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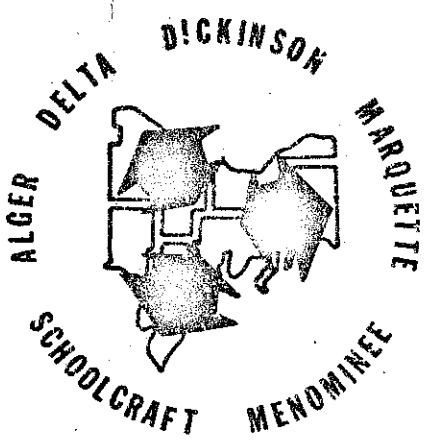

CENTRAL UPPER PENINSULA

REGIONAL TRANSPORTATION PLAN

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

June, 1977

ACKNOWLEDGEMENTS

This document is a policy plan for transportation development in the Central Upper Peninsula of Michigan. Regional goals, policies, and objectives for the development of transportation are the focus of the plan.

Organization, content design, and preparation of this report was the responsibility of David Gillis, Transportation Planner. John Gorenchan and Jerry Pilon prepared the graphics. The CUPPAD professional and clerical staff, under the guidance of Jim Dooley, Regional Planning Manager, and Greg Main, Executive Director, provided counsel and assistance in the preparation of the plan.

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CHAPTER I

INTRODUCTION

REGIONAL PLANNING PROCESS

Why a Regional Transportation Plan? What do we get out of this planning process? Traditionally, transportation planning has been done either at the statewide level or in urban areas. Statewide plans are, by necessity, rather general and not directly responsive to local areas. Also, the level of detail involved in statewide planning is often insufficient for use in local public investment programming. Further, there is substantial variation in the goals and objectives of various regions in the state, and this results in varying attitudes toward transportation development which cannot be effectively addressed in a statewide plan.

Planning at the regional level addresses the complex man-land relationship with increased emphasis on local needs and preferences. Plans for a regional transportation system can be developed in accord with regional economic goals and social needs. With these considerations in mind, public investment policies regarding transportation improvements should be oriented toward a desirable systems approach, thus, effectively maximizing each public investment dollar. Through regional planning, local officials can synthesize local desires with the state and federal funding process. The result is actually a process in itself, where existing conditions are evaluated in terms of expressed regional issues and concerns. Maximally beneficial improvements or alterations to the system can then be programmed within the jurisdiction of local, state, and federal implementation bodies. A completely developed regional planning process not only offers coordination between various local interests, but also between the multiple levels of government involved in provision of project aid and implementation.

How does this affect the Central U.P.?

In the central six-county region of Michigan's Upper Peninsula, there is a great need to coordinate transportation planning and economic development. Maximum efficiency in the transportation system would effectively reduce the Region's isolation and promote economic development. While factors other than transportation are also responsible for economic stagnation in the area, it has been researched and documented that many area industries and businesses have been handicapped by high cost of transportation and slow transit times to markets where they must compete with firms not so geographically disadvantaged.* A well developed transportation plan is the first step in reducing these inequalities and making the Region more competative economically. The resultant strategy will be an effective tool, useful in completing and coordinating the total transportation system so vital to the Central U.P.

The regional planning process, as it relates to transportation, accomplishes the following:

1. Examines the existing transportation system and relevant regional characteristics.
2. Evaluates system deficiencies and needs.
3. Identifies issues in transportation of local and regional concern.

*Transportation and Distribution in 48 Counties in Northern Michigan, EBS Management Consultants, 1967.

4. Develops transportation goals, related policy recommendations, and specific objectives for the system.
5. Develops alternative improvements within the context of regional goals.
6. Develops a methodology for ranking projects needed to implement the plan.
7. Coordinates proposed projects and assists actual development of these improvements.

How are these items accomplished? The specific steps followed in the comprehensive transportation planning process are briefly explained below:

Examination of Existing Conditions

At the base of any good development strategy is a detailed assessment of existing conditions in the study area. CUPPAD regional transportation planning staff have collected data relating to the existing transportation system in the Region. This includes information about existing facilities for each mode of transportation and data regarding the flow of people and goods within the system. Socio-economic data, the vital information about the characteristics of the population that affect demand for transportation, has also been compiled. Preliminary analysis of this data has resulted in a better understanding of the correlation between the Region's people, their economic activities, and the need for transportation.

Issue Identification

An evaluation of the transportation system strengths and deficiencies is often not enough to base responsive decisions upon. No one is more familiar with problems in transportation than those who are users, providers, and those who are responsible for transportation system development. Toward this end, meetings have been held with local units of government, county road commissions, local economic interest groups, private enterprise, state agencies, and others to discuss issues and problems in transportation, leading to a formal statement of transportation issues of regional concern. The statement outlines the problem areas in the regional transportation network and indicates the general nature of concern in regard to transportation services.

Develop Goals, Related Policies, and Objectives

Based upon the identified issues and problems in the Region, overall comprehensive goals for optimal development of the transportation system have been derived. Goals are broad statements outlining desirable system conditions in the future. Related policies describe specific action necessary to progress toward these goals. Objectives are definite measurable steps to be achieved leading to maximum improvement of the transportation system.

Goals, related policies, and objectives are developed with substantial public input through the OEDP process. In this process, draft statements are prepared in consultation with Overall Economic Development and Planning

Committees (OEDP) in each of the six counties in the Region. The membership of these committees reflects a blend of local elected officials and private businessmen. The draft statement is then submitted to the complete CUPPAD Commission for approval or revision. In this manner goals, related policies, and objectives are described by the Region rather than prescribed for it by some other level of government.

Develop Improvement Alternatives

Within the context of approved goals, alternative improvement possibilities have been suggested to offer some potential solutions. These broad concepts are intended to provoke thought and comment rather than to be considered as preferred improvements.

Develop Project Ranking Mechanism

Development of a meaningful improvement ranking mechanism is used to evaluate projects to determine transportation improvement priorities. This technique has been derived to give priority to improvement projects which are designed to most effectively address the approved transportation objectives. The theory and actual ranking mechanism has been reviewed again through OEDP process and approved by the CUPPAD Regional Commission.

Rank, Coordinate, and Assist Proposed Projects

Transportation improvement projects proposed at the local level are evaluated through the ranking mechanism according to the ability to satisfy specified criteria. These projects represent marked improvements to accrue to the total transportation system when carried to completion. At this and all levels of the process, the plan will seek the greatest possible level of local input, allowing it to be a plan developed by the Region, rather than for the Region.

THE ROLE OF TRANSPORTATION

It is highly essential in the planning process to understand the meaning of, and the need for, transportation. It is through transportation that distance is overcome. The relations and connections between spatial areas and varying regions are highly reflected in the transportation facilities in existence and the flow of traffic. Only to the extent that transportation services are reliable and efficient can the separation of man, his food sources, and his industrial output take place. Hence, the ability to transfer people, goods, and services between varied regions allows economic and social development of an area to occur.

The Central Upper Peninsula Planning and Development Region encompasses six counties in Michigan's Upper Peninsula. These counties combined cover a vast land area of 7,120 square miles. It is this element of distance, so evident in the Region, that is such a strong force to be

reckoned with in the development of transportation systems. Thus, transportation in the Region can be viewed as a developmental force, instrumental in creation and sustenance of social and economic well-being. The deficiencies in the transportation system are also a force, serving only to constrain and limit growth and development.

MULTIMODAL CONCEPT – NEW EMPHASIS

There has been much emphasis in recent years placed on the concept of multi-modal transportation planning. The multimodal approach basically refers to planning for a total coordinated transportation system, rather than at the subsystem level. Traditionally, transportation planning has been done at the modal level (e.g., highway plans, public transportation plans, etc.). This concept of total (or multimodal) transportation is based on the premise that there is an interrelationship among modes of transportation and an alteration in the characteristics of one mode can have an obvious effect on the operational characteristics of other modes. An example would be in the case of a rail abandonment forcing shippers along the rail line to now truck their product over highways. Increased truck traffic can quickly deteriorate a road and shorten the life of a bridge. In such situations, it is possible to predict the consequences of an alteration in the transportation system.

The need exists to develop a suitable balance among economic efficiency, energy and environmental considerations. Potential changes in energy availability may have a severe effect on the types of transportation available for use. As the energy situation worsens and costs rise, those modes of transportaiton, particularly rail and water which are energy-efficient, will probably play a more important role in the distribution system. In our energy-scarce world, we obviously cannot depend on any single method of transportation. There is a need for railroads as well as highways, buses as well as automobiles, to carry people and goods.

BARRIERS TO TRANSPORTATION IN THE CENTRAL REGION

The vast distances in the Central Upper Peninsula are a hinderance to transportation. Some parts of the Region are more isolated than others, that is, they are more recessed from the Region's major activity centers. Some of these urbanized areas experience decreased interurban contact due to their locational proximity in regard to other activity centers.

Figure 10 (on page 58) illustrates the connectivity of the state highway system in relation to the Central Region's urbanized areas. By considering the Region as a closed system, the areas of maximum intra-regional accessibility become evident, and areas less accessible due to spatial bias are also pinpointed. It is interesting to note that the results correspond precisely with areas designated urban and secondary centers by the CUPPAD Regional Commission.

Considering the Central Upper Peninsula as a Region, distance to urbanized areas in the nation is a barrier to economic development. Figure 11 (on page 59) shows the relative proximity of the Region to major metropolitan areas in this part of the country. While the distances appear great, modern transportation technology can effectively reduce travel times and tie the Region to the rest of the national economy. Hence, the distance barrier may be more perceived than actual. Provincial attitudes and silent resignation to isolation are more serious barriers to inter-regional interaction than actual physical distance.

Physical factors, particularly topographical, obstruct the developemnt of maximally efficient transportation systems. Some parts of the Central U.P. are quite conducive to transportation development, while in other parts the terrain may be rough, rolling, or swampy. Unfavorable physical features can cause system improvements to become very costly or necessitate circuitous routing.

Many unique and fragile natural areas exist in the Central Region. Sometimes transportation facilities are not compatible with these environmentally sensitive areas. This again constrains natural development of optimal transportation systems and must be recognized.

Climatic constraints may also tend to hinder transportation in the Central U.P. Snow accumulation in winter may block ground and air transportation and freezing temperatures adversely affect waterborne movement. Exposed facilities experience accelerated deterioration rates due to severe weather conditions. These factors force an unusually large proportion of capital resource to be allocated to facility maintenance and snow removal. This valuable capital is money that could be spent in transportation development if it were available.

THE REGIONAL GROWTH CONCEPT

Individuals, families, business people, and government officials react to change by continuously making decisions based upon their own needs and perspectives. Many decisions are clearly made without full understanding of their effect on the total environment. When pieced together, these many decisions influence the economic, social and physical nature of the Region and, in essence, unconsciously chart the direction which the Region is headed. There is a need to improve this process by encouraging a broader decision making framework - a framework in which a concensus can be reached on where the Region is heading and how it should get there. With common-agreed upon goals and policies, individual decision makers will have a reference point for better evaluating their individual choices and governmental agencies in particular can better gauge the ultimate impact and cost of their activities and proposals.

The question of where the Region is heading implies that there are alternative ways of growing. In theory, this is true. Plans could be designed which envision dispersion of population or corridor development along major highways. A review of the existing pattern of development of the Region, however, suggests that these are not viable options. The urban communities in the Region provide the vast majority of the jobs, offer the most complete shopping and related services, contain the largest investments in public facilities, and offer the best quality medical care. In addition, the existing transportation system (one of the major determinants of land use patterns) is focused on these centers. Lastly, the fact that the Region is not developing at a rapid pace makes any radical departure from the existing pattern meaningless in terms of the short-range impact on development.

Based on these considerations, it is apparent that the overall approach to development should strengthen these centers to protect the significant public and private investments which have already been made. The goals, objectives, and policies proposed are directed toward concentrating growth within these centers.

It should be clearly understood that this strategy does not imply that smaller communities in the Region should be bypassed in terms of needed public facilities. Rather, it suggests that facilities be provided in relation to the functional role played by the community. For example, many small communities, because of their location, play a needed role in terms of providing services to agricultural areas or tourists. This should be recognized and planned for. On the other hand, it is clear that we cannot continue to labor under the illusion that each settlement, regardless of its size and location, will be helped by more public investment.

Community Classification

Communities in the Region are of four types: Urban, Secondary, Trade, and Rural. These communities or groups of communities were evaluated from an economic, social, and physical standpoint and were classified on the basis of their size, type of economic activity found there, accessibility, and distance to competing centers of the same or larger size. The following is a description of each type of center.

Urban Centers are the largest communities in the Region, wherein the greatest variety of goods and services may be obtained. They function as employment, financial, medical, and government centers. The Region's transportation network is focused on these centers, making them highly accessible from rural areas in the Region, as well as from metropolitan regions.

Secondary Centers are much smaller communities which provide employment, shopping, and other services at a reduced level. They are distinctly urban, but rely on a single major industry for their economic existence.

Trade Centers are communities whose primary economic function is to provide for the day-to-day convenience needs of the residents as well as those who live in still smaller communities in surrounding rural areas.

Rural Centers are the numerous small communities which contain a few hundred persons or less, have minimal commercial facilities, and are remote from other communities of the same or larger size (Figure 1).

Urban Centers

Marquette-Ishpeming-Negaunee Area
Escanaba-Gladstone Area
Iron Mountain-Kingsford-Norway Area
Menominee-Marinette Area

Secondary Centers

Munising Area
Manistique Area

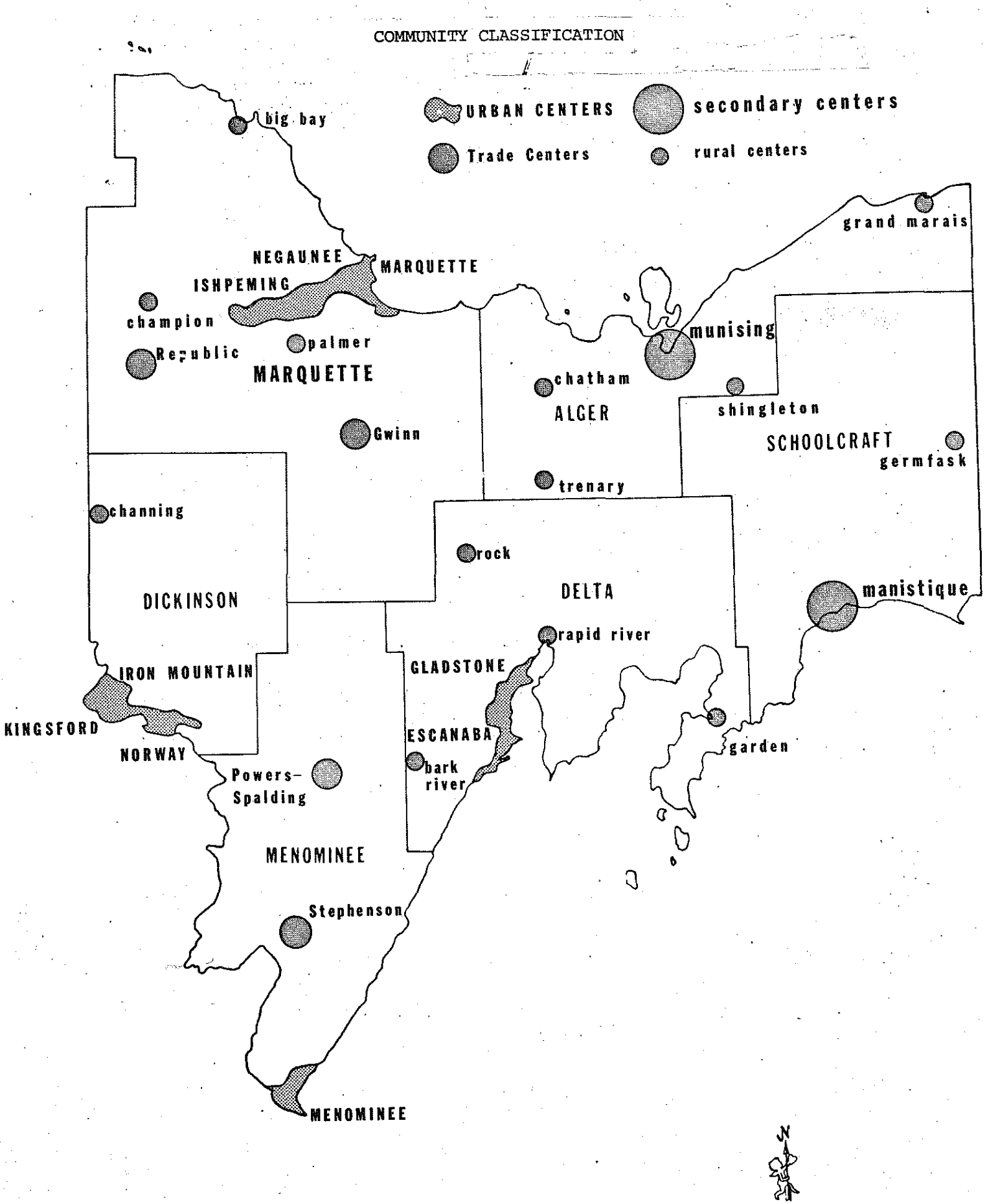
Trade Centers

Gwinn
Republic
Powers/Spalding
Stephenson

Rural Centers

Bark River
Big Bay
Champion
Channing
Chatham
Garden
Germfask
Grand Marais
Palmer
Rapid River
Rock
Shingleton
Trenary

Figure 1



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Based on the characteristics of these identified centers, judgement can be made and a strategy devised to convert change from a problem to a resource. The Regional Growth Concept suggests that all public resources should be applied to these communities in a coordinated effort. It is based on the premise that we have (or can get) the resources available to overcome the pressing economic problems and the social ills which characterize the Central Upper Peninsula. Applications of these resources must, however, be made in a much less fragmented manner.

GOALS, OBJECTIVES AND POLICIES

The CUPPAD Commission originally adopted three overall goals to guide its work. In 1974, two additional goals were added. These goals are very general and express the overall desires of the Commission with respect to the economy, the environment, local government, human services, and man-made facilities. They are as follows:

I. Stabilize and improve the overall economy.
II. Ensure the rational use of the Region's natural resources and the compatible arrangement of land uses.
III. Strengthen local government.
IV. Improve the social and economic well-being of the Region's people by providing specialized social services through a coordinated delivery system.
V. Develop a system of communities linked by adequate transportation and communications systems which have facilities and levels of service consistent with their size and function.

In addition, goals, objectives, and policies pertaining to specific functional areas have been adopted by the Commission. They are designed to provide a coordinated approach to achieving the Commission's overall goals and the Regional Growth Concept.

CHAPTER II

REGIONAL CHARACTERISTICS

THE PEOPLE

The people who reside in the Central Upper Peninsula today are the descendants of the ethnic waves which were attracted by the economic opportunities in the Upper Peninsula. The French came for the furs and left, but returned to harvest the pine and stayed. They now comprise the largest single group, but are the least identifiable. The Finns came to work in the mines but found the terrain and climate so similar to their homeland that they soon established farming communities in the area. These settlements are still visible today. The Germans established farms in Menominee County, and the Swedes and Italians settled in Dickinson County. Cornish, Austrians, Czechs, Poles, Slavs, Irish, and Norwegians came in lesser numbers to join existing communities or to form new ones. Another group which flavors the culture of the area is the Indian. They have been largely assimilated, however; and consequently, much of their rich culture has been lost. The only Indian settlement of any significant size in the Central Upper Peninsula is located at Hannahville and consists of approximately 200 persons.

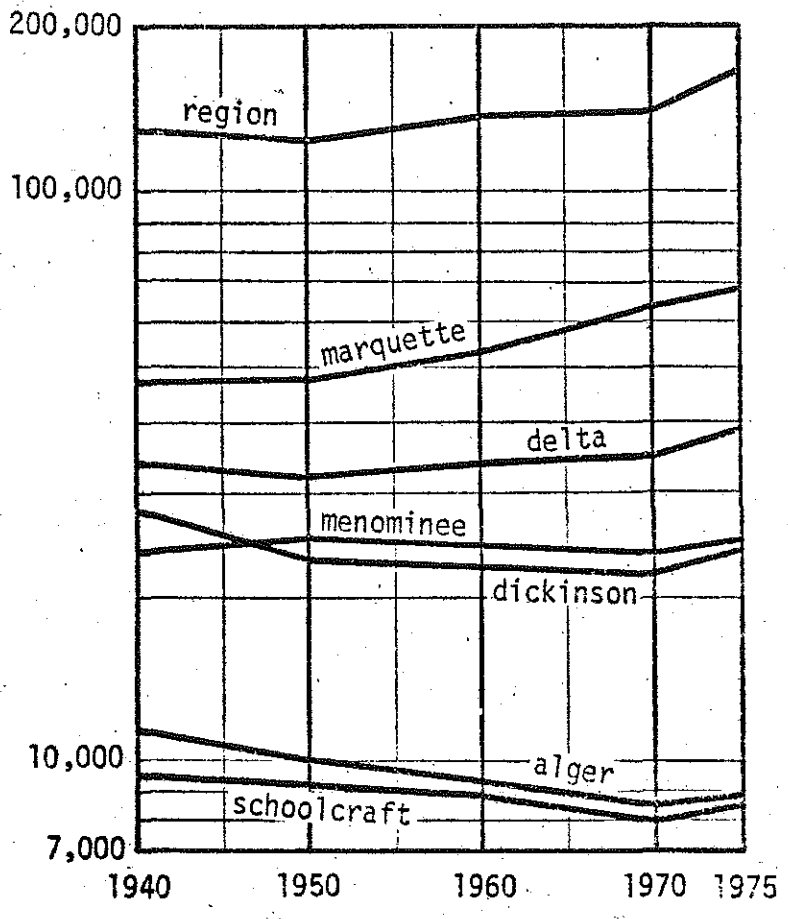
These groups provide the Region with a colorful heritage which is expressed in place names, ethnic festivals, and other events, and in much of the local humor.

Population Trends

Between 1940 and 1970, population increased slightly. This increase was not shared uniformly by the local government jurisdictions. Marquette and Delta Counties gained population while all other Counties declined. Similarly, only three cities registered gains in population, and all others declined.

Figure 2

Population Trends



Source: 1940-1970 figures are from U.S. Census. 1975 estimates are from Michigan Department of Management and Budget, May, 1977.

Based upon 1975 population estimates, the Region's population has increased 6.8% since 1970. All of the six counties shared in this increase, although Delta with 9.6% and Marquette with 7.4% showed the largest gain. Increases in the other counties were Alger 4.8%, Dickinson 5.1%, Menominee 4.0%, and Schoolcraft 5.3%.

Significant Growth Areas

Many townships registered overall increases in population between 1960 and 1970. In only a few, however, could the increase be termed significant; i.e., where the percentage increase was large in relation to the numerical size of the local unit. For example, a ten percent increase in a jurisdiction with less than 100 people would be an absolute increase of only ten persons. This can hardly be termed significant. The same percentage increase in a community of 5,000 would mean the addition of 500 people which is significant. For the purposes of this report, the criteria shown in Table 1 were used to evaluate the significance of population increases.

In general, there were two types of areas in the Region which showed significant increases--the townships which are adjacent to the major cities and the three townships in Marquette County in which K. I. Sawyer Air Force Base is located. Only one city, Marquette, gained significantly. This is attributable to the growth of Northern Michigan University. Ely Township in Marquette County and Spalding Township in Menominee County also gained significantly. One possible conclusion which may be drawn is that people are migrating from the cities in the Region to the adjacent township areas. This is supported by the fact that nearly all of the cities lost population.

Estimates prepared of the 1975 population for two suburban townships suggest that the trends discussed above have accelerated between 1970 and 1975. In Chocolay Township the estimated 1975 population is 4,234, a 28% increase since 1970. In Menominee Township the estimated 1975 population is 3,842, a 17% increase since 1970. While it can not be concluded from this data that the increase is attributable to out-migration from the adjacent cities, other information indicates that this is the case.

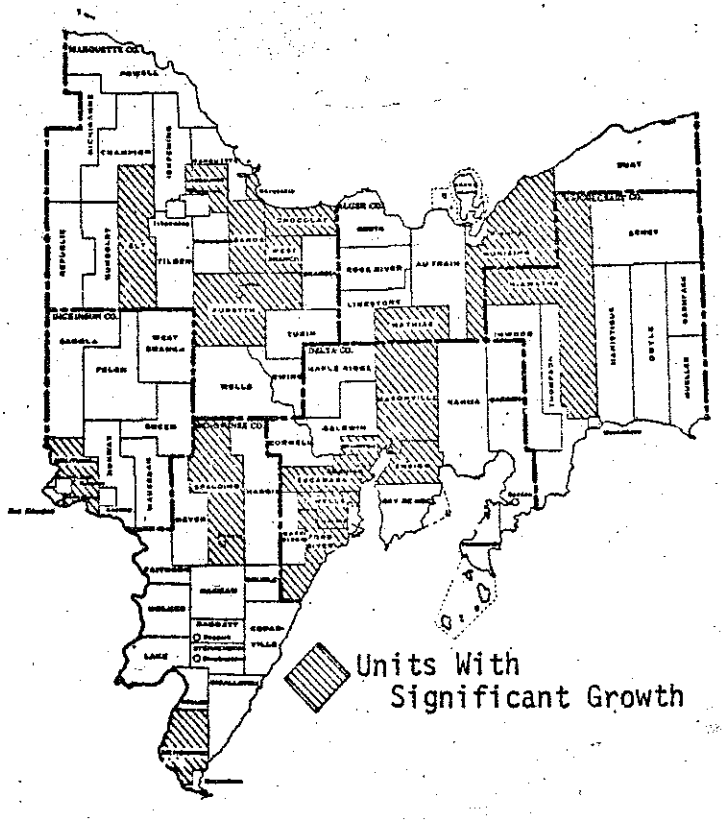
Table 1

Significant Growth Criteria

Population	Significant Increase
0-100	25%
101-500	20%
501-1,000	15%
1,001-5,000	10%
5,000+	5%

Figure 3

Significant Growth Areas



Age and Sex Distribution

Analysis of the age composition of the Region's population reveals that every County except Marquette has an age composition high in older, retired people and low in younger, productive workers relative to the State. The proportion of people in the 65 or over age group in the Region is 11.1%, while the state is 9%. At the other end of the spectrum, the 0-20 age group comprises about the same proportion of the Region's population as in the State. The age group 21-44, the most productive, from an economic standpoint, falls short of the state proportion; namely, 27% for the Region versus 30% for the state. These differences are actually understated since they are heavily weighted by the high proportion of young persons at K. I. Sawyer and at Northern Michigan University.

Table 2

Age Distribution - 1970

County	Under 5	%	5-17	%	18-59	%	60+	%	Median Age
Alger	677	7.9	2,382	27.8	4,155	48.5	1,352	15.8	30.3
Delta	3,018	8.4	10,705	29.8	16,345	45.5	5,866	16.3	28.2
Dickinson	1,686	7.1	6,413	27.0	10,641	44.8	5,005	21.1	35.5
Marquette	5,239	8.1	16,560	25.6	35,448	54.8	7,470	11.5	24.1
Menominee	1,967	8.0	7,007	28.5	11,113	45.2	4,511	18.3	30.7
Schoolcraft	650	7.9	2,369	28.8	3,595	43.7	1,615	19.6	31.2
Total	13,237	7.9	45,436	27.9	81,297	47.0*	25,819	17.1*	30.0
State of Michigan		9.1		27.7		50.8		12.4	26.5

Source: U.S. Census, 1970.
*Mean Figures

The existing imbalance in age distribution poses serious implications for the future of the Region. Both the youngest and oldest age groups make the greatest demands on the community for the social and welfare services, such as education, recreation, and medical care. Yet, they are the least able of all age groups to contribute to meeting the cost of these programs. The financial burden, via tax payments, therefore, falls on those gainfully employed, primarily the 21-44 age group. This same group is most effected by out-migration, which adversely affects business and industrial development and consequently, the tax base of the community.

The imbalance in age distribution does not carry over to sex distribution. In each age group, the distribution by sex is almost even.

Table 3

Sex Distribution by Age Groups - 1970

	Male	Female
0 - 20	21	20
21 - 44	14	13
45 - 64	10	11
65+	5	6

Source: U.S. Census, 1970.

Educational Levels

The educational level of people living within an area is often a significant factor in determining employment levels and job skills. As a whole, Region median years of education (11.7) compares favorably with the state (12.1), although it is slightly lower. The Region had a lower proportion of persons with 13 or more years and a higher proportion with less than five years education. It is also worthy to note that graduation levels, particularly for males, are well below the state average.

Within the six counties, there is some variation in median years of education. The median in Alger, Delta, Dickinson, Menominee, and Schoolcraft are all less than 12 years, while it is above 12 in Marquette County. The median level was generally higher in the cities as might be expected.

Table 4

Education 26+ Years

County	Less than 5 yrs.	%	High School Grad. %		Median School Years
			Male	Female	
Alger	282	6.0	41.3	51.2	11.4
Delta	803	4.2	46.6	52.1	11.9
Dickinson	424	3.0	47.1	52.8	12.0
Marquette	840	2.7	57.2	60.8	12.2
Menominee	557	4.1	44.8	51.1	11.7
Schoolcraft	161	3.5	38.3	46.4	11.1
Total	3,067	3.9	45.9	52.4	11.7
State Data		3.8	51.2	54.2	12.1

Source: U.S. Census, 1970.

There is no apparent correlation between education and employment levels in the Region. This suggests that the economy of the area lacks sufficient diversity to effectively utilize the labor force. As a consequence, it may be the case that many persons are underemployed.

Income

One commonly used measure of income is per capita income. The following table presents estimated personal income data for the Central Upper Peninsula for the year 1969 and 1974.

Table 5

Estimated Per Capita Income

County	1969	1974	% Change 1969-1974
Alger	$2,276	$3,335	+46.5
Delta	2,528	3,740	+47.9
Dickinson	2,513	3,911	+55.6

Table 5 (Continued)

Estimated Per Capita Income

County	1969	1974	% Change 1969-1974
Marquette	$2,521	$3,766	+49.4
Menominee	2,308	3,437	+48.9
Schoolcraft	2,274	3,383	+48.8
Central Upper Peninsula	2,403	3,596	+49.6
State of Michigan	3,357	4,751	+41.5

Source: Michigan Department of Management and Budget, May, 1977.

None of the counties in either 1969 or 1974 even began to approach the state average, however, considerable improvement was realized in the five-year period. In 1969, the Region's per capita income level was approximately 72 percent of the state figure. By 1974, the Region's level had risen to 76 percent of the state figure.

Welfare

The welfare burden in the Region accounts for a substantial share of general governmental costs at the county level. For this reason and because data on welfare recipients further illuminates the overall view of the Region's people, this section will focus on these considerations. While per capita income has increased, poverty in the six-county Region remains very high. In terms of the total families living in poverty, the Region has 11.2% and the state 7.3%. An even larger disparity exists when examining the percentage of families receiving public assistance. State-wide it is only 4.2% but the regional average is over four times as great at 17.9%. When considering unrelated individuals living in poverty, the state figure is 4.9% but the regional average is over two and a half times as great at 12.4%. There are also a greater percentage of children living in poverty.

There are several categories of welfare programs which are administered by the state and county governments. Still other social services are delivered by numerous other agencies and groups. This discussion will, however, focus on the major assistance payments programs. These are as follows: ADC, Aid to Dependent Children; GA, General Assistance; FS, Food Stamps; MA, Medical Assistance.

For the month of December, 1974, there were 7,033 cases in which payments were made. The largest program in terms of number of cases was Medical Assistance. This was followed by ADC with 2,094 and Food Stamps with 1,964 cases involving households not otherwise receiving public assistance. More than half of the recipients reside in Delta and Marquette Counties. The following table displays caseloads by program, by county.

Table 6

Assistance Cases -- December, 1974

	ADC	GA	FS*	MA	Total
Alger	144	46	150	121	461
Delta	503	130	380	702	1,715
Dickinson	236	23	250	331	849
Marquette	807	311	770	882	2,770
Menominee	264	16	259	270	809
Schoolcraft	140	12	146	131	429
Total	2,094	538	1,964	2,437	7,033

Source: Assistance Payment Statistics, December 1974, Department of Social Services.

*Includes households not receiving other forms of public assistance.

Migration

In the decade 1960 to 1970, the rates of out-migration remained very high for most of the Region. During the decade, the trend produced a net out-migration of 8.2 percent of the 1960 total population. The Upper Midwest Council in Population Mobility in the Upper Midwest, reported net migration declines of 1113 persons in Alger County. The declines for Delta, Dickinson, and Menominee were of 1,300, 1,211, and 1,514 persons respectively. Schoolcraft County was reported to have had an out-migration of 1297. Marquette County was the exception to the trend with a net in-migration of 537 persons.

It is important to note that migration patterns differ by age and family composition. Throughout the country, the standard division of migrants is "young singles", "families", and "retirement age." Each of these groups has different reasons for migrating to another location.

For the retirement age persons, the reasons for migration were either to escape winter or to find more amenable housing since there was no longer a need to reside near their place of employment. For most counties of the Region, in-migration exceeded out-migration of the age group of 65-69. This migration ranged from 12 percent of the 1970 population in Dickinson County to 2.6 percent in Alger County with 3.4, 6.7, and 9.4 percentages for Menominee, Delta, and Schoolcraft Counties respectively. Marquette County had an out-migration of 8.1 percent.

For the "family" group, the principal reason for migration was a change in employment. The ups and downs of employment within the Region, especially in the manufacturing and mining sectors, produced the conditions that lead families to leaving one county in the Region for another or to areas out of the Region. In addition, the decline of agricultural and forest related employment reinforced this trend. The three counties of Delta, Dickinson, and Menominee, with their stronger manufacturing sectors, did slightly better and had in-migrations of persons with ages between 35 and 44 of 4.8, 1.0, and .1 percent of their respective 1970 populations. The less industrialized counties of Marquette, Alger, and Schoolcraft, had net out-migrations during the period of 5.9, 3.6, and 6.4 percent respectively.

For the "young singles" part of the population, the reasons for migration were more varied. They included employment, education, military service, marriage, and simply to see some of the rest of the world. The Upper Midwest Council reported a massive out-migration pattern for the age group 20-24 for the Region. Delta County reported 40 percent out-migration of this age group population of 1970. For Schoolcraft County, it was a 59 percent out-migration. Alger, Dickinson, and Menominee Counties were in between with percentages of 54.5, 49.3, and 46.8 respectively. Marquette County was the only county with a net in-migration of this age group with a percentage of 61.5. It was as massively positive as the rest of the Region was negative. There were three reasons for Marquette County's in-migration. The first is that the only university in the Region, Northern Michigan University grew enormously. Secondly, the most important reason for in-migration however, was the forced migration of air force personnel at K.I. Sawyer Air Force Base. The third was the employment opportunities presented by the mining industry and the rapidly expanding retail sector.

Since 1970, there has been a turnaround in migration in the Central Upper Peninsula. All of the counties experienced net in-migration in the period 1970-1976, based upon provisional population estimates of the Census Bureau.

Table 7

In-Migration, by County, 1970-1976

County	In-Migration as a Percentage of 1970 Population
Alger	+8.6
Delta	+6.1
Dickinson	+5.9
Marquette	+3.4
Menominee	+1.5
Schoolcraft	+6.7

Population Projections

As a part of the Commission's Water Quality Planning Program, population projections were prepared for all local governmental units in the Central Upper Peninsula. The projections were based on county population projections prepared by the Michigan Department of Management and Budget which were published in a report entitled, "Population Projections for the Counties of Michigan", dated October 1974. Minor revisions were made in some of the county projections based upon OEDP Committee review.

The 1975 estimated population for the six counties is 178,643 or a 7.8 percent increase since 1970. The projections forecast a 9 percent growth in population between 1978 and 1980, and a 9.75 percent increase between 1980 and 1985. The 1985 population for the six counties is projected at 213,752.

All of the six counties are projected to show population growth between 1975 and 1985. Delta and Marquette Counties, however, are projected to have the most significant increases and together would account for two-thirds of the Region's total population growth.

Table 8

Future Population

County	Estimated* 1975	Projected** 1980	1985
Alger	8,977	9,585	10,150
Delta	39,358	44,220	49,239
Dickinson	24,975	26,320	27,390
Marquette	69,467	76,205	83,599
Menominee	25,563	28,971	33,024
Schoolcraft	8,659	9,454	10,352
Central Upper Peninsula	176,999	194,755	213,752

Source: *Michigan Department of Management and Budget, May, 1977.
**CUPPAD Regional Commission, 1977.

Population projections for local governmental units were prepared by disaggregating or breaking down the county figures using the following factors:

1. Historical population trends and historical ratios between the county population level and the level of individual local units.
2. Data on population projections from local wastewater facilities plans.
3. 1973 population estimates by local governmental units used for general revenue sharing purposes and 1974 and 1975 county population estimates published by the U.S. Bureau of the Census.
4. Information derived from the number of building permits issued, knowledge of recent and proposed developments, etc.

Persons using these data should realize the fragile nature of the projections. Population growth is dependent upon economic development, and population distribution will be dependent upon existing natural resources, annexation policies, school locations, and other factors.

In other words, local people participating in the planning and development decision-making process can directly affect decisions made by individual families about where to live, work, and play. The degree to which these decisions are influenced will be determined by the willingness of community leaders to consciously decide to encourage and direct growth in a planned fashion.

If decisions to redirect growth are not made, there will be continued growth in the townships adjacent to the cities and decline in the rural townships and in some of the cities. The implications of this trend, in terms of the cost of providing public services, should be carefully considered in view of possible alternative ways of growing.

THE ECONOMY

The economic development of the Region is both one of the major determinants of the regional growth pattern, and is also the major item affected by that pattern. The growth of the urban centers will continue to be reinforced by new businesses and industries while the smaller communities will continue to decline and suffer out-migration of local business and population.

The economic history of the Region has been dominated by the iron mining, forest, and paper products industries. If these industries suffered national economic downturns, the economy of the Region usually suffered a severe depression. In the past decade, newer industry types have developed in the Region which have and will continue to cushion the fluctuations of the older established industries. In addition, increased government employment has also been a good short-term expedient. However, this employment may not be an adequate long-range solution to the basic development of the Region.

Since 1970, the national economy has suffered a severe depression. In the Region, however, these conditions were, to a degree, less severe. This was mainly due to the low economic base and the continued out-migration of the prior period, combined with the fact that the industries of the Region were less affected than many other industries. However, the national depression did nothing to improve the regional economy over the period 1970-75.

Labor Force

The Region's labor force in 1960 was 53,661. It increased to 56,115 by 1970, and to 74,600 by 1976. The trend over the past seven years has been a continued increase at an average rate of 5.4 percent. The following table presents labor force data by county.

Table 9

Labor Force

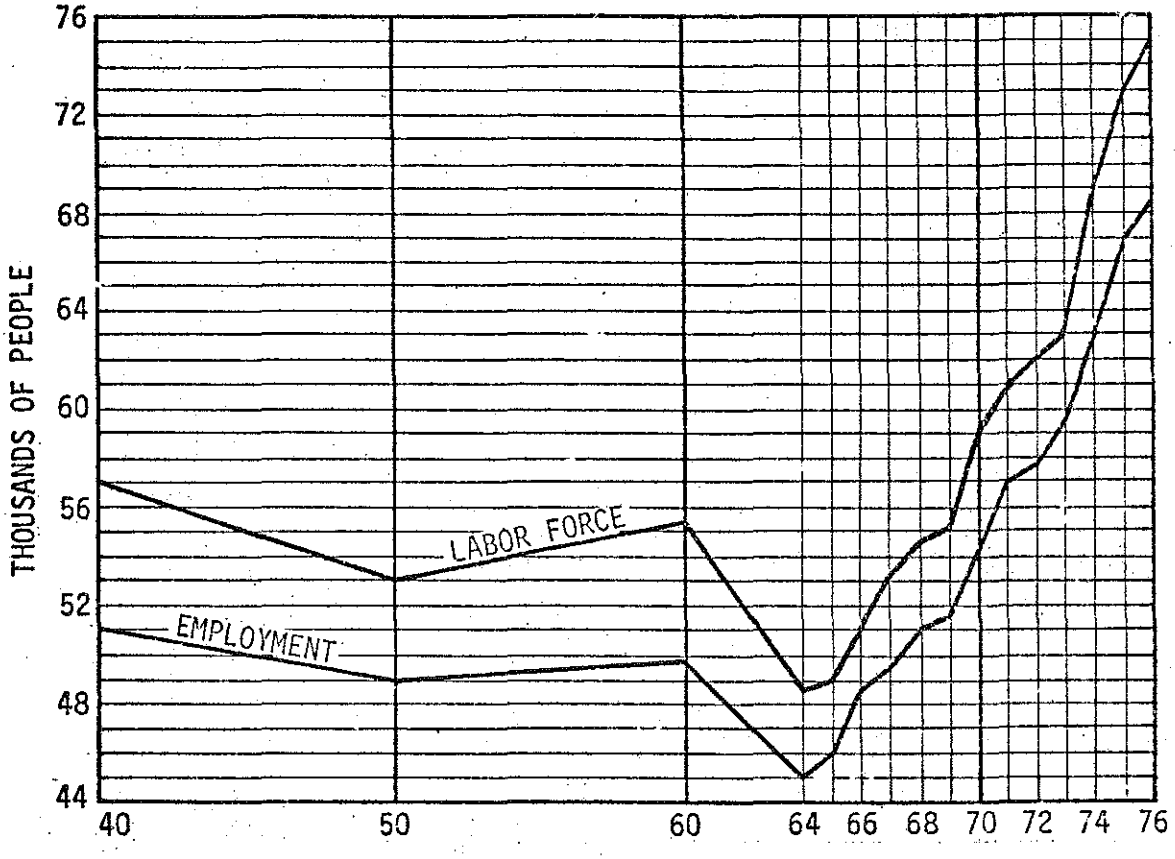
County	1960*	1970*	1975**	1976**	Annual Increase Increase Since 1970
Alger	3,075	2,600	4,150	4,337	11.1%
Delta	11,638	12,000	16,100	15,950	5.5%
Dickinson	8,444	8,850	10,525	10,175	2.5%
Marquette	18,952	21,200	26,650	30,388	7.2%
Menominee	8,528	8,740	10,700	10,425	3.2%
Schoolcraft	3,024	2,725	3,325	3,325	3.6%

Source: *CUPPAD Regional Commission, Employment and Earnings in Perspective, 1971.
**MESC, Employment and Labor Force Estimates, December 1975 and 1976.

The increase in Alger County has been due to a turn around in migration patterns plus the opening of a new veneer mill. For Marquette and Delta Counties, the increase has been because of the availability of employment opportunities in mining and manufacturing respectively. The labor force for the Region has continued to climb throughout the period. The post-war baby boom more than kept pace with the out-migration the Region has experienced since the 1920's. As this proliferation tapers off, however, the labor force is not likely to cease expansion as re-inmigration has begun, attracted by the perceived higher quality of life.

Figure 4

Labor Force



Labor Participation Rate by Place of Residence

Traditionally, the labor participation rate for the Region has been low. In 1960, the rate was 34.1%. In 1970, it was 33.9%. However, in 1975 it jumps to 41.2%. For each of the counties, the same pattern exists. In 1960, the rate varied from a low of 33.2 in Alger County to a high of 34.5 in Menominee. In 1970, the range was wider. Alger was lowest at 30.3%. Delta and Schoolcraft had rates of 33.4% and 33.1% respectively. Marquette dropped to 32.8%. Menominee was at 35.5% and Dickinson went up to 37.3%. However, between 1970 and 1975, a major change occurred. Alger returned to a rate of 34.6%. Schoolcraft County has increased to 38.0%. Delta and Marquette Counties have increased their rates drastically to percentages of 40.5 and 40.7 respectively. Dickinson and Menominee Counties increased to 41.9 and 42.0% rates. This indicates that the economic expansion that occurred during this span of time succeeded in hiring more locals and especially more women employees.

Occupation Groups

The division of occupational groups by counties is expressed in the following tables for each county. The tables include male and female employment combined for each census.

Table 10

Occupation Groups, Alger County

	1960	1970
Professional and Technical	257	334
Farmer and Farm Laborers	247	146
Managers and Proprietors	242	140
Clerical and Sales	396	403
Craftsman	307	365
Operatives and Drivers	623	637
Service	232	337
Laborers	304	218
Household	57	10
Others	12	
Total	2,677	2,590

Source: U.S. Census of Population, 1960 and 1970.

In Alger County, a series of declines in employment areas can be noted. The first is in farm employment. In this case, the agriculture is mainly forestry and the trend indicates the increased levels of farm and forest mechanization and the increased service employment for 1974 indicates the increased need for equipment services. For example, the county with only 2,590 total employees in 1970 supports three auto and truck dealerships with one having in excess of 50 employees currently. This trend has continued through to date.

Table 11

Occupation Groups, Delta County

	1960	1970
Professional and Technical	866	1,229
Farmer and Farm Laborers	640	230
Managers and Proprietors	1,093	1,146
Clerical and Sales	2,013	2,340
Operatives	1,727	1,819
Drivers	501	591
Service	1,081	1,524
Laborers	715	656
Household	244	114
Craftsman	1,411	1,630
Others	228	
Total	10,519	11,279

Source: U.S. Census of Population, 1960 and 1970.

The trends in Delta County that have continued since 1960 have been the major increases in professional and technical, manufacturing operatives service, craftsman, and service employment. These changes represent a major expansion

in manufacturing and retail trade. The agricultural employment decline has stopped and reversed since 1970 as employment increased in spite of mechanization in the forestry industry.

Table 12

Occupation Groups, Dickinson County

	1960	1970
Professional and Technical	817	1,027
Farmer and Farm Laborers	180	120
Managers and Proprietors	760	716
Clerical and Sales	1,430	1,612
Craftsman	1,230	1,311
Operatives	1,190	1,020
Drivers	382	435
Service	775	1,075
Laborers	462	366
Household	126	59
Others	331	
Total	7,683	7,741

Source: U.S. Census of Population, 1960 and 1970.

For Dickinson County, the 1970 census figures represent a rather bleak point in its economic history. The downturn in manufacturing employment has been reversed and the indicators should now exceed the 1960 figures. A number of plant closings were responsible for the downturn. However, good local community action has attracted new firms from out of the area and developed new local firms.

Table 13

Occupation Groups, Marquette County

	1960	1970
Professional and Technical	1,969	2,929
Managers and Proprietors	1,300	1,362
Farmer and Farm Laborers	153	97
Clerical and Sales	2,494	4,401
Craftsman	2,395	2,721
Operatives	3,201	2,567
Drivers	558	955
Service	1,823	3,303
Laborers - not mine	707	790
Household	295	261
Others	950	
Total	15,845	19,386

Source: U.S. Census of Population, 1960 and 1970.

The indexes of employment listed above indicate three trends that occurred in the county during the decade. First was the expansion of the university, second was the expansion of retail trade, and the third was the expansion of service industries. Marquette, more than any other county in the Region, reflected the national economic trends. It was during the latter part of this period that the iron mining industry went into a major decline that has lasted up to this past year.

The employment trends that were started in the last half of that decade have continued to the present and now are being reinforced by the renaissance of the iron mining industry.

Table 14

Occupation Groups, Menominee County

	1960	1970
Professional and Technical	757	817
Managers and Proprietors	701	467
Farmer and Farm Laborers	898	603
Clerical and Sales	1,135	1,314
Craftsman	1,104	1,331
Operatives	1,467	1,804
Drivers	357	411
Service	649	998
Laborers	562	513
Household	188	62
Others	177	
Total	7,995	8,320

Source: U.S. Census of Population, 1960 and 1970.

Menominee County's economic history has been more stable than the rest of the Region. This is demonstrated in the statistics by the craftsman, operatives, and laborers. The regional trends on the growth of retail trade and service employment are also substantiated by statistics on clerical and sales and services. Since 1970, the trends demonstrated have continued.

Table 15

Occupation Groups, Schoolcraft County

	1960	1970
Professional and Technical	182	255
Managers and Proprietors	273	300
Farmer and Farm Laborers	112	35
Clerical and Sales	381	382
Craftsman	363	308
Operatives	467	259
Drivers	55	114
Service	300	437
Laborers	256	196
Household	77	33
Others	41	
Total	2,507	2,319

Source: U.S. Census of Population, 1960 and 1970.

For Schoolcraft County the statistics indicate and actual decline. However, the decline is fundamentally in farm and laboring and operative employment. This represents the closing of a number of sawmills during the period. Small increases were registered by most of the other classes. Servic was the only group that showed a major increase. However, since 1970, with some new industry in the county, additional employment has been developed.

Unemployment

For the Region, unemployment rates have been substantially higher than the rest of Michigan. The difference has usually been in excess of two percentage points higher. The table below lists the unemployment characteristics for the Region, its counties, the state, and the nation.

Table 16

Unemployment Rates

County	1960*	1965*	1970*	1976**
Alger	12.9		8.7	13.7
Delta	9.1	7.0	10.2	8.8
Dickinson	8.9	6.5	7.6	7.9
Marquette	7.9	5.2	6.5	7.8
Menominee	6.2	4.9	6.1	6.5
Schoolcraft	16.7		13.8	10.5
Region	8.8	6.2	7.8	8.2
State of Michigan	6.9	3.9	7.0	8.9
United States	5.5	4.5	4.9	

Source: *CUPPAD, Employment and Earnings in Perspective, 1970.
**MESC, Employment and Labor Force Estimates, December, 1976.

The effect for 1976 indicates that the Region was less affected by the most recent recession than was southeastern Michigan. The major factor in the continued unemployment has been the continued expansion in labor force at a rate well in excess of the expansion in employment opportunities. This is especially true of Alger and Schoolcraft Counties. The fluctuation has been basically attributable to three factors. The first is employment in the saw timber and pulp cutting industry. The second factor would be the arrival or departure of a single larger employer. The third would be in government or government induced construction. Menominee County has had a much more stable history due to its better proportion of manufacturing. Delta and Dickinson Counties have had greater fluctuations over the period. For both, manufacturing was very strong at the start of the period but declined drastically during the 1960's, only to regain their strength positions in the mid-1970's. Marquette County's trend reflected the role of the iron mining industry with its decline and renaissance, and the importance of K.I. Sawyer Air Force Base.

The unemployment rates have also demonstrated the self-fulfilling nature of the growth pattern of the Region. The more urbanized counties have had somewhat lower unemployment rates and the less urbanized counties have had higher rates. However, in the decade of the 1960's, much of the unemployment was brought about by the closing of several larger employers, especially in Dickinson County. Since 1970, the national economy has faltered and stumbled. Consequently, the local unemployment rates have reflected the state of the national economy and have not demonstrated what should have been an actual economic revival.

Total Employment

The table below lists the historical trends for each of the counties and the Region.

Table 17

Total Employment and Percentage Increases

County	1960*	1970*	Percent Increase 1960-70	1975**	Percent Increase 1970-1975
Alger	2,381	2,590	+8.8	3,255	+25.7
Delta	9,721	11,279	+16.0	14,375	+27.4
Dickinson	7,215	7,741	+7.2	9,269	+19.7
Marquette	15,035	19,386	+28.9	25,720	+32.7
Menominee	6,905	8,320	+20.5	9,750	+17.2
Schoolcraft	3,212	2,319	0.0	2,775	+19.7
Region	43,569	51,635	+18.5	65,144	+26.2

Source: *U.S. Census of Population, 1960 and 1970.
**MESC, Employment and Labor Force Estimates, December, 1975.

The table reaffirms the fact that the Region was less affected by the 1974-75 recession than was the state. In addition, the Region has been affected by the national trend of rural revival.

Payrolls

In the CUPPAD Region, the payrolls come from a number of sources. The first is from the private sector. The table below lists the number of firms and total private sector payrolls for each county.

Table 18

Business Establishments and Payrolls

	1968		1974	
County	# of Firms	Payrolls*	# of Firms	Payrolls*
Alger	147	8.108	199	9.264
Delta	687	30.752	776	85.042
Dickinson	527	26.332	619	64.620
Marquette	973	63.516	1,135	112,084
Menominee	432	22.628	483	39.819
Schoolcraft	183	6.276	227	11.087

*$'s in millions

Source: County Business Patterns, 1968 and 1974.

It is important to recognize that sizeable growth in the number of firms is highly indicative of an improved retail business climate. Significant increases in payroll totals, however, may indicate either the acquisition of some additional highly paid employment or a sizeable increase of lower paying employment or both. In the period since 1968, the examples of Delta, Dickinson, and Menominee Counties

represent more of the former case than the latter. However, since 1974, the recent experience indicates that lower paying retail employment is rapidly increasing as well. Marquette County has begun that process earlier, although the buying power generated by K.I. Sawyer and Northern Michigan University has contributed greatly to the retail community's strength in the three cities for sometime.

The second payroll source is from the state and local government.

Table 19

State and Local Payrolls

County	1962*	1968*
Alger	1.638	3.094
Delta	5.007	9.217
Dickinson	3.404	7.394
Marquette	11.100	21.562
Menominee	3.192	6.112
Schoolcraft	1.498	3.055
Region	25.840	50.534

*$'s in millions

Source: U.S. Census of Government, 1968.

During the 1960's, much of the employment involved state activities. More recently, the local units have been able to use revenue sharing funds to increase their employment to the new higher necessary levels.

The third source is federal payrolls. The civilian component of the federal payroll is listed below.

Table 20

Federal Civilian Payrolls

County	1962*	1968*	1974**
Alger	.481	.495	.116
Delta	1.397	2.213	1.716
Dickinson	3.071	4.422	5.996
Marquette	3.890	5.661	10.500
Menominee	.594	.693	.340
Schoolcraft	.481	.495	.136

$'s in millions

Source: *CUPPAD, Employment and Earnings in Perspective, 1971.
**County Business Patterns, 1974.

For the Counties of Alger, Delta, Menominee, and Schoolcraft, the shrinkages represent the reductions in a number of federal programs with the increased emphasis on revenue sharing and the consolidation of services in such centers as Marquette. The steady increase in Dickinson County reflects the importance

of the Veteran's Hospital. Marquette County presents a substantially different picture. Due to K.I. Sawyer Air Force Base and to the fact that numerous federal agencies maintain regional offices in the county, the totals are far higher.

The military side of the federal payroll is not significant to most of the counties in the Region. However, due to K.I. Sawyer and its very large manpower component, it is extremely important to the Region as a whole and Marquette County in particular. In 1962, it contributed $16.288 million in military payrolls. By 1968, this figure was $18.342 million. By 1974, the figure for the Region totaled $40.435 million.

Private Sector Development

The development of private enterprise in the Region has revolved around the usual groupings of manufacturing, trade, the transportation of goods, utilities, the provision of services, the construction of homes, and the commercial and industrial industries that shelter the other economic activities. Much of the Region has also been very dependent upon three other industries for most of its history. These are of course, mining, tourism, and forest products. Agriculture had played a major part earlier, however, since World War II it has stabilized to those most productive areas that are still able to generate an acceptable return on investment.

Manufacturing

The largest employment sector remains in manufacturing. The table below lists the employment and payrolls for manufacturing for the individual counties.

Table 21

Manufacturing Employment and Payrolls

County	1968 Employees	1968 Payroll	1974 Employees	1974 Payroll
Alger	719	4.892	506	5.193
Delta	2,311	13.768	3,024	37.330
Dickinson	1,326	7.540	2,093	19.771
Marquette	1,756	8.716	1,330	11.105
Menominee	2,339	11.640	2,708	20.626
Schoolcraft	256	1.648	344	2.914

*$'s in millions

Source: County Business Patterns, 1968 and 1974.

The Counties of Delta, Dickinson and Menominee have tried to maintain a strong manufacturing basis but have seen a number of older firms closed or relocated and a number of firms were established. Other firms produced major expansions. Over the past two years, the manufacturing sector has continued to expand, providing increased numbers of full-time indoor employment. Marquette and Alger Counties have suffered actual declines, although both counties have seen some recent improvements. Schoolcraft County has had some continuous, if modest, growth. The diversifications of economic bases by means of manufacturing development can show continued improvement especially with an improving national economy. However, it must be kept in mind that a sizeable portion of the increases in manufacturing

payrolls demonstrated by the counties is due to inflation. Similar statistics for 1975 and 1976 will show even more dramatic gains but will not demonstrate an improved standard of living for the employees.

Trade

The expansion of trade, both wholesale and retail, improved during the period 1968 to 1974. However, it most assuredly reinforced the growth center pattern of the Region. The smaller communities continued to lose establishments and the urban center communities were the points of survival and new starts. In addition, the penetration of the Region by the various larger franchising firms began and has continued to date. In Alger and Schoolcraft Counties, less activity was recorded than the other counties. The table below describes the trends for the counties.

Table 22

Retail Trade Firms and Payrolls

	1968		1974	
County	# of Firms	Payrolls*	# of Firms	Payrolls*
Alger	67	.884	79	1.395
Delta	279	4.720	259	9.044
Dickinson	188	3.396	197	7.114
Marquette	345	7.912	378	14.554
Menominee	143	1.900	144	6.042
Schoolcraft	77	1.068	89	1.529

*$'s in millions

Source: County Business Patterns, 1968 and 1974.

For Alger and Schoolcraft Counties, most of these retail establishments were located in the downtowns of the urban centers of Munising and Manistique. In Delta County, the decline in the number of firms shown in the 1974 statistic has been reversed, mainly by the development of local revitalization and the arrival of the single-structure shopping mall of which two have been constructed in Escanaba. For Dickinson County, two shopping malls have begun construction and one has been completed since 1974. Menominee County has a similar pattern of growth.

In the cases of Delta, Dickinson, and Menominee Counties, numerous smaller firms have disappeared but have been replaced by the much larger volume distributors. An example would be the penetration of the Region by K-Mart's. For Marquette, the story is different. By feeding on the needs of the mining employees, the Air Force, and the students at Northern Michigan University, Marquette County businesses have flourished. Since 1974, three new shopping centers have been opened with a fourth being constructed. Much of the growth is concentrated adjacent to the City of Marquette.

Wholesale trade has been another matter. In 1968, there were only 264 wholesalers in the six-county Region. By 1974, there were still only 298. Certain products like petroleum products, foods, and feeds are wholesaled in the Region. However, many products are supplied by wholesalers outside the Region.

One aspect of trade that is still poorly defined and enumerated is tourism-related trade. In the Region, it is often extremely seasonable. If it is counted, it is usually counted by its function, be it motel, store, or service. Employment and payroll are even harder to determine since many are family operations. The Michigan Department of Commerce is currently attempting to record these types of statistics but their reliability may not be more useful than as approximations.

Services

Because of the role of tourism to the Region's economy, it is important to review the progress of service firms. The following table summarizes tourism establishments by county.

Table 23

Tourism Establishments

	1968		1974	
County	# Establishments	# Establishments Offering Lodging	# Establishments	# Establishments Offering Lodging
Alger	29	N/A	42	9
Delta	147	15	194	18
Dickinson	120	14	154	12
Marquette	276	24	313	25
Menominee	75	14	91	N/A
Schoolcraft	40	N/A	55	18

Source: County Business Patterns, 1968 and 1974.

Payrolls for service establishments, like retail establishments, may vary widely with the product. Some services, like professional services, have high salaries and in a few cases, such as a hospital, exert a major economic impact on a community.

Mining

Over the past century, the economy of the Region has been dominated by mining and especially iron mining. The iron industry has been sensitive over the century to cycles of boom and bust. Much of the cycle has been related to the same cycles in the national economy but some have revolved around the economics and technology of the industry. With the current international situation and the continued high demand for ore, it now appears that the Region's iron ore producing industry is now in a long-term expansion period.

The iron mining is concentrated in two counties. For Marquette County in 1968, there were 3,500 mining employees. By 1971, it had dropped to 2,800. By 1976, it again increased to over 3,900 and will increase to over 5,000 by 1980. In Dickinson County, the industry is more stable and substantially smaller and has stayed in the range of 350 to 450 employees since 1968. In Schoolcraft County, mining has also been an important industry. In this county, it has consisted of the quarrying of limestone. In 1968, there were 275 employees, by 1971 employment was the same. By 1974, it had dropped slightly to below 250. By 1976, it was over 300.

The 1968 Dickinson County payroll in this industry was $5.404 million. By 1974, it was $7.774 million. The 1968 mining industry payroll in Marquette County was $26,460 million. By 1974, it was $41.378 million. Schoolcraft County had a payroll in 1968 of $1.916 million. By 1974, it was approximately $2.115 million.

Contract Construction

The contract construction industry typically suffers more during recessions, since economic expansion is what produces the need for new structures. Most of the construction conducted in the Region is the production of new housing units. The recession of the past few years arrived at a point when housing construction costs were rapidly accelerating. The result was that on-site construction is still depressed and the lower cost, factory-produced housing has begun to make a major penetration of the regional housing market.

Table 24

Construction Firms and Payrolls

	1968		1974	
County	# Firms	Payroll*	# Firms	Payroll*
Alger	2	"D"	1	"D"
Delta	40	1.392	54	3.641
Dickinson	40	3.888	63	13.275
Marquette	75	2.944	89	8.486
Menominee	31	2.460	34	2.654
Schoolcraft	9	.228	12	.414

"D" - No information available because of disclosure.

*$'s in millions

Source: County Business Patterns, 1968 and 1974.

The table above indicates that for Alger, Menominee, and Schoolcraft Counties, only slight gains have been made. For Delta, Dickinson, and Marquette Counties, there have been major gains but there have also been sizeable increases in the total number of firms. In addition, housing materials and labor costs have shown some of the highest rates of inflation and must be considered.

Financial, Real Estate, and Insurance

This sector of the economy has a significant impact on the Region's economy.

Table 25

Financial Services

	1968		1974	
County	# Firms	Payroll*	# Firms	Payroll*
Alger	10	.168	13	.369
Delta	60	1.668	55	3.046
Dickinson	22	.696	31	N/A
Marquette	87	2.444	91	N/A
Menominee	23	1.372	26	3.286
Schoolcraft	10	.228	12	.450

*$'s in millions

Source: County Business Patterns, 1968 and 1974.

For these services, it must be remembered that the banks will have much larger employee numbers and hence payrolls than the other types of firms. The insurance and real estate agencies may have only one or two agents and an equally small number of clerical employees.

Forestry

Ever since the early seventeenth century, the forests have been vital to the CUPPAD Region. Early, the forests provided the environment for the fur bearing animals of the pre-colonial economy. With the advent of the railroad and steam lakeship, the large scale harvest of the high quality forests began. This process started in the 1860's and was completed by 1910. The areas cut-over were not often properly reforested. The result was the mixed hardwood forest that has maintained the forestry industry for the past 60 years.

The last full survey of the counties of the Region was conducted in 1966. At that time, the total forested acres per county were tabulated as follows:

Table 26

Forest Land - 1966

	Total Land*	Forest Land*	Forest Land as a % of Total Land
State of Michigan	36,492.1	19,373.4	53.1
Central Upper Peninsula	4,430.1	3,923.5	88.6
Alger County	584.3	540.6	92.5
Delta County	755.2	638.3	84.5
Dickinson County	484.5	454.0	93.7
Marquette County	1,178.2	1,108.6	94.1
Menominee County	666.5	527.5	79.9
Schoolcraft County	767.4	654.5	85.3

*Acres in thousands

Source: County and Regional Facts - Region 12

In 1973, the State of Michigan's Department of Natural Resources listed 1,628.645 of the forest acres being in the public domain which was approximately 41.5% of the total forest acreage listed for 1966. In 1976, CUPPAD surveyed the three largest forest land owners; Champion International, Cleveland-Cliffs Iron Company, and Mead Corporation, and received the following county totals.

Alger	177,540 Acres
Delta	66,841 Acres
Dickinson	39,866 Acres
Marquette	209,173 Acres
Menominee	59,653 Acres
Schoolcraft	70,917 Acres
Region	623,990 Acres

Source: CUPPAD Regional Commission

This acreage, plus the state and federal forest, provides the majority of the multiple use forest lands in the Region. There are, in addition, several smaller industrial forest land owners but their total is substantially less than the three larger firms. Some productivity information is available. In 1972, the removal of industrial round wood for each county in the Region was as follows:

Table 27

Industrial Round Wood Removals

County	Total Round Wood Removals 1,000 cu. ft.	Total Saw Timber Production 1,000 bd. ft.	Total Pulpwood Products 100 Standard Cords
Alger	6,165	32,436	314
Delta	7,280	25,054	721
Dickinson	8,020	27,998	779
Marquette	10,372	48,258	744
Menominee	9,539	31,841	736
Schoolcraft	4,334	17,043	411

Source: Primary Forest Products Industry and Timber Use, Michigan, 1972

Since 1972, conditions have fluctuated much as they have in the past 60 years. Labor problems in the various mills have reduced production in some years. However, the opening of the new veneer mill by the Cleveland-Cliffs Iron Company has stimulated production. In the past year, the use of wood as a fuel source, especially for residential heat, has rapidly increased production.

In terms of employment, the industry is slowly developing a higher level of consistent employment with more contractors and truckers on longer term contracts. However, a stong "casual" labor component still exists. For some contractors and a larger number of the cutting crews, the work in inconsistent. It is also not high paying, except for the operators of some of the harvesting equipment. The crews vary in size from three to eight. In recent years, forestry mechanization has rapidly increased productivity which had also reduced this "casual" component. The capitol costs for a contractor have increased considerably and, as a result, a few skilled workers with heavy equipment can today easily out-produce a much larger number of semi-skilled men with chain saws. The flat or gentle slopes of the forested terrain of the Region are also more amenable to the use of this heavy equipment.

Agriculture

The last thirty years have seen agriculture reaching stability in the Central Region. In the early 1900's, the Central Upper Peninsula was the scene of indiscriminate land use practices. After the timber was cut from the land, immigrants bought the land and attempted to farm it. Since the 1930's, natural factors, such as poor soil and severe winters, combined with economics, have "weeded out" small underproductive farms. The existing trend is one of elimination of marginal farms and expansion of productive farms at a rate governed more by economic demands and not so much by natural limitations. By 1976, however, the weeding process is nearly complete, but taxation structures are now producing financial problems for what should be economically viable units.

Table 28

Farms and Farm Acreage 1964, 1969 and 1974

County	Number of Farms			Acres of Land in Farms		
	1974	1969	1964	1974	1969	1964
Alger	95	104	148	20,674	25,146	32,263
Delta	331	373	526	95,361	101,542	117,155
Dickinson	157	162	197	38,760	39,749	43,763
Marquette	N/A	97	139	N/A	27,393	41,943
Menominee	515	594	923	146,753	162,239	208,215
Schoolcraft	49	54	97	15,556	14,835	18,083
Region	N/A	1,384	2,030	N/A	370,904	461,422
Upper Peninsula	N/A	2,700	4,153	N/A	667,247	866,904
State	N/A	77,946	93,504	N/A	11,900,689	13,598,500

Source: U.S. Census of Agriculture, 1964, 1969 and 1974.

The decline of agricultural employment has been a national phenomenon for a number of decades. From 1930 to 1969, the United States' agricultural employment declined from over twelve million jobs to four million and from 22 percent of all employment to four percent of all employment. The Region has followed a similar pattern. Agricultural jobs dropped from 8,465 in 1930 to 2,110 in 1970, and the proportion of total Region employment in agriculture declined from 16 percent to 4.2 percent. More than half of the agricultural jobs (1,100) are in Menominee County where farm jobs account for 13 percent of the total employment. Farming is also important in Delta and Dickinson Counties although at a lesser level. For Marquette, Alger, and Schoolcraft Counties, agriculture is only on the best areas where good management has been successful. Part-time employment in agriculture has also decreased.

The figures on employment represent only part of the picture for the Region. Productive farms are expanding while the marginal operations are being eliminated. This is shown by the decrease in total farm acreage and the increase in both average farm size (up 27% from 1959 to 1969 in the Central Region) and farm product sales. The percentage of farms with sales under $2,500 has decreased, while those with sales over $10,000 have increased. Average product sales per farm in the Region increased 56 percent, from $6,064 in 1964 to $9,466 in 1969 and 14,315 in 1974. Agriculture in the Central Region is, thus, catching up with the national average product sales.

Table 29

Farm Size and Sales

County	Average Size of Farm in Acres			Percent of all Farms Having Sales under $2,500			Percent of all Farms Having Sales $10,000 and Over		
	1974	1969	1964	1974	1969	1970	1974	1969	1964
Alger	218	242	218	47.3	39.4	41.2	28.4	35.5	12.8
Delta	288	272	223	38.3	32.9	44.3	33.5	24.3	15.6
Dickinson	247	245	222	47.1	44.4	36.0	32.5	33.9	26.4

Table 29 (Continued)

Farm Size and Sales

County	Average Size of Farm in Acres			Sales under $2,500		Percent of all Farms Having Sales $10,000 and Over			
	1974	1969	1964	1974	1969	1970	1974	1969	1964
Marquette	N/A	282	302	N/A	52.5	60.4	N/A	18.5	15.1
Menominee	285	276	226	28.5	32.8	40.5	44.3	34.0	16.5
Schoolcraft	317	275	186	42.9	51.8	72.2	24.5	12.9	4.1
Region	N/A	269	227	N/A	34.8	44.0	N/A	29.6	16.3
Upper Peninsula	N/A	247	208	N/A	42.4	51.1	N/A	23.1	11.7
State	N/A	152	145	N/A	43.3	10.4	N/A	26.5	37.9

Source: U.S. Census of Agriculture, 1964, 1969, and 1974.

At the present time, approximately eight percent of the land in the Region is used for farming activities which include stock raising, crop cultivation, and managed woodlots. The Region's main crops are oats, hay, corn for silage, and potatoes. Cultivation of these crops and stock raising is concentrated in the southern portion of the Central Upper Peninsula. In 1969, Menominee County had about 43 percent of the Region's farm units and farm acreage. Delta had 27 percent of each, Dickinson about 12 percent, Alger and Marquette each had 7 percent, and Schoolcraft had 4 percent.

Regional breakout of primary crops by order of importance, by county other than hay:

Alger	Oats
Delta	Oats, corn, potatoes, and dry beans
Dickinson	Corn and potatoes
Marquette	Oats and potatoes
Menominee	Corn, oats, and barley
Schoolcraft	Oats, corn, and potatoes

In the past five years, two shifts in agriculture have taken place. The first has been a minor switch from dairy production to beef production in the Counties of Delta, Dickinson, Menominee, and Schoolcraft. This reflects the nation's higher beef prices and the substantially higher milk production costs. The second change has been in corn production. In the five years between 1969 and 1974, corn production for grain has increased dramatically to become a major production crop as seen in the following table.

Table 30

County	Corn Production for Grain Production		% Change
	1974	1969	
Delta	59,941	12,082	493
Dickinson	29,945	11,573	258
Menominee	234,404	13,280	1764
Schoolcraft	1,800	800	225

Source: Census of Agriculture Preliminary Data, 1974 Census.

Financial Resources

The Region presently has 22 banks with one new bank to be built. There is only one savings and loan firm in the Region. Alger County has two banks, a branch of a regional savings and loan firm, and a credit union. Delta County has four banks, a branch of the savings and loan firm, and 11 credit unions. There are three banks, a branch of the savings and loan, and three credit unions in Dickinson County. Marquette County, with its larger population and three cities, has five banks, five credit unions, and the savings and loan firm. Menominee has five banks and two credit unions. It must be recognized that some of the populace of Marinette and Menominee maintain accounts in the opposite communities or both, depending on residence and employment. The separation of the banking patterns would be difficult to estimate. In Schoolcraft County, there are three banks, two credit unions, and a branch of the Region-wide savings and loan firm.

The distribution of these financial institutions is quite uniform. Many of the banks have two or more branches, although the branches often serve the same community as the main office. With only one savings and loan firm in the Region, it may be that market penetration by another firm might be possible. However, the sizeable number of banks and credit unions especially appears to hold much of the home loan business.

Energy

The future economic progress of the Region will be very closely tied to energy. The direct costs of coal, oils, gasoline, and natural gas are certain to increase. In addition, the costs of transporting these energy sources into the Region will also increase. The climate of the Region will continue to result in a higher level of consumption than the national average. These problems are likely to hinder industrial expansion, slow tourism activities, and cause some local hardships especially regarding gasoline and heating fuels. The forest industry may provide some help with the problem either through wood based synthetic fuels or by wood-fired electrical generation.

THE NATURAL ENVIRONMENT

What constraints and opportunities for development are posed by the natural features of the Region? What are these features? In what way is the Region unique? The preceding discussion was concerned with the human and economic qualities of the Region. This discussion will identify natural features, such as geology, topography, vegetation, water, etc., and will focus on those characteristics which offer themselves as determinants for development. These factors coupled with the man-made features provide a framework within which public policies can be formulated to produce a better environment.

Natural Features and Resources

Unlike most areas in the United States, the Central Upper Peninsula reveals all of its geologic history providing a diversity of land features seldom seen in the Midwest. The oldest of precambrian rocks were formed by volcanic action. These rocks were uplifted to create the Marquette and Menominee Iron Ranges, which together form the western boundary of the Central Upper Peninsula.

The rest of the Central Upper Peninsula is composed of different sedimentary rocks formed in the ancient basins of Lake Superior, Lake Michigan, or the unification of these two basins. The oldest of these formations is red and brown colored sandstone known as the Jacobsville Formation which shows itself

in only certain bluffs on the Lake Superior shoreline. Above this lies the clean sandstone formation that thrilled explorers years ago when they first saw the now famed Pictured Rocks. These are the outcroppings of the Munising Formation. The layers of dolomite and shale immediately above it make it the purest aquifer of all layers of rock. When these sedimentary formations were deposited, they, like a layer of cake, were horizontal. With the changing pressure within and upon the earth, these horizontal layers were uplifted in the north and depressed in the south. Surface erosion then created the flat plain of the Central Upper Peninsula. The combined effect of the tilting and erosion was that from north to south, different types of sedimentary rocks appeared as bedrock. These consist of sandstone, limestone, or shale, depending on the type of sediment from which it was formed. The only locations where these rocks outcrop are the peninsulas of Lake Michigan. Here the limestones form cliffs above the water, and on the Garden Peninsula they harbor the beautiful Fayette State Park.

Covering the great majority of the Central Upper Peninsula are deposits of loose soils left by the period of glaciation. The glaciers deposited two types of soils--tills and outwash. Tills were deposited by the glacier as it moved. For this reason, these deposits are totally unsorted in mounds (drumlins) such as those scattered throughout Menominee County; along the side of the glacier (moraines) as seen in the forms of hills around the City of Munising; or under the glacier as it moved (basel till). Glacial outwash soils were formed by deposits from lakes and rivers formed by melting ice. This water sorted the clays, silts, sands, and gravels, and gently deposited them in different locations. It was in this way that the sand base Kingston Plains of Alger and Schoolcraft Counties were formed.

It was on these bases that the organic soil-making processes began their long uphill battle toward fertility. These organic processes, working with the physical processes of water, have produced a beautiful country of many lakes, streams, and small waterways; lush northern hardwood-conifer forests; and some boreal forests which are common farther north in Canada. These forests show the subtle distinctions of the soils bases. Beech, birch, maple, elm, and the hardwoods are found in the well-drained loam developed from the basel tills and morainal hills. They give way to swamp conifers, pine, and hemlock, on the well-drained, yet fertile, outwash soils; they also give way to the swamp conifers if the soils are not drained. The boreal forests of spruce, fir, birch, and aspen are found in the unfertile outwash soils, giving way to the stands of aspen or lush willow in poorly-drained areas.

This variety of forest types gives rise to a variety of wildlife also. Pine martin, fisher, otter, beaver, mink, muskrat, and black bear were all sought by the fur trader. Their homes were then destroyed as the loggers harvested the timber. The mink, muskrat, and black bear survived by virtue of their adaptability. The others survived only in small populations (with the exception of the extirpated martin and fisher populations) and are now slowly reviving under protective legislation. As the forests were logged, the populations of wolves (and the coyotes which replaced them) and bobcats increased, keeping the increasing populations of snowshoe rabbits, deer, and game birds nimble. This trend is slowly reversing itself as new forests are replacing the logged-over lands. In the wetlands and along shorelines of lakes, waterfowl proliferate and, with effective management, provide the hunter with an ideal situation. Similarly, although not as successfully, upland game birds such as sharptail grouse inhabit the grasslands are the first successional stage in preparing the burned-over outwash soils for the pine.

These features provide us with some natural determinants which when coupled with man-made features begin to suggest a development pattern for the Region. The balance of this discussion will concern itself with geology, soils, water, and other characteristics which must be considered.

Bedrock Geology

Bedrock is the solid rock at or near the earth's surface. It is generally concealed by an unattached layer of loose fragmented rock. This mantle may have formed in place by decomposition of the underlying parent bedrock, or it may be an accumulation of foreign rock fragments transported and deposited by wind, water, or ice.

Most of the Central Upper Peninsula is part of the Michigan Basin complex. Over the millions of years of bedrock formation, the basin settled or depressed in the center. Because of this settling and a long period of erosion, a certain bedrock will appear at the surface in only a specific belt or band. The oldest bedrock, which appears at the surface on the outer edge of the Michigan Basin, is under 15 layers of younger bedrock in the middle of the Basin.

The oldest geological formation found in the Region is the complex precambrian system of highly folded and faulted igneous and metamorphic rocks. Precambrian rocks, which are over one billion years old, breech the surface in much of Marquette and Dickinson Counties. The sedimentary bedrocks which overlay much of the precambrian were deposited in ancient seas which at one time or another covered a large part of the earth's surface. These sediments, consisting mainly of sand and marine organisms, were compressed to form various snadstones and limestones. The youngest bedrock found in the Region is the Engadine Dolomite. This bedrock is about 350 million years old.

Surface Geology

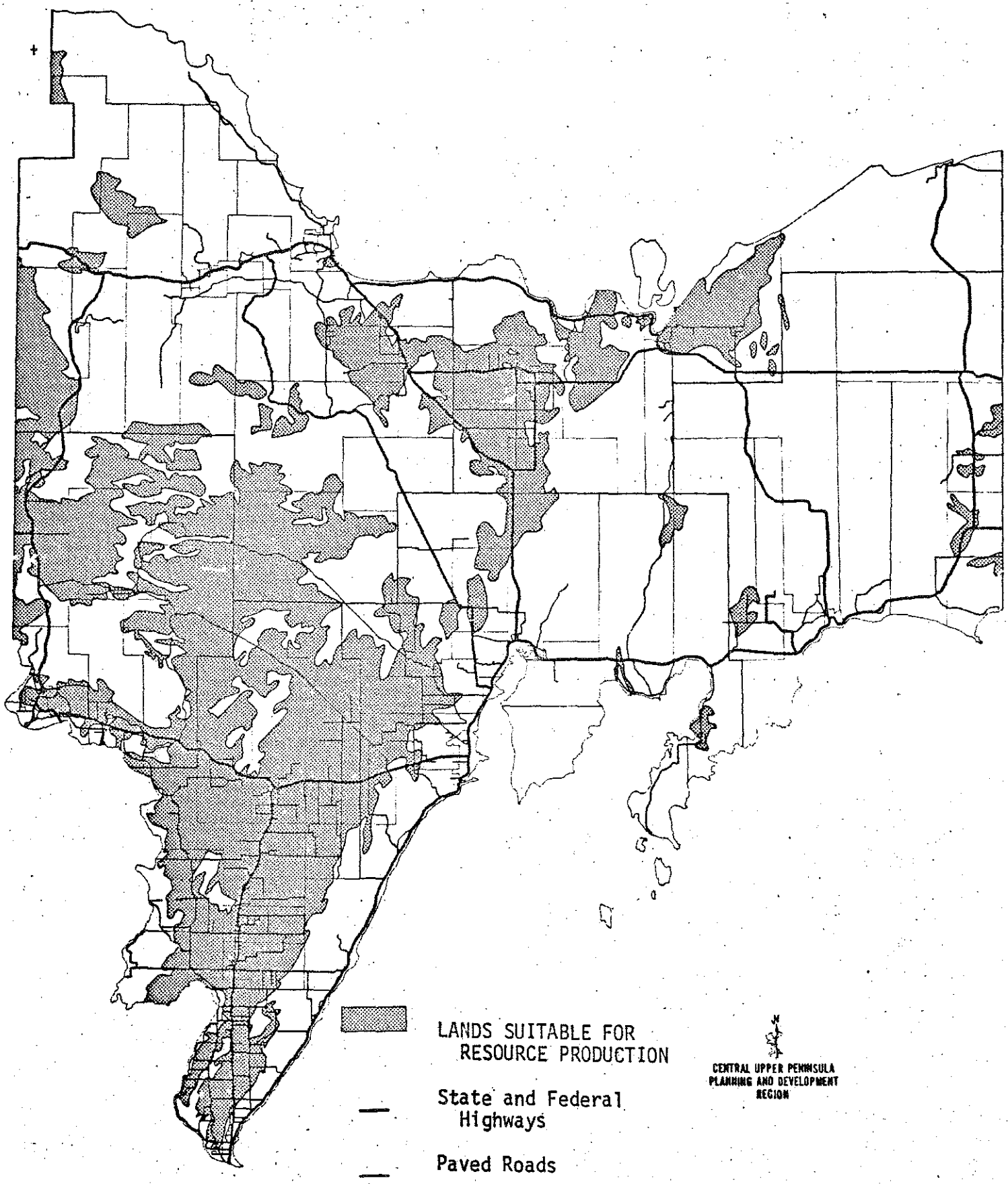
Before the glaciers inundated the area, a long erosional period occurred in which some Paleozic formations were worn down and washed or blown away. As a result of these erosional processes, the relatively flat bedrock was cut and gouged to form ridges and depressions in local areas.

Most recent in geological history were the glaciers. As the rivers of ice moved from the north, they carried along pieces of sandstone from the bottom of ancient Lake Superior. Limestone and dolomite formations were also broken up and carried along. Glacial deposition occurred in three main ways: materials deposited directly from the ice with little or no transportation by moving water are called tills; materials deposited in and by moving streams of water are called outwash; and those deposited in glacial lakes are called lake deposits. Glacial drift consists of unconsolidated deposits of poorly sorted clayey, silty, and sandy lake deposits and windblown dune sands. Glacial drift ranges in thickness up to 300 feet and varies greatly in permeability throughout the Region.

There are at least ten distinct types of surficial deposits in the Region. Some of these have characteristics which preclude intensive development without extensive site preparation. Other areas might easily be developed but may result in increased public costs in providing services.

Figure 5

Land Suitable for Resource Production



The areas which pose the most severe limitations are areas in which surficial deposits are thin or nonexistent making installation of underground utilities or septic tanks impractical. Swamp deposits with poor drainage and a high water table also pose problems. Development in these areas may also result in pollution of ground water. These two types of areas occur with some frequency in the Region.

Mineral Resources

Mineral resources in the Region include iron ore, sand and gravel, limestones, feldspar, amphibolite, and dolomite. All of these are mined commercially. Iron ore is the most important mineral resource. In 1969, more than 28,286 long tons of crude ore were produced in the Region. Iron mining occurs in both the Menominee and Marquette Iron Ranges.

During the past year significant gains have occurred in the iron mining industry in the Region. The Empire Mine underwent an expansion and a new mine, the Tilden, was constructed. The Cleveland-Cliffs Iron Mining Company has indicated that still another mining operation may be in the offing. The expansion of mining has necessitated other expansions. Modern mining operations are energy intensive. Consequently, expanded power production at the Presque Isle Plant in Marquette has been proposed. The construction of a new coal unloading facility at Presque Isle has been proposed by the Lake Superior and Ishpeming Railroad. The City of Marquette will benefit from this construction, as the current coal dock is located in downtown Marquette and constitutes a major obstacle to redevelopment of the downtown waterfront.

Soils

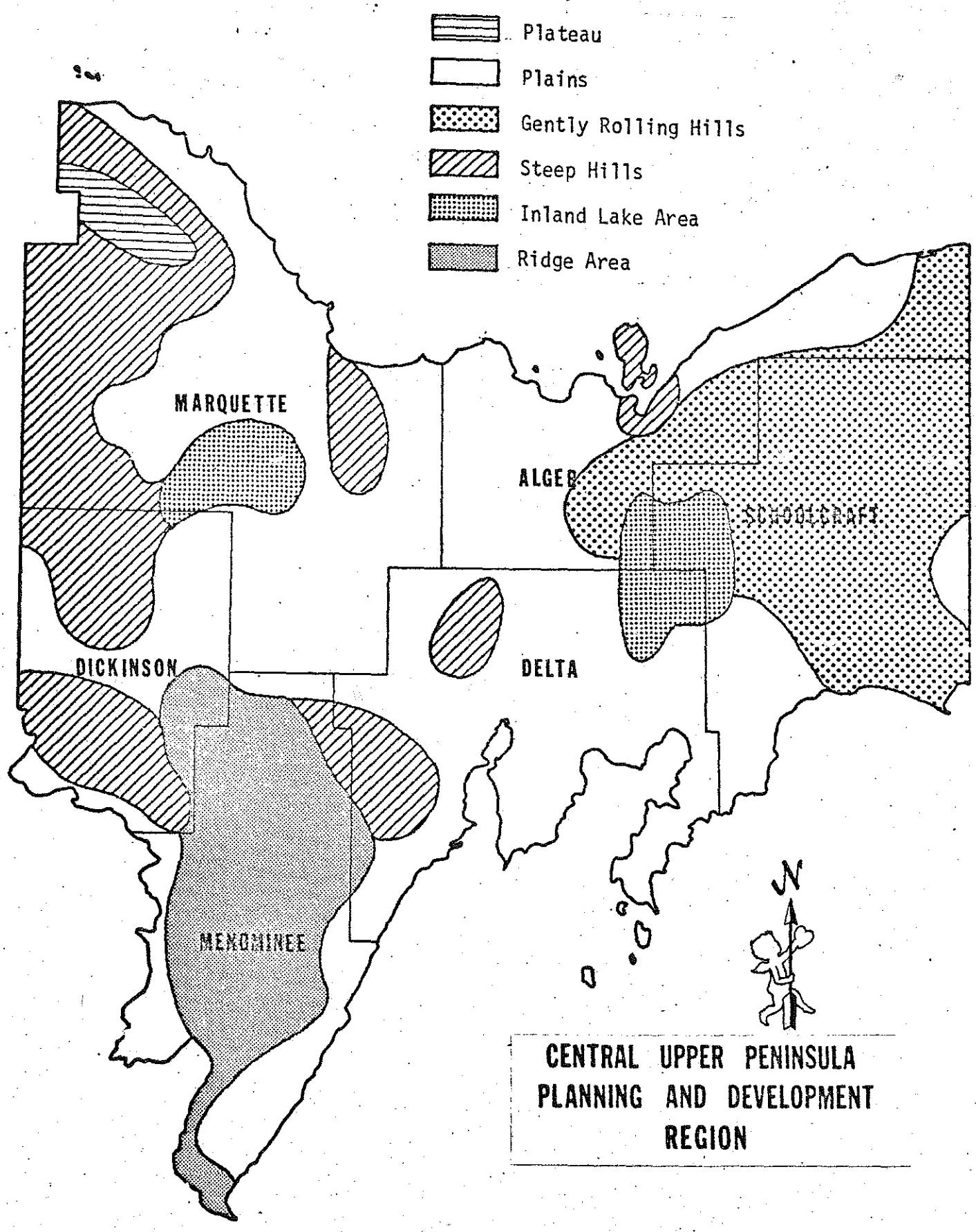
The glacial period was also the time of soil formation. The tremendous grinding of glacial ice formed sand, silt, and clay from the underlying bedrock. Later, organic matter enriched the existing soil. A myriad of different soil types has evolved from the heterogenous glacial parent material, and their occurrence is so scrambled that only a gross pattern is apparent on a soils map. Individual soils are classified on the basis of the parent mineral material, texture, and the soil profile development.

Soil characteristics should be a major factor in determining land use. From a regional perspective, and within the context of the Short Range Plan, a broad categorization of soil characteristics suffices. Similarly, soil suitability need only be rated in terms of its appropriateness for intensive uses or resource production. This does not imply that more specific analyses utilizing detailed soils information are not necessary, for example, when preparing a functional plan or locating some specific facilities.

Areas which are unsuitable for intensive uses occupy large areas. As was the case with certain geologic formations, intensive development should not occur in these areas. This is not to say that utilization of these areas is not possible since in many cases, certain areas can and have been developed successfully. The costs of making these areas suitable from both a public and a private viewpoint, however, suggests that alternatives ought to be examined. Similarly, effort should be made to preserve for agricultural or forestry those areas which are the most productive. These areas are depicted on maps later in this part of the Plan.

Figure 6

Land Forms



Floodplains and Wetlands

Areas which are subject to periodic inundation from floodwaters, are being identified in conjunction with the National Flood Insurance program. Flood prone areas have been identified in Munising, Gladstone, Escanaba, various parts of Delta and Menominee Counties, in the City of Menominee, in Iron Mountain and Kingsford, Stephenson, and in Chocolay Township. After detailed studies of these areas, future development in these areas will be limited to those uses and structures which will not be damaged by flooding. Wetlands adjacent to the Great Lakes are being identified as part of the shorelands planning effort. Wetlands are commonly ideal wildlife habitats. When this is the case, development should be regulated to ensure preservation of these areas.

Areas which are subject to periodic inundation should be identified for the purpose of preventing development in these areas. The flood problem in the Region is generally not serious; however, as development continues, problems may occur. Since floodplain data is generally not available, the general soils map can be used as an interim guide to assure that future development does not pose problems.

Topography - Land Forms

The Region's terrain can be classified in six general categories based on the general gradient, the amount of vertical relief, and other factors.

Land Form	Characteristics
Plateau	Elevation is generally greater than 1,000 feet above sea level. Gradient is less than five percent. Hills are rarely more than 50 feet high.
Plains	Elevation ranges from 600 to 1,200 feet above sea level. Gradient is generally less than ten percent. Hills are rarely more than 50 feet high.
Gently Rolling Hills	Gradient is generally greater than ten percent. Hills are generally less than 150 feet high.
Steep Hills	Gradient is generally greater than ten percent with hills exceeding 150 feet.
Inland Lake Area	Steep hills interlaced with many small lakes.
Ridge Area	Frequent small glacial hills oriented in one direction. Vertical change rarely exceeds 200 feet.

These differing areas provide the Region with a great variety of natural form and some further growth determinants. The steep hills so prevalent in the western part of the Region for example, pose development constraints which should be acknowledged by public policies.

Special Environments

The Region is blessed with an abundance of scenic and/or historic sites. These represent a valuable asset worthy of preservation. While many of these have been identified from time to time and many are being preserved, there remains a need to identify, in a comprehensive way, these areas and determine the need for acquisition or other means of preservation. Following is a partial list of important scenic, historic, and recreation sites in the Central Upper Peninsula.

Table 31

Significant Scenic, Historic and Recreation Areas

Alger County
Bay Furnace Park, AuTrain Township
Forest Highway 13
Grand Marais Area
Hiawatha National Forest
Kingston Plains Area
Laughing Whitefish Falls
Lake Superior Shoreline
Lobb/Madigan House, Munising
Munising Falls
Munising Harbor
Onota Ovens
Paulson House, Au Train
Pictured Rocks National Lakeshore
Wagner Falls

Marquette County
Al Quall Recreation Area, Ishpeming
Baraga House, Marquette
Call House, Marquette
Carp River Forge, Marquette
Cliffs Shaft Mine, Ishpeming
Cliffs Ridge Ski Resort, Marquette
Iron Mountain Railway, Marquette
Iron Ore Discovery Monument, Negaunee
Iron Ore Loading Docks, Marquette
Jackson Mine and Forge, Negaunee
John Burt House, Marquette
Julian Mason Home, Marquette
Lake Superior Shoreline
Marquette City Hall
Marquette County Historical Museum
Marquette State Prison
McCormick Tract, U.S. Forest Service
Northern Michigan University
Open Pit Iron Mines
Presque Isle Park, Marquette
Republic Open Pit Iron Mine, Republic
Shiras Park, Marquette
Stannard Rock Lighthouse, Lake Superior
State Fish Hatchery, Marquette
Sugar Loaf Mountain
Suicide Hill Ski Area
U.S. SKi Association Hall of Fame, Ishpeming
Van Riper State Park

Delta County
Big and Little Bays de Noc
Delta County Historical Museum, Escanaba
Escanaba Paper Mill
Fayette State Park
Forest Highway 13
Garden Peninsula
Green Bay Islands
Hiawatha National Forest
Little Bay de Noc - Grand Island Indian Trail
Ludington Park, Escanaba
Iron Ore Loading Dock, Escanaba
St. Lawrence Point, Indian Point
Samuel Elliot Farm, Fayette
Stonington Peninsula
Van Cleve Park, Gladstone

Dickinson County
Ardis Furnace (1908), Iron Mountain
Buffalo Farm, Randville
Chapin Pit, Iron Mountain
Cornish Pump, Iron Mountain
Hanna-Groveland Mine, Randville
Hydraulic Falls Dam
Iron Mountain Recreation Area
Menominee Iron Range
Norway Spring
Piers Gorge, Norway
Pine Mountain Ski Area, Iron Mountain
Rock Dam and Rapids
Sturgeon River Small Watershed
Vulcan USA, Ski Area

Menominee County
Alvin Clark (Mystery Ship), Menominee
Chappe Rapids
First Street Historic District, Menominee
Forty-Fifth Latitude Marker, Menominee
Indian Spirit Stone, Menominee
Johnson Sawmill
J. W. Wells State Park
Lake Michigan Shoreline
Menominee Municipal Marina
Pemence Falls
Religious Shrine, Stephenson
Riverside Cemetery Site
Shakey Lakes Recreation Area
Stephenson Charcoal Kilns
Wisconsin Land and Lumber Company town, Hermansville

Schoolcraft County
Baraga's First Mission Church
Big Spring Kitch-iti-ki-pi State Park
Blaney Park
Ekdahl - Goudreau Archeological Site
Hiawatha National Forest
Historic Post House, Manistique
Indian Lakes State Park
Lake Michigan Shoreline
Palms Book State Park
Seney National Wildlife Refuge
Seul Choix Point Lighthouse
Siphon Bridge, Manistique
Thompson Fish Hatchery, Thompson
White Marble Company Limestone Kiln

Water Features

Water is plentiful in the Region. The more than 2,500 miles of streams, 1,500 lakes larger than five acres, and adjacent Great Lakes provide a great quantity of clean, fresh water. The inland lakes are, for the most part, small. (More than one-third of all inland lakes are between five and nine acres in size.) There are only 17 lakes larger than 600 acres in the Region. The Region's 486 miles of Great Lakes shoreline provide a valuable scenic recreational resource; however, less than 100 miles are in public ownership.

The increased demand for lakefront development may lead to substantial water quality problems in the future. The inland lakes in the Region vary substantially in their ability to support development. For this reason, the CUPPAD Regional Commission has previously sought funds to carry out comprehensive studies of inland lake environments. The studies result in management recommendations which offer a measure of protection against further decline in water quality, caused by development along shorelines. The Great Lakes shorelines are also experiencing increased development pressures. The Commission in conjunction with the Michigan DNR is preparing a plan for the use and development of the shorelands.

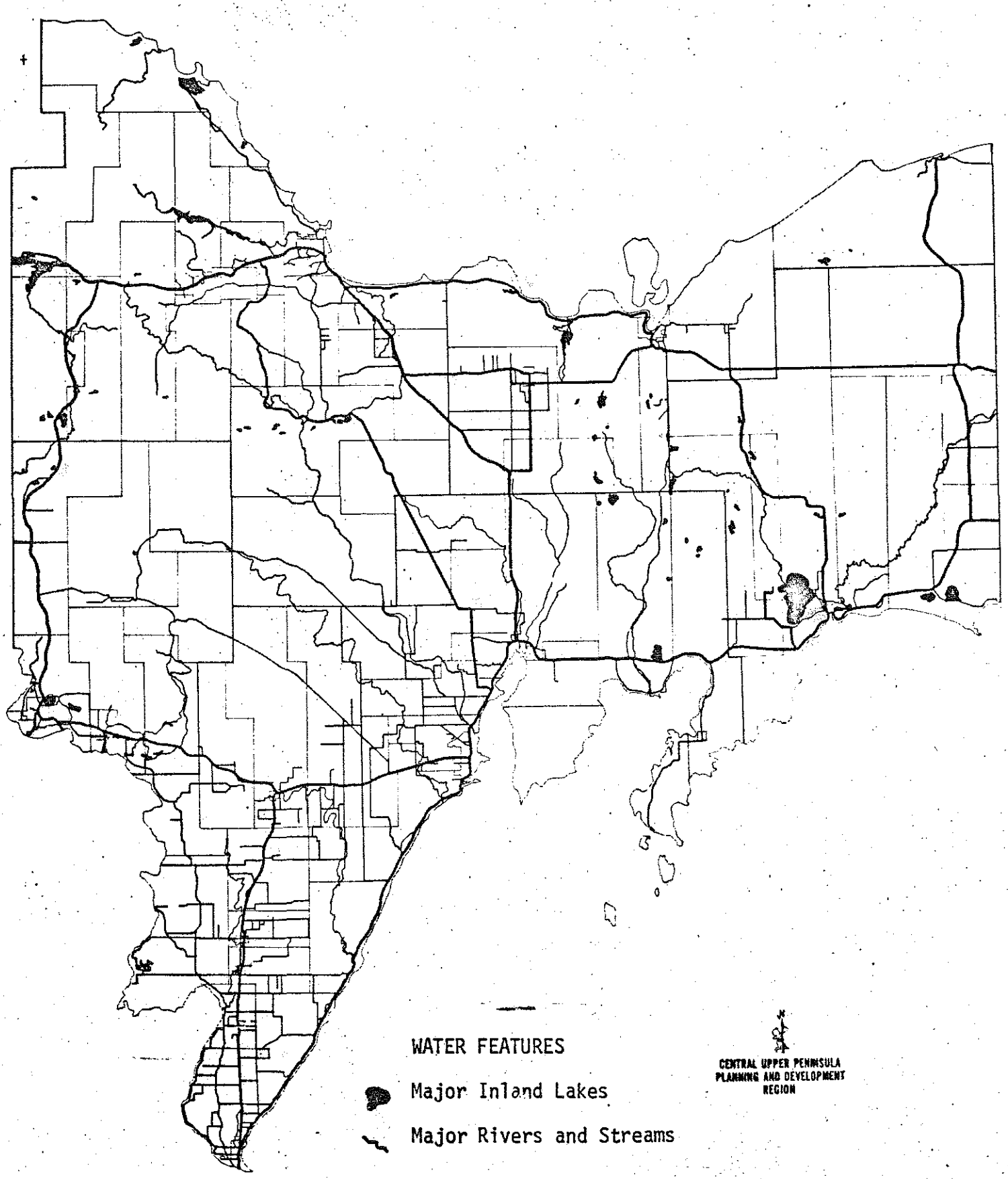
Fish and Wildlife

The Region's variety of forests, fields, and waters provide a northwoods habitat, which presently supports 47 species of mammals and over 200 species of birds, ranging from the pigmy shrew to the large black bear. This represents fewer species than were originally supported due to the history of man's actions, either in destruction of habitat (i.e., logged-over land) or through direct predation (i.e., bounties on timber wolf). Reintroduction of some of the expatriated populations has, in some cases, been carried out successfully and is now being considered in others.

Careful management of all resources is necessary to maintain a balanced population of wildlife. This involves such forms as maintaining forests in various stages of growth. Extensive cooperation is necessary between managers dealing with the interactions of natural resources and people to provide the best habitat for all.

Figure 7

Water Features



The general abundance of good quality water has led to a good quality fishery. The native Brook Trout, the introduced Rainbow and Brown Trout inhabit the top quality cold, clear, shaded streams and spring-fed lakes of the Region. Warmer waters contain many Bass, Pike, and Perch. The Great Lakes, too, contribute Steelhead and Lake Trout in addition to the warm water fish. Coho and Chinook Salmon have recently been introduced to add variety and new challenges for the angler.

Climate

The climate of the Central Upper Peninsula is greatly influenced by the tempering effects of Lakes Superior and Michigan. Damage from windstorms, lightning, and floods is infrequent. The annual mean temperature for the Region is about 42°F. Precipitation averages about 31 inches with most rain falling in June and September; February is usually the driest month. Annual snowfall ranges from in excess of 200 inches near Lake Superior to less than 50 inches in the south near Menominee. The effect of Lake Superior on snowfall is significant. "Lake snow squalls" frequently supplement the normally expected accumulations. The squalls develop most often during the fall and early winter months when westerly winds bring very cold Arctic air over the warmer lake water surface. The entire Region is covered by at least one inch of snow more than 110 days every year. Along Lake Superior, there is an average of twenty days per year with snow depth of 26 inches or more.

Because of the Region's northerly location, the agricultural growing season is somewhat limited, and few crops can be grown. The average growing season in the Region is about 100 days, compared to 160 days in areas of the Lower Peninsula. Crop production for the most part is limited to grains, feed hay, potatoes, and some fruit crops.

REGIONAL DEVELOPMENT PATTERN

The regional development pattern has been greatly influenced by natural features, the location of exploitable resources, and the land ownership patterns. Figure 8 shows the general land use pattern in the Region.

The most significant natural feature influencing development has been the presence of water. Historically, the Great Lakes have been a major factor in the location of development. In the nineteenth century, the fish, furs, and rich timber resources attracted settlers who built towns along the shore and used the Great Lakes to transport their products. Development along the shore has continued. Currently, five of the six major urban areas in the Region are located along one of the Great Lakes shorelines. The only exception is the Iron Mountain-Kingsford-Norway urban center. Another water feature which has influenced the loation of future seasonal and permanent residential development, is the Region's abundant inland lakes.

The pattern of land use by county is evident by the percentages shown in Table 34. Clearly, the most dominant feature of the land use pattern in all of the counties is the large portion of other open lands. This category includes forest lands, water surface, wetlands, etc. Overall, about 93 percent of the Region is in this category. Agriculture represents the second largest land use in the Region, however, it is a distant second, accounting for only 5.5 percent of the regional total. Seventy percent of the Region's agricultural lands are located in Delta and Menominee Counties where agricultural use accounts for 10 percent or more of the total acreage.

Combined, the three categories of 1) residential, commercial and institutional; 2) industrial, and 3) other urban account for about 1.5 percent of the Region's total land area. About 70 percent of the total industrial acreage is found in Delta and Marquette Counties. Dickinson and Marquette Counties are the leaders in terms of extractive area. Both counties have open pit iron mines. Extractive uses in the other four counties are chiefly sand and dravel and limited quarrying operations.

Table 32

Land Use
(Figures are in percentage of total land)

	Central U.P.	Alger	Delta	Dickinson	Marquette	Menominee	Schoolcraf
Residential, Commercial, & Institutional	0.8	0.4	1.0	1.3	1.1	0.7	0.3
Industrial	0.08	0.03	0.1	0.05	0.14	0.07	0.01
Extractive	0.3	0.04	0.09	0.4	0.7	0.17	0.15
Other Urban	0.35	0.07	0.5	0.4	0.4	0.5	0.18
Agriculture	5.5	3.0	10.4	4.9	1.3	14.4	1.7
Other Open Lands	92.9	96.45	87.9	93.0	96.4	84.1	97.6

Source: CUPPAD Regional Commission

Another major influence on the development pattern of the Central Upper Peninsula is land ownership. A significant portion of the Region is either in public or corporate ownership. Major blocks of public ownership are the Hiawatha National Forest, Seney Naional Wildlife Refuge, Pictured Rocks National Lakeshore, and a number of state parks and state forests.

The following table shows the amount of state and federal ownership by county.

Table 33

State and Federal Land Ownership in Acres
June 30, 1971

	State		Federal	
County	Acres	% of Total Land	Acres	% of Total Land
Alger	102,844	17.2	116,338	19.5
Delta	60,486	7.9	245,806	32.0
Dickinson	219,533	45.0	---	0
Marquette	264,784	22.9	18,051	1.6
Menominee	91,811	13.3	---	0
Schoolcraft	288,554	36.2	125,340	15.9
Central Upper Peninsula	1,024,012	22.9	505,535	11.3

Figure 8

Generalized Land Use

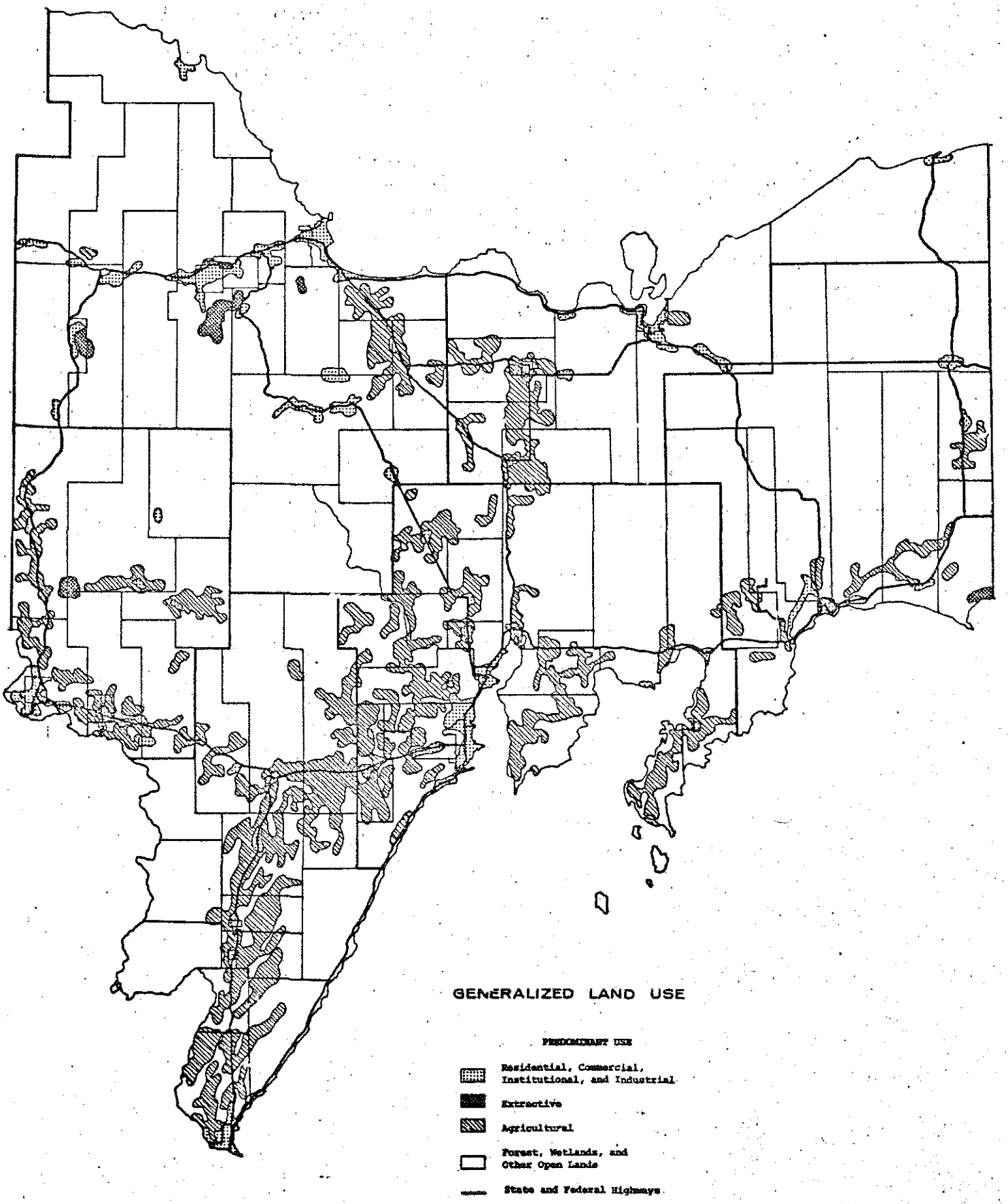
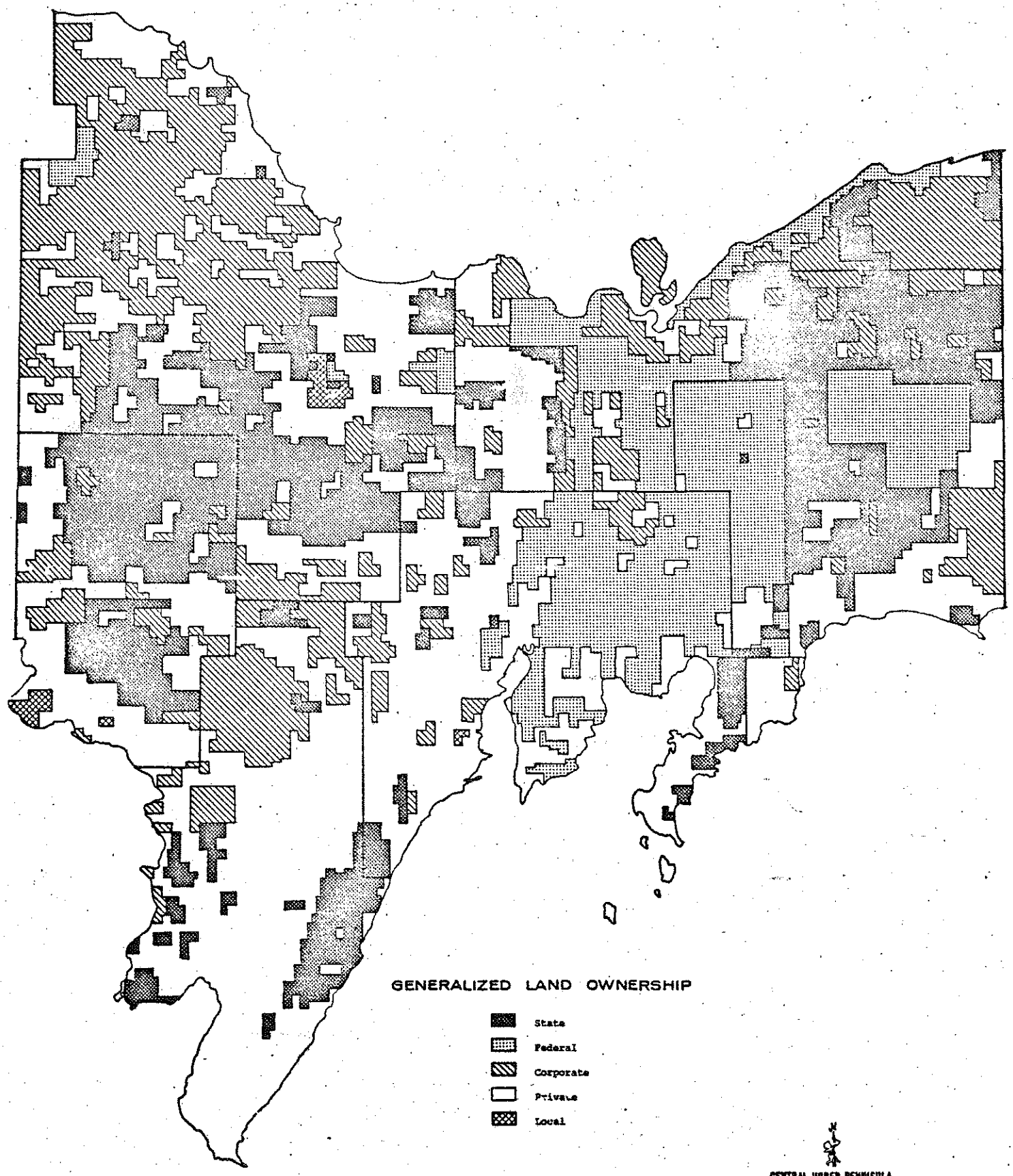


Figure 9

Generalized Land Ownership



Additional acreage has been purchased since June 30, 1971.

Source: CUPPAD Regional Commission

Major mining and wood products corporations also own substantial acreage in the Region. In 1976, CUPPAD surveyed the three largest forest land owners---Champion International, Cleveland Cliffs Iron Company, and Mead Corporation. These firms own 623,000 acres or 14 percent of the total Region. The combined ownership of these three firms and state and federal agencies represents 48 percent of the Region's total land acres and accounts for over 60 percent of the land in Alger and Schoolcraft Counties, over 50 percent in Dickinson County, and over 40 percent in Delta and Marquette Counties. The inclusion of acreage owned by other corporations would substantially augment these figures.

THE GOVERNMENTAL STRUCTURE

The Region is governed by a total of 92 general purpose local governments. There are 6 counties, 12 cities, 70 townships, and 4 villages. Both the counties and townships in the Region cover large geographic areas relative to the balance of the state.

Counties are governed by Boards of Commissioners who are elected from districts of equal population size; Delta County with five Commissioners has the smallest board while Marquette with 12 has the largest board. There are no counties within the Region which have instituted the office of County Executive on either an elective or appointive basis.

Cities, for the most part, have city manager forms of government. Exceptions are Menominee, Iron Mountain, and Stephenson. Townships are all organized in the same manner, according to state law with the exception of Chocolay Township which is organized as a Charter Township. The Region's four villages, Chatham, Daggett, Garden, and Powers, all have relatively small populations and generally provide few services. Public sewers, however, are provided in Chatham and Powers.

Local governments are largely dependent on property taxes for operating revenue. The extensive amount of land in public ownership causes problems in the form of tight budgets and a reluctance on the part of the population to increase taxes or to use bonding.

CHAPTER III

HIGHWAY TRANSPORTATION

The economy of the Region is very much dependent upon the growth of industry, forest products, agriculture, and facilities for tourism. Such growth is dependent upon a safe, convenient, and economical transportation system to facilitate the easy movement of people, goods, and services within and outside the Region. The transportation system also establishes a greater social and economic viability by bringing the people, the places of production, and the places of consumption closer together. Thus, transportation systems, of which the highway system is a vital link, are the key elements in facilitating the movement of people, goods, and services.

HIGHWAY CLASSIFICATION AND VEHICLE REGISTRATION

Functional Classification

The purpose of highways, roads, and streets is two-fold: to move traffic and to provide access to property. Nearly all roads and streets serve both these functions in varying degrees. Roads which carry strictly local traffic, roads which serve as major circulation routes, and roads which will carry high volumes of traffic all require quite different levels of development. While many roads serve both purposes to some extent, they are usually considered to have a primary function.

The Federal Highway Act of 1968, mandated that each state carry out a needs study for the 20-year period, 1970-1990. These studies were to be based on a functional classification of all roads in the state. As a result of this mandate, uniform functional classification of highways was initiated. The criteria employed by the state, as reproduced in Appendix A, included: service provided, such as inter-regional, inter-community, inter-area, or local; predominant trip length; desirable operating speeds; access and spacing. Preliminary classification for all counties, cities, and villages was done by the state in the Lansing office; the local units were requested to review the classifications, revise them as necessary, and advise the state of any corrections. This needs study has been and will continue to be revised every two years.

The functional classification of highways in the Central Region is reviewed and revised to reflect such factors as county and city goals, travel patterns, population distribution, and land use.

Legal Classification

The financing of county roads and city and village streets within the CUPPAD Region principally is derived from state payments from their Motor Highway Vehicle Fund. These payments are supplemented by Federal Aid and by city and township participation for construction of specific roads. In special cases, county boards, city commissions, private individuals, or industrial corporations may also contribute to road construction projects.

Federal and state funds may be spent only on specific categories of roads. For this purpose, the federal government has legally classified roads into several categories: Federal Aid Primary (FAP), Federal Aid Secondary (FAS), and Federal Aid Urban (FAU). These are the main federal categories and the difference between this system and the functional classification is that federal funding can be spent on federal aid routes which do not include all roads, while the functional classification is a method of uniformly categorizing all roads without reference to funding.

The State of Michigan has classified all state roads into five legal systems: state trunkline, county primary roads, county local roads, city and village major streets, and city and village local streets as required by Act 51 of P.A. of 1951. Provisions of this act specify that state, county, and city roads be designated according to their relative importance within each jurisdiction. Act 51 also establishes the State Motor Highway Vehicle Fund for highway planning, construction, and maintenance.

Motor Vehicle Registration

The history of motor vehicle registration in the Central Region is shown in the table on the following page for even years from 1970 through 1976. As the table indicates, there is a greater rate of increase for the Region than for the state as a whole. In 1976, there were almost 140,000 vehicles of all types registered in the six-county Central Region. In addition to passenger and commercial, the total vehicles include trailers, motorcycles, and municipal vehicles. There are approximately six vehicles for every ten persons living in the CUPPAD Region.

The greatest rate of increase occurred in the commercial category. Partially, this can be attributed to the growing trend of pick-up truck and van ownership which is classified a commercial vehicle. These past trends can be expected to continue into the future and consequently, will be placing an increased burden on our road network.

STATE TRUNKLINES

The primary function of state trunklines is to provide statewide mobility of travel and to interconnect population centers of major economic importance. There are approximately 9,388 miles of state trunkline in Michigan, of which 659 miles are located in the Central Region.* The state trunkline system in the Region is oriented toward both east-west and north-south travel (Figure 10).

The major east-west routes are U.S. Highway 2 and Michigan 28 (M-28). These routes traverse the northern and southern periphery of the Region, interconnecting the major urban and secondary population centers. The north-south routes are U.S. Highway 41, M-35, M-94, and M-95. The principal north-south corridor is the US-41 and M-35 route connecting major industrial areas of the Upper Peninsula (Marquette - Escanaba - Menominee) with the major market areas of Green Bay - Milwaukee - Chicago to the south.

Figure 11 illustrates the locational proximity of the CUPPAD Region to major market areas. While the distances appear great, modern transportation technology can effectively reduce travel times and tie the Region to the rest of the national economy. Hence, the distance barrier may be more perceived than actual. Vast distances in the Central Upper Peninsula also act to hinder transportation within the Region. Parts of the Region are more isolated than others, that is they are more recessed from urban areas. Transportation in this case serves to unify the Region as a system and establish a framework for development.

*25th Annual Progress Report, MDSH&T, 1976.

Table 34

Motor Vehicle Registration
In The Central Region*
1970 - 1976

Alger County	1970	1972	1974	1976	Percent Change 1970 - 1976
Passenger	3,270	3,214	3,512	3,982	21.8
Commercial	969	965	1,309	1,612	66.4
Total	5,132	5,165	5,992	7,056	37.5
Delta County					
Passenger	14,653	15,825	16,693	18,126	23.7
Commercial	3,819	4,558	5,393	6,245	63.5
Total	22,878	25,654	28,630	31,839	39.2
Dickinson County					
Passenger	10,815	11,485	12,271	13,106	21.2
Commercial	2,451	2,993	3,315	3,970	62.0
Total	16,128	18,294	19,679	21,780	35.0
Marquette County					
Passenger	24,144	25,639	28,721	31,697	31.3
Commercial	5,191	6,069	7,582	9,439	81.8
Total	34,585	38,415	44,444	50,233	45.2
Menominee County					
Passenger	10,607	11,039	11,670	12,543	18.2
Commercial	2,418	2,912	3,529	4,069	68.3
Total	15,857	17,174	18,903	20,882	31.7
Schoolcraft County					
Passenger	3,619	4,021	3,996	4,282	18.3
Commercial	896	1,135	1,305	1,574	75.7
Total	5,695	6,552	6,934	7,646	34.3
Region					
Passenger	67,108	71,223	76,863	83,736	24.8
Commercial	15,744	18,632	22,433	26,909	70.9
Total	100,275	111,254	124,582	139,436	39.1
State					
Passenger	3,907,459	4,221,005	4,514,331	4,681,236	19.8
Commercial	609,564	700,711	817,169	911,734	49.6
Total	5,262,833	5,852,330	6,374,581	6,691,859	27.2

*This information was gathered for fiscal years beginning in July and running to June.

Source: Michigan Department of State, Office of Driver and Vehicle Administration.

Figure 10

STATE AND COUNTY ROADS IN THE
CENTRAL UPPER PENINSULA

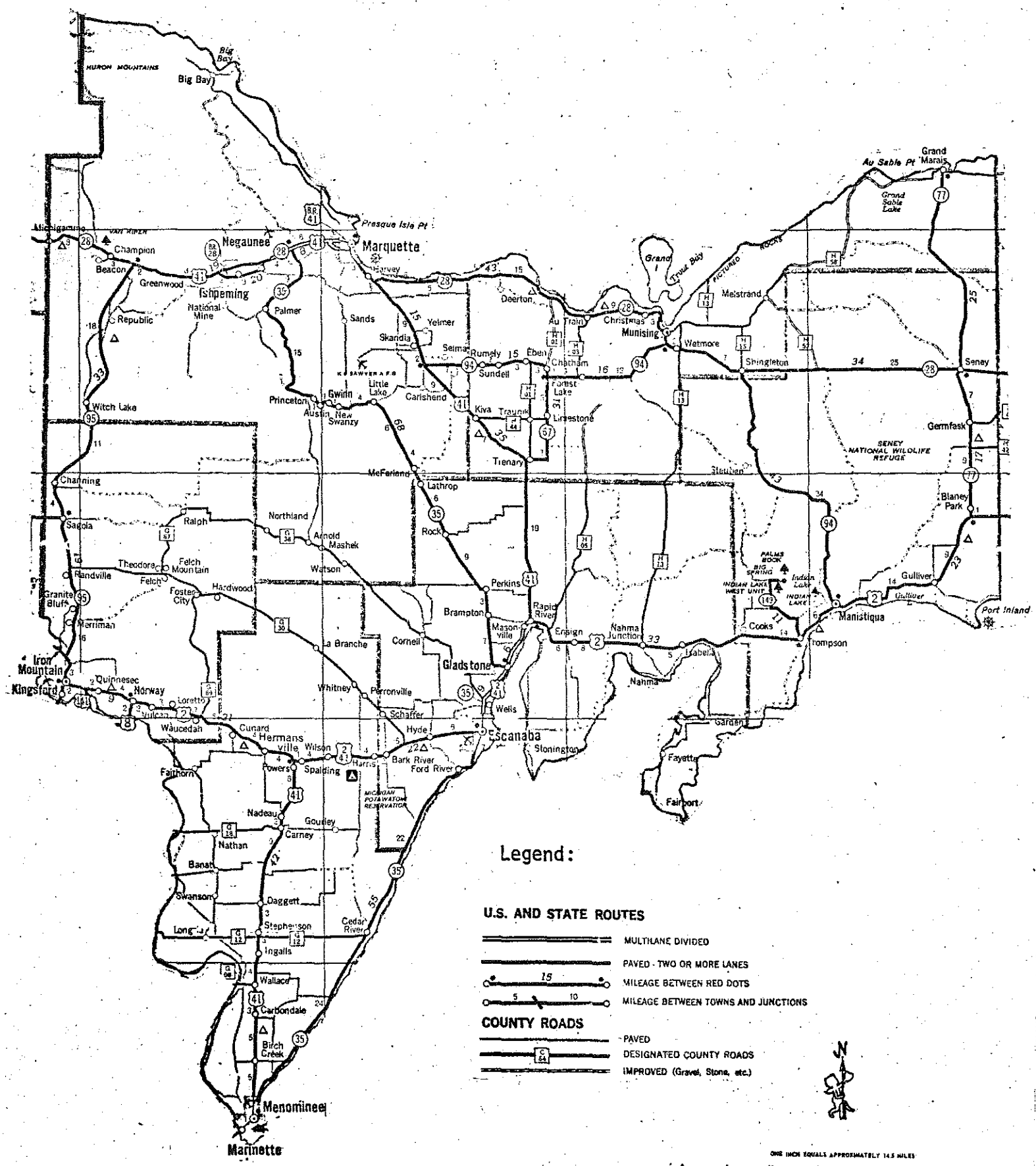
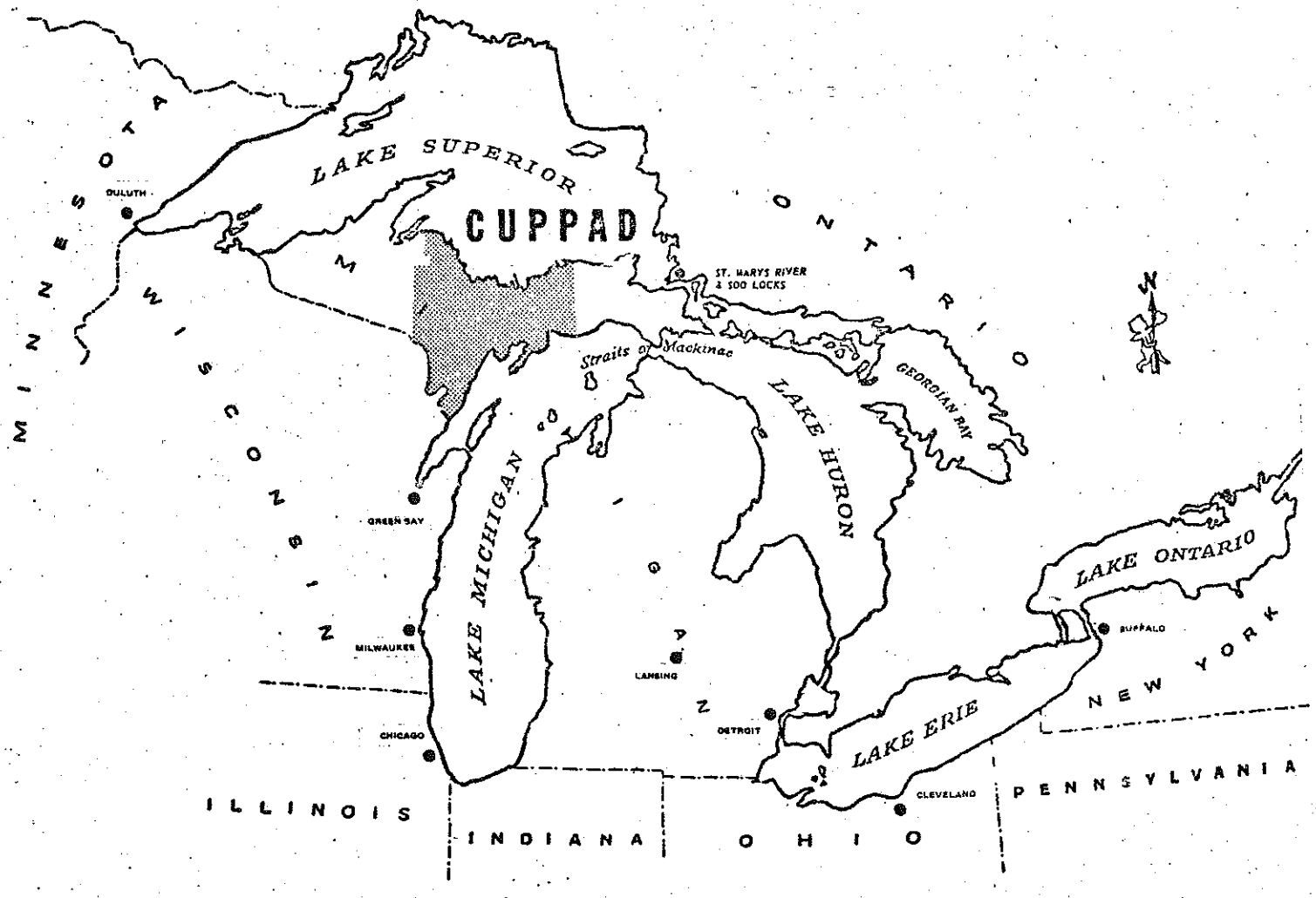


Figure 11

PROXIMITY OF CENTRAL UPPER PENINSULA
TO MAJOR MARKET AREAS



Traffic Volumes and Trends

Traffic monitoring is an essential process that provides information relating to the capability of the highway system to safely and efficiently accommodate traffic volumes, thereby providing a method of identifying potential problems. To insure reliability of information, the Michigan Department of State Highways and Transportation maintains Permanent Traffic Recorders (PTR's) on state trunklines at key locations throughout the state. PTR's are stationary electronic devices located below the highway surface which count vehicles 24 hours a day, 365 days a year.

Three such stations are located in the Central Region. The PTR station on US-41 and M-28 at M-95 near Champion and on US-41 and US-2 at Powers have been selected for purposes of illustration. Figure 12 represents the average daily traffic volumes recorded near Champion since the PTR has been in operation. Figure 13 illustrates the fluctuations in traffic volumes over a given year by month.

Traffic volumes vary greatly on the road system throughout the Region. Two trends are obvious though:

1. Vehicular traffic has increased over the years; and,
2. Traffic volumes show a dramatic increase in summer season.

As indicated, there has been an increase in the amount of traffic using these routes over the years. With the attraction that the Region has for tourists, similar expansion can be expected to occur on most other highways in this area.

Figures 14 and 15 display current and projected average annual traffice volumes on the highway system. These figures do not represent maximum flow, but rather an average over one year. It is notable that the greatest existing volume and largest increases are around the urban areas. Based upon anticipated statewide traffic increases, we are assuming that these trends will continue, compounding traffic problems already in existence.

Of particular concern is the expected traffic increases along U.S. 41/M-28 between Marquette and the Negaunee-Ishpeming urban areas. Rapid development along this section of highway, coupled with increased traffic volumes, has resulted in a bottleneck for congestion, confusion, and traffic accidents. This type of development can quickly render the highway facility overcapacitated.

Sufficiency Rating

In the past two decades, the Michigan Department of State Highways and Transportation has conducted extensive research in such areas as highway classification, priority ratings, capacity ratings, and sufficiency ratings in an effort to develop an impartial and scientific method of scheduling highway improvements that will accomplish two things. First, it should be able to measure the existing and future adequacy of all road sections on the state highway systems and rate each section according to measurable standards in order to determine which sections will require attention in a given time period. Second, each individual road section should be given a rating index denoting its relative urgency for improvements scheduling.

Figure 12

AVERAGE DAILY TRAFFIC TRENDS AT PERMANENT TRAFFIC RECORDER, 1959-1976

PTR Station on US-41/M-28 at M-95

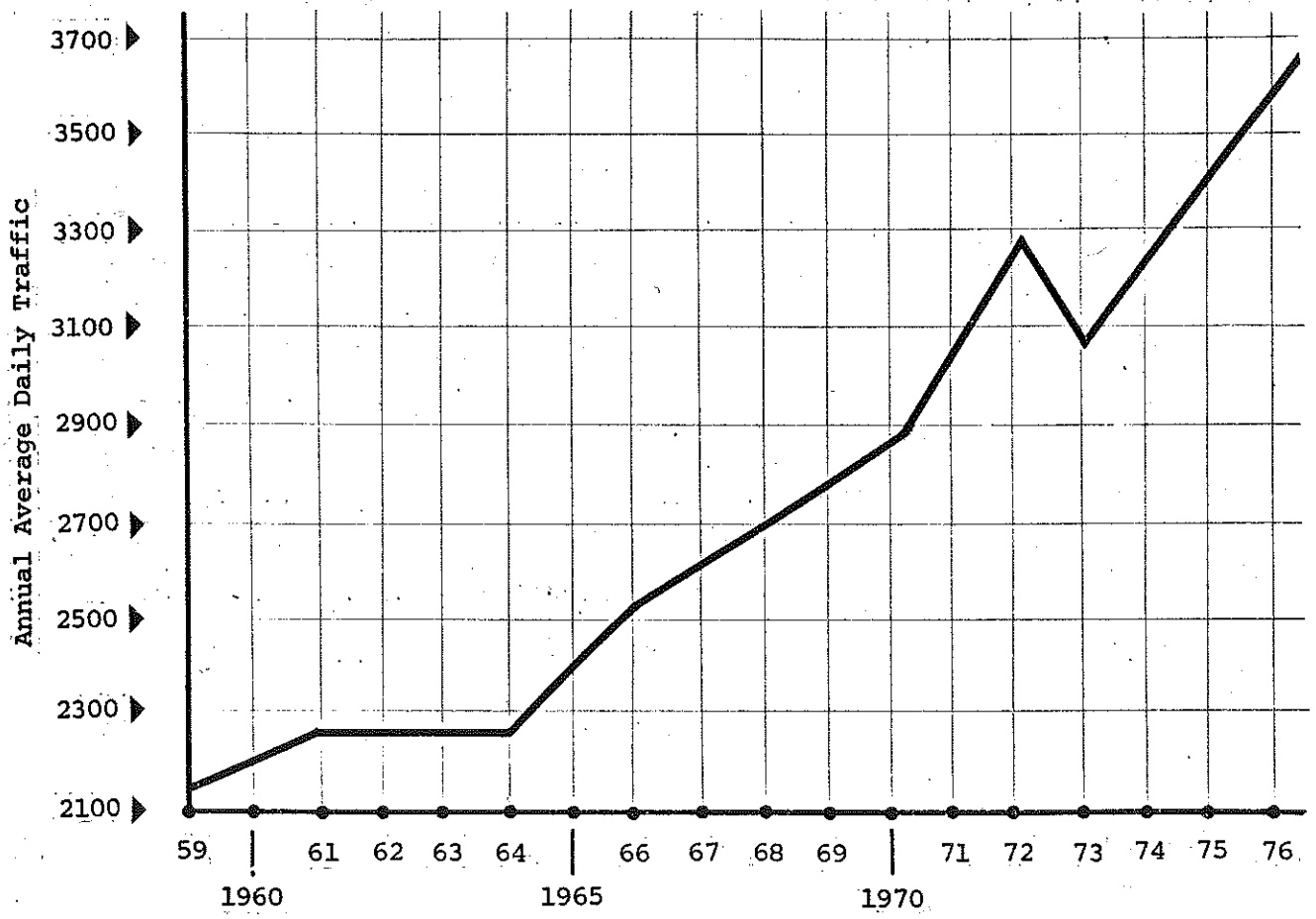
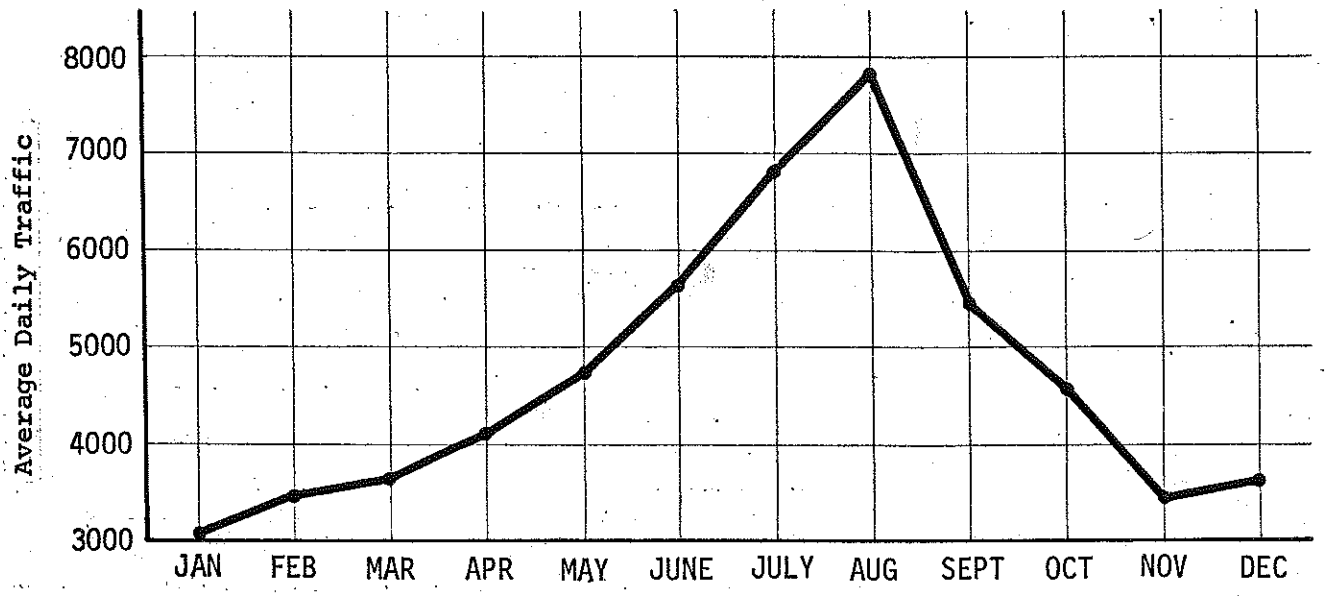


Figure 13

AVERAGE DAILY TRAFFIC AT PERMANENT TRAFFIC RECORDER BY MONTH, 1976

PTR Station on US-2 & 41 at Powers



PTR Station on US-2 & 41 at Powers

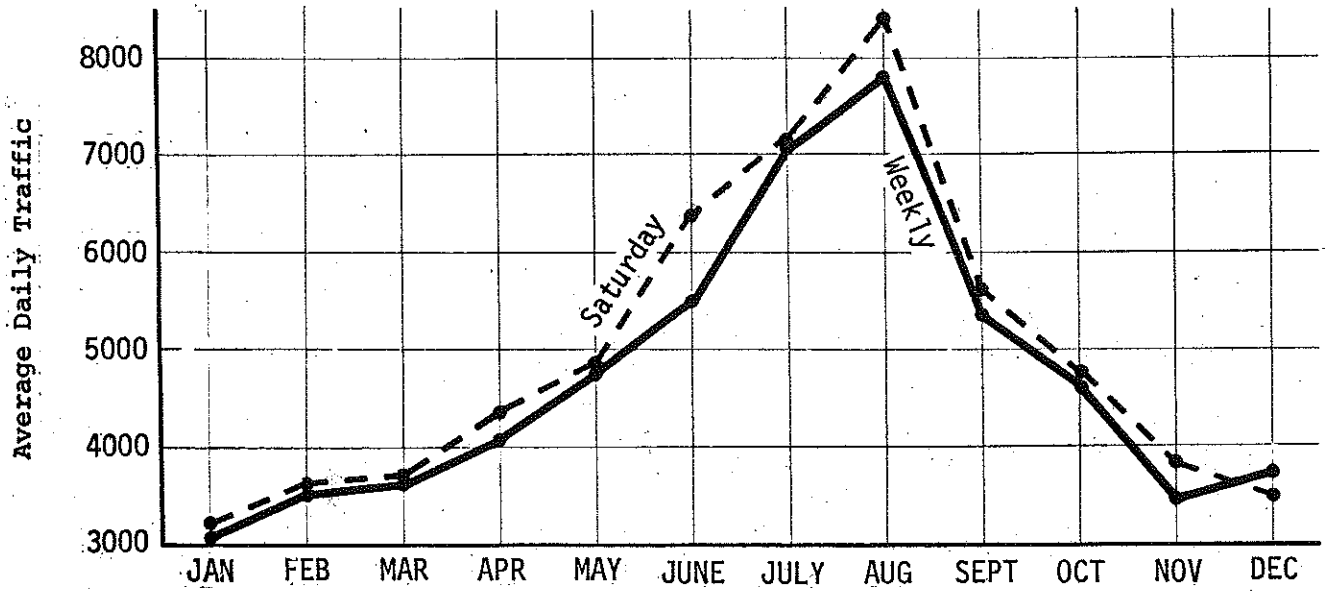
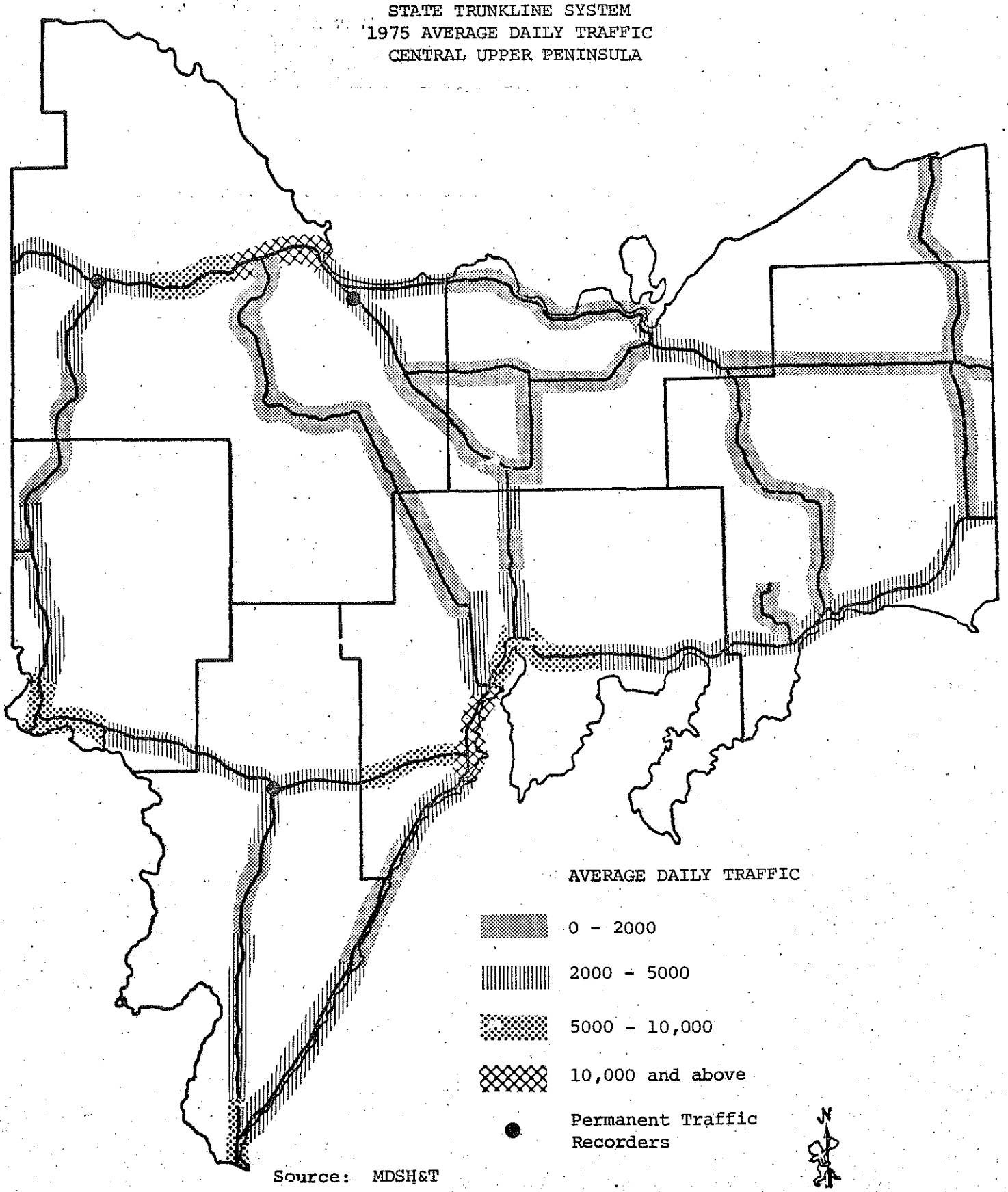


Figure 14

STATE TRUNKLINE SYSTEM
1975 AVERAGE DAILY TRAFFIC
CENTRAL UPPER PENINSULA

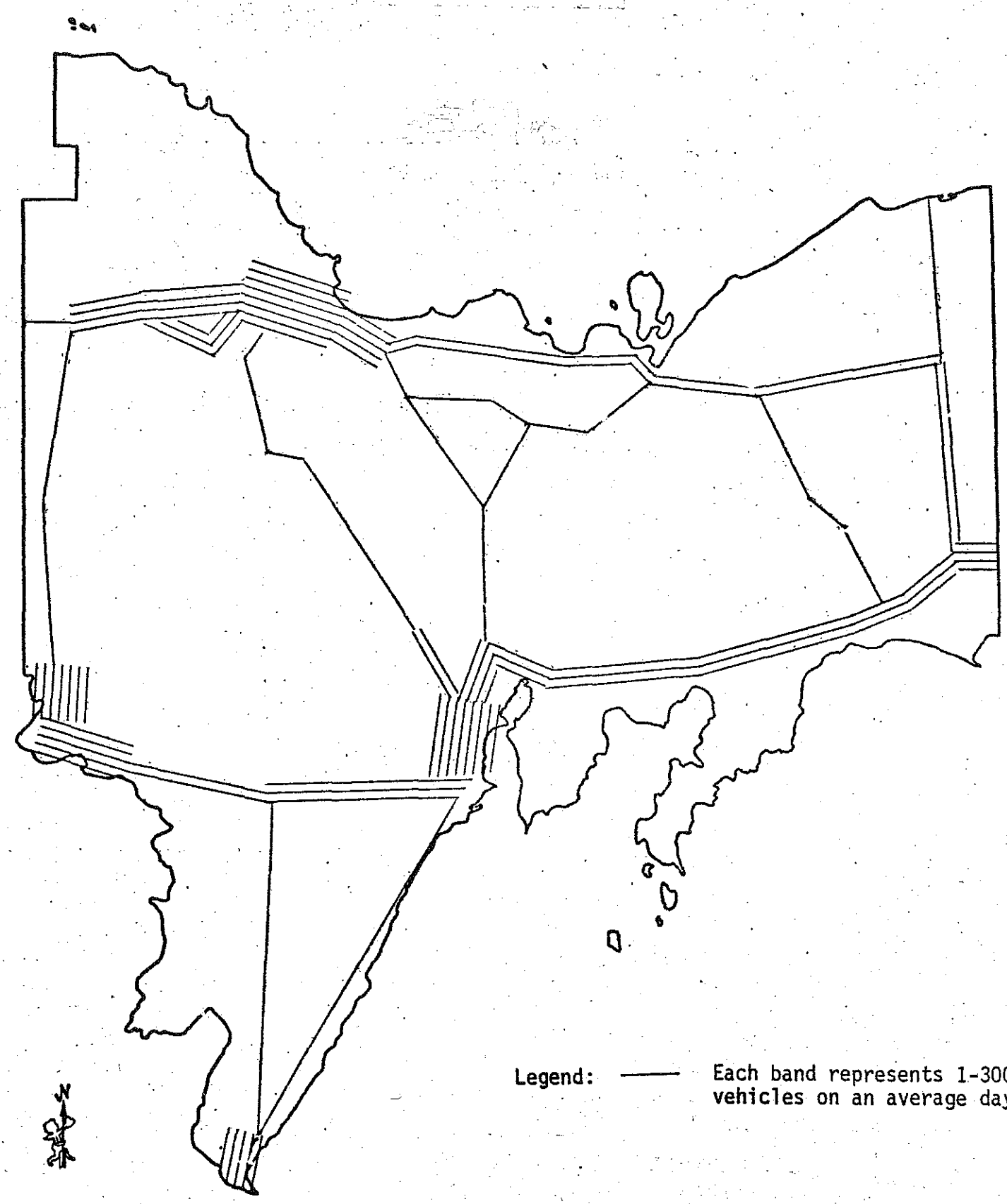


Source: MDSH&T

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Figure 15

1990 TRAFFIC VOLUME
ON 1970 HIGHWAYS



CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGION

The method used by the MDSH&T to evaluate state trunklines is called the Sufficiency Rating. Four factors are considered in this system, each counting for a percent of the total rating on highways. Individual segments of each trunkline are given a numerical rating using four separate factors - traffic carrying capacity, surface condition, base condition, and degree of safety. The numerical aggregate of each of these four is the sufficiency rating for that segment of route. All state highways were evaluated in 1974, according to this rating system, and the results are used to help determine improvement priorities.

As shown in Figure 16, there are over 400 miles of deficient highways in one or all of the four categories within the Central Region. This situation is not unique to the Central Region. In fact, 73 percent of the state's highways have deficiencies which require some type of improvement.

	Total Highway Miles	Deficient Miles	% Deficient
Region	658.92	405.1	61.5
State	9,214.9	6,751.6	73.3

Source: 1974 Sufficiency Rating Manual.

In the Central Region, the predominant deficient mileage is in the surface and safety category. The surface condition is the most noticeable by motorists because of vehicle handling, riding, and safety. It is also the most easily corrected. Of all deficient trunkline mileage in the Region, the capacity factor - the ability of a highway to handle traffic volumes - has the lowest number of miles rated "critical". Capacity is of concern, however, because of the seasonally oriented recreational traffic which is several times greater during the summer months than comparable demand during the off-season. Recreational traffic, comprised of significant number of boat, camper, travel trailers, and motor homes, frequently results in a backup of traffic and usually more accidents.

The sufficiency rating is not an absolute system but rather an indicator of problem or potential problem areas. This data proves extremely useful in understanding the condition of our existing system of highways so that we can more accurately assess future conditions and propose remedial action.

State Trunkline Highway Plan

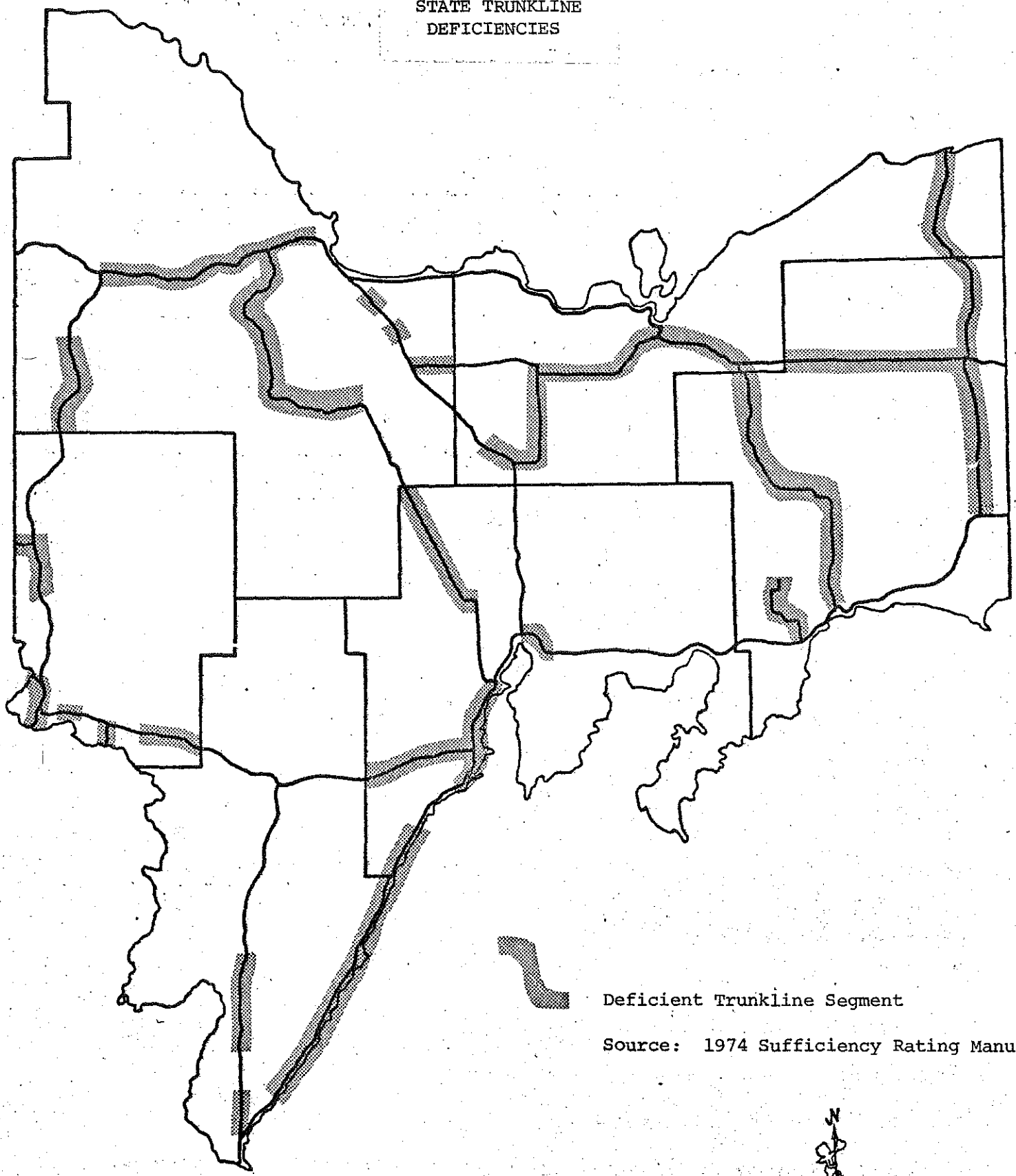
To properly conduct both short and long-range planning programs that fit into an ultimate plan, it is necessary to periodically review and approve a state trunkline highway plan. The current plan shown in Figure 17 for the CUPPAD Region was approved by the State Highway Commission on September 25, 1974. The total plan represents a state trunkline highway system of 9,484 miles.* The routes indicated by dots or dashes represent either new locations which are subject to detail planning and engineering studies or they are in need of major upgrading to adequately perform their function.

There are two distinct economic patterns within the Upper Peninsula. Tourist activity is pronouncedly east-west along US-2 and M-28, while commercial and industrial linkages are aligned in a north-south pattern and tied to the Wisconsin-northern Illinois area. Highway planning should recognize these

*Michigan's Highway Needs, 1974-1994, MDSH&T.

Figure 16

STATE TRUNKLINE
DEFICIENCIES



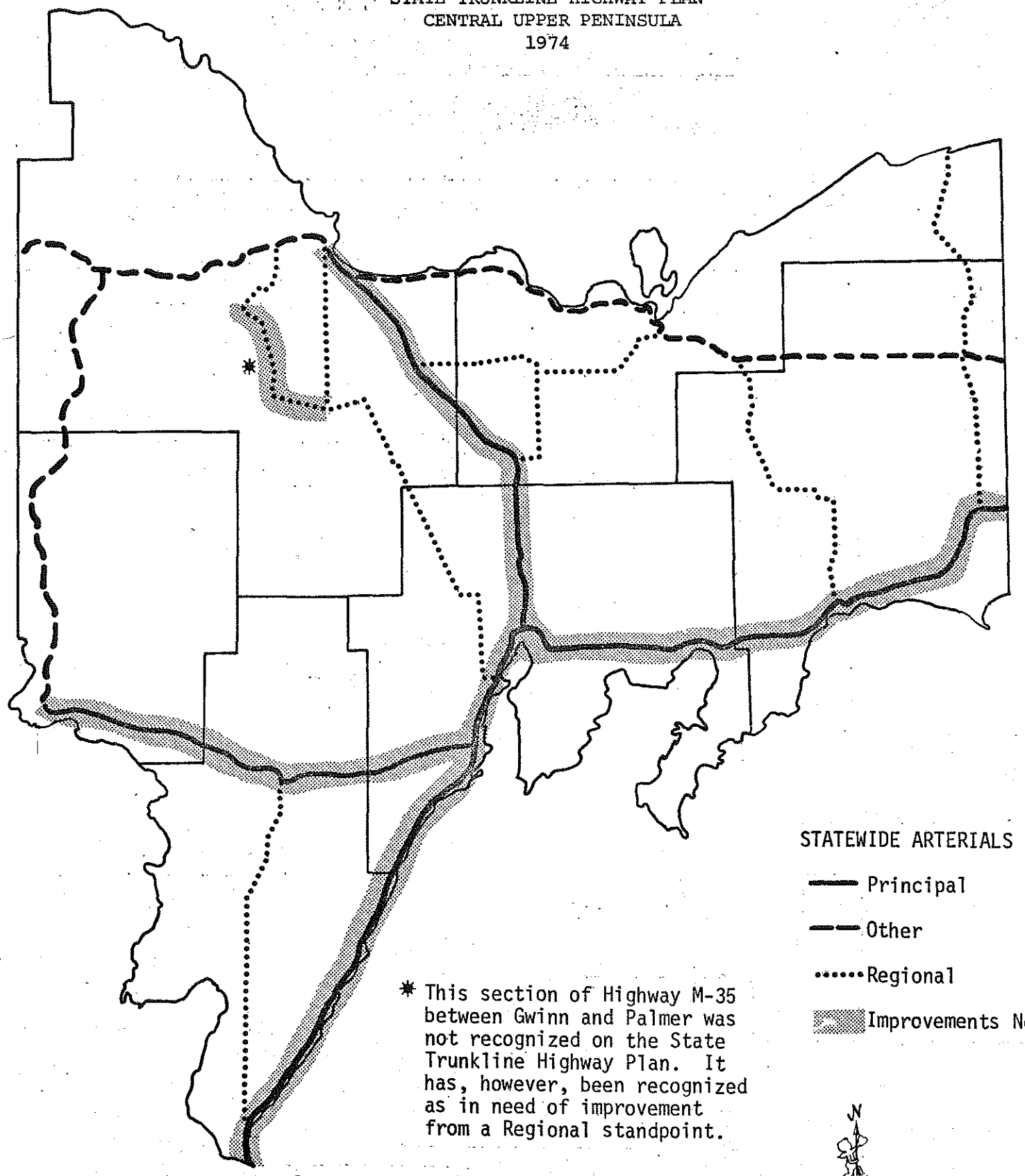
Deficient Trunkline Segment

Source: 1974 Sufficiency Rating Manual

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Figure 17

STATE TRUNKLINE HIGHWAY PLAN
CENTRAL UPPER PENINSULA
1974



* This section of Highway M-35 between Gwinn and Palmer was not recognized on the State Trunkline Highway Plan. It has, however, been recognized as in need of improvement from a Regional standpoint.

Source: MDSH&T

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

different economic patterns and reflect their individual needs. Commercial and industrial ties should be enhanced by maximizing mobility to markets, whereas, a balance between mobility and convenient access to facilities and attractions is necessary to serve tourist travel.

As Figure 17 indicates, major improvements are anticipated for U.S. Highway 2 and US-41/M-35 in the Central Region. The east-west route, US-2, was appropriated specific funding in 1972 for improvements across the Upper Peninsula. Environmental, detail planning, and engineering studies have been going on, however, initial emphasis has been placed on the eastern and western ends of the Upper Peninsula and little has been accomplished in the Central Region. It is anticipated that improvements to US-2 in the Region will take place in the mid to late 1980's.

Improvements to a north-south route, US-41/M-35, have not progressed as has programming for improvements to US-2. This route is the major connecting corridor between the Central Region and the major market areas to the south - - Green Bay - Milwaukee - Chicago. Due to the duration of time needed prior to actual construction, (usually about eight to ten years) initial steps should be taken now to begin studying this corridor for future improvements.

The Michigan Department of State Highways and Transportation has looked at alternative improvements for a small section of M-35 between Little Lake and Gwinn in 1971. At a public meeting in Gwinn, in 1976, it was felt that the 1971 information was in need of updating. Subsequently, a meeting was held in 1977, with MDSH&T and local officials to discuss M-35 between Gwinn and Palmer. An origin-destination study was conducted in the summer of 1977, for this area and MDSH&T has tentatively scheduled a letting date for improvements to this section of M-35 for 1983. Prior to actual construction, meetings and public hearings will be held to gain local input.

This need for improvements to a north-south corridor was pointed out in a study conducted by Edwards and Kelcey, Inc., in 1972. The study indicated that a "north-south service upgrading is expected to have a greater beneficial impact on the Upper Peninsula economy than improved east-west service. On this basis, the upgrading of the combined US-41 and M-35 corridor to freeway standards takes precedence as a regional highway planning objective over a US-2 improvement program."*

Any highway improvements that would facilitate movement of goods in and out of the Region would be beneficial to economic development. Improved freeway access to market areas would reduce truck transit time and make local industry more competitive.

COUNTY ROAD SYSTEM

The county road network by law is divided into two systems, the primary system and the local system. Primary roads are those of greatest general importance to the county and currently comprise about a third of the total county road network. Local roads are those of lesser importance and constitute the balance of the network.

*Highway Planning Studies. Implications of Improved Backbone Highway Service on a Developed Corridor, Michigan, Edwards and Kelcey, Inc., 1972.

There are approximately 4,900 miles of county roads in the Central Region, of which 3,170 miles are local and 1,722 miles are primary roads. Although generally less important in terms of volume carrying capacity than trunklines, county roads serve a greater local level service providing rural areas access to farm and forest markets, schools, and urban centers. The rural areas of the Region, especially those involved in forest and agricultural production, are particularly dependent upon good county roads and bridges.

Of the 1,700 miles of county primary roads in the Region, 70% or 1,200 miles are paved. The adequacy of primary roads in the Region varies from county to county, however, it has remained fairly constant over the last few years. Alger County has the greatest number of inadequate miles of primary road, while Dickinson County has the least (Table 35). For local roads, approximately 80% of the system is unpaved, with Menominee County having the greatest number of miles of inadequate local roads.

The county bridge situation in the CUPPAD Region is severe, as it is state and nationwide. Many of our county bridges are over 50 years old and unable to safely carry today's loads. In areas where bridges are either deteriorated or out completely, social and economic hardships can result for people living and working in that area. For the Central Region, there were 285 bridges in 1976 of which 100 or 35% are considered inadequate. Marquette County has the greatest number of bridges with 94, however, they also have the least percent of bridges classified as inadequate. Menominee and Dickinson County have the largest number of inadequate bridges. The vast majority of Menominee County bridges considered inadequate are located on the local road system, while Dickinson County inadequate bridges are evenly split between primary and local roads. Between 1972 and 1973, there was a sharp increase in the number of inadequate bridges in the Region (Table 36).

The County Road Commissions are funded primarily through payments from the State Motor Vehicle Highway Fund. These funds while they have been increasing, have not been increasing as fast as total expenditures for county roads (See Figure 18). This rapidly widening gap must be made up from other sources, mostly county raised revenues and federal assistance.

It is obvious that total expenditures on county roads have been increasing at a much greater rate than MVH Fund payments. Despite the increasing expenditures by road commissions, the percentage of inadequate roads and bridges have not declined appreciably. Several factors have hindered the road commission's efforts to improve the adequacy of the system. Inflationary trends have boosted the costs across the board, from materials and insurance to wages. Increased travel demand has put a greater strain on the roads. This increased usage is a result of greater traffic in high recreation areas, population shifts, and the use of county roads in areas where the state trunkline has become overcapacitated.

In addition to county roads, there are two types of roads within the Hiawatha National Forest: forest highways and forest development roads (explained in Appendix B). Forest highways are designated routes on a Federal Aid highway system passing through a national forest. Maintenance of these highways is a

Table 35

CONDITION OF COUNTY ROADS BY SURFACE TYPE
CUPPAD Region, 1976
(in miles)

Primary Road System

County	Unpaved				Paved			
	Adequate	Inadequate	Total	Percent Inadequate	Adequate	Inadequate	Total	Percent Inadequate
Alger	29.33	67.33	96.66	69.7	48.59	50.96	99.55	51.2
Delta	25.34	69.65	94.99	73.3	251.47	5.74	257.21	2.2
Dickinson	57.38	2.09	59.47	3.5	140.67	.51	141.18	.4
Marquette	39.07	19.94	59.01	33.8	227.64	6.16	233.80	2.6
Menominee		60.46	60.46	100.0	351.80	43.20	395.00	10.9
Schoolcraft	93.34	58.75	152.09	38.6	72.08	.32	72.40	.4
Region	244.46	278.22	522.68	53.2	1092.25	106.89	1199.14	8.9

Local Road System

County	Unpaved				Paved			
	Adequate	Inadequate	Total	Percent Inadequate	Adequate	Inadequate	Total	Percent Inadequate
Alger	118.47	163.91	282.38	58.0	27.36	7.28	34.64	21.0
Delta	208.84	205.04	413.88	49.5	110.97	8.10	119.07	6.8
Dickinson	241.68	77.95	319.63	24.4	48.18	.24	48.42	.5
Marquette	473.98	181.18	655.16	27.6	312.53	6.40	318.93	2.0
Menominee	202.30	428.03	630.33	67.9	132.61	9.40	142.01	6.6
Schoolcraft	105.26	79.34	184.60	43.0	22.49	1.73	24.22	7.1
Region	1350.53	1135.45	2485.98	45.7	654.14	33.15	687.29	4.8

Source: Annual Act 51 Report, County Road Commission Interviews

Table 36

CONDITION OF COUNTY BRIDGES
CUPPAD Region

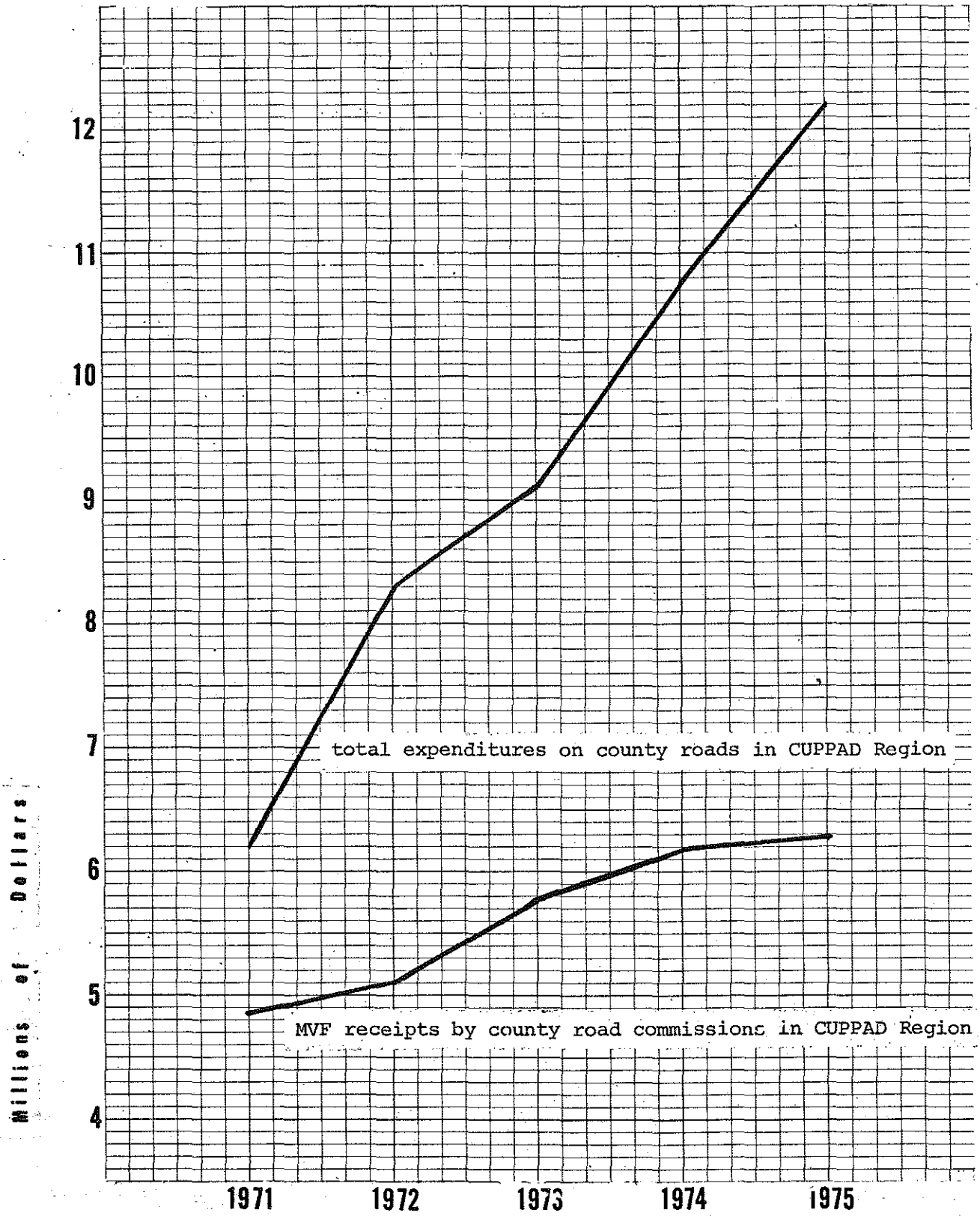
	1976							
	Primary				Local			
County	Adequate	Inadequate	Total	Percent Inadequate	Adequate	Inadequate	Total	Percent Inadequate
Alger	7	3	10	30.0	10	10	20	50.0
Delta	18	5	23	21.7	17	4	21	19.0
Dickinson	4	10	14	71.4	--	12	12	100.0
Marquette	29	9	38	23.7	47	9	56	16.1
Menominee	25	5	30	16.7	18	24	42	57.1
Schoolcraft	9	6	15	40.0	1	3	4	75.0
Region	92	38	130	29.2	93	62	155	40.0

	1973				1972				1971			
County	Adequate	Inadequate	Total	Percent Inadequate	Adequate	Inadequate	Total	Percent Inadequate	Adequate	Inadequate	Total	Percent Inadequate
Alger	17	13	30	43.3	22	8	30	26.7	26	4	30	13.3
Delta	33	12	45	26.7	33	11	44	25.0	27	10	37	27.0
Dickinson	4	23	27	85.2	19	7	26	26.9	19	8	27	29.6
Marquette	82	13	95	13.7	82	12	94	12.8	77	10	87	11.5
Menominee	39	33	72	45.8	37	35	72	48.6	36	36	72	50.0
Schoolcraft	13	7	20	35.0	13	8	21	38.1	15	6	21	28.6
Region	188	101	289	34.9	206	81	287	22.2	200	74	274	27.0

Source: Annual Act 51 Report from County Road Commissions

Figure 18

MVF Payments and Expenditures on County Roads



joint responsibility between the MDSH&T, as agent for the Federal Highway Administration, County Road Commissions, and the Forest Service.

Forest development roads are constructed by the Forest Service to carry out its task of multiple-use forest management. There are approximately 1,540 miles of forest development roads in the western Hiawatha National Forest. A small portion of these roads are maintained by the county road commissions. The majority of these roads are maintained by the Forest Service and woodjobbers, however, this maintenance does not include snow plowing.

Standard transportation maps of the counties, such as those issued by the road commissions, do not distinguish between these types of roads. Therefore, few residents know which roads are maintained by the counties and which roads are maintained by the Forest Service.

One particular problem resulting from the situation described above, has to do with development pressure in areas previously uninhabited. Persons retired or wishing to commute to jobs are constructing new homes or converting summer camps to year-round residences. This places increased pressure on road commissions for services, such as snow plowing and maintenance, along with other publicly financed service (i.e., school bus service). While it is not anyone's wish to deny a person his right to live where he chooses, it is definitely in the public interest to seek economy in the way publicly financed services are provided. This problem can best be averted by the establishment and enforcement of land use controls which will prohibit year-round occupancy in areas not already served by the road commission.

CITY AND VILLAGE STREETS

Under Act 51, streets are classified as either major or local. Major streets are selected under the direction of the governing body on the basis of greatest general importance to the community, while local streets generally are selected to serve residential areas.

There are 16 cities and villages recognized under Act 51 in the Region which receive funding for street improvements. Total street mileage for these cities and villages is almost 600 miles, of which 167 miles is major, 361 is local, and 56 miles is urban trunkline (Table 37).

Cities in the Region, formerly much less congested than most major metropolitan areas, may experience increasing problems in urban traffic flow. Average daily traffic along a few of the state trunklines located in the cities reaches 20,000 vehicles daily (Figure 19). This traffic flow will undoubtedly increase in the future as population and vehicle registration rise. It is clear that in counties displaying overall net growth, the urban centers are growing faster than the county as a whole. Problems associated with such increases include traffic control, major street congestion, and parking. The City of Marquette is currently plagued with major street congestion and parking problems within their downtown area. A study is presently being conducted to seek solutions in trying to rectify the situation.

Traffic circulation, noise, and congestion are also problems prevalent in the Cities of Menominee and Iron Mountain. Heavy truck traffic in these cities results in a noise and congestion problem. One way of alleviating this problem

Table 37

Street Mileage Within Cities and Villages

CUPPAD Region, July, 1976

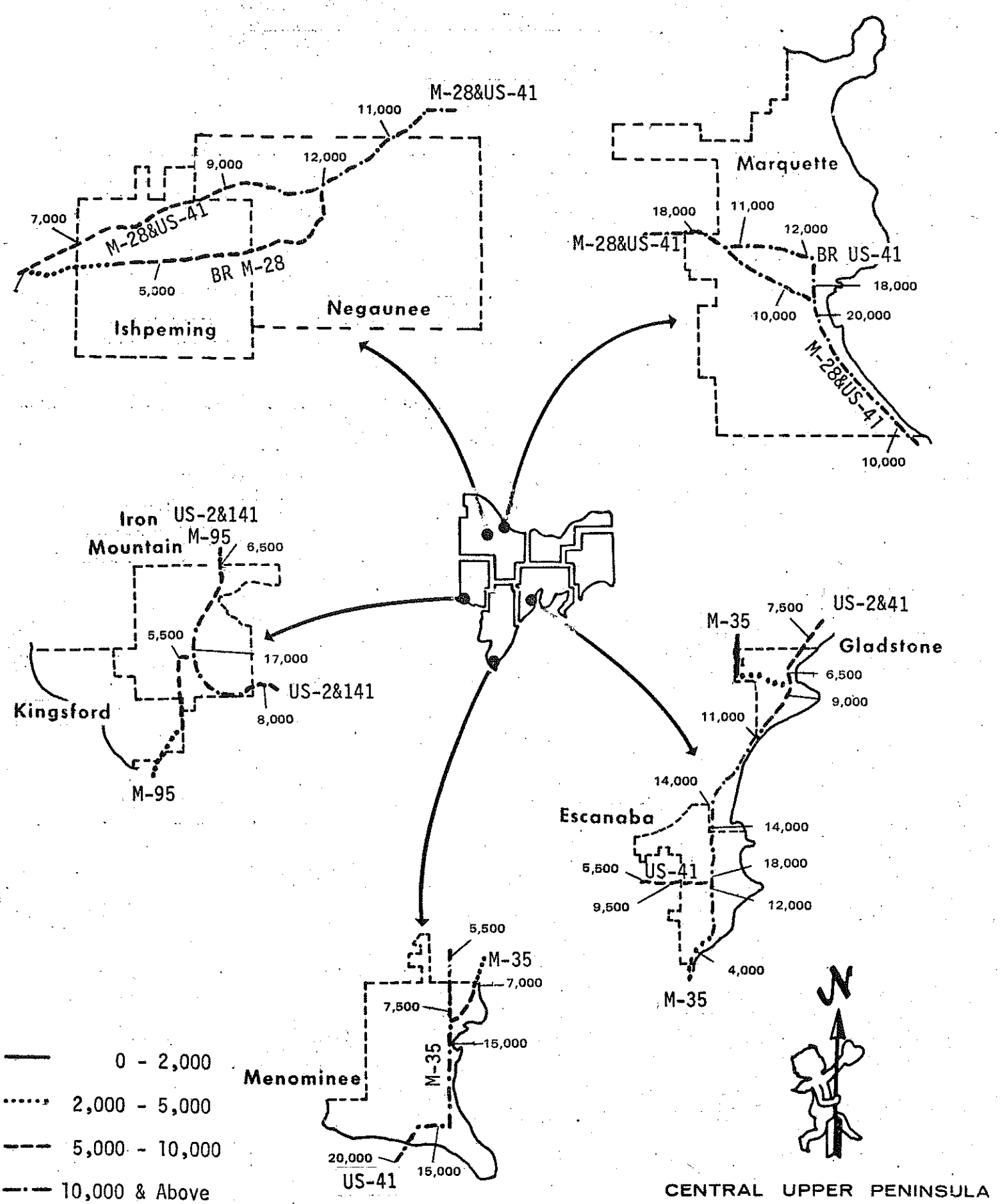
City or Village	Population*	State Trunk	City and Village Streets			Total All Streets
			Major	Local	Total	
Chatham	246	2.50	1.55	3.51	5.06	7.56
Daggett	366	.70	2.77	2.15	4.92	5.62
Escanaba	15,368	6.05	24.23	47.68	71.91	77.96
Garden	336		1.62	1.71	3.33	3.33
Gladstone	5,237	4.56	12.28	24.40	36.68	41.24
Iron Mountain	8,702	5.07	19.68	44.93	64.61	69.68
Ishpeming	8,245	5.07	9.75	27.53	37.28	43.35
Kingsford	5,276	1.02	11.65	31.12	42.77	43.79
Manistique	4,324	5.46	6.02	16.64	22.66	28.12
Marquette	21,967	6.79	22.46	51.16	73.62	84.07
Menominee	10,748	4.10	19.56	41.04	60.60	64.70
Munising	3,677	3.03	7.49	11.06	18.55	22.58
Negaunee	5,248	5.90	9.95	27.72	37.67	47.54
Norway	3,033	3.75	11.63	23.24	34.87	38.62
Powers	560	1.37	2.17	3.06	5.23	6.60
Stephenson	800	1.11	4.23	4.30	8.53	10.04
Region	94,133	56.48	167.04	361.25	528.29	594.80

* 1970 Census

Source: 25th Annual Progress Report - MDSH&T, 1976

Figure 19

URBAN TRUNKLINE AVERAGE DAILY TRAFFIC
(1975)



CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

would be for the rerouting of the highway traffic around or bypassing the cities. This would provide greater ease of movement for people wishing to conduct business in the downtown area as well as provide a more continuous, uniform route for users traveling through the communities.

Another problem that has or will have to be confronted in cities and villages in the Region is to comply with the Uniform Criteria for Major Streets adopted in 1974. Some major streets do not currently meet the minimum specifications because of existing diagonal parking which now is prohibited on major streets. The local governing bodies have until 1980 to comply with the criteria or it could ultimately result in reclassification of such major streets to the local street system and a reduction in the amount of Motor Vehicle Highway Fund revenues returned to the affected municipality.

TRUCK TRANSPORTATION

Motor truck transportation has become an extremely important component in the highway system. Significant amounts of manufactured goods, forest products, agricultural, and petroleum products, along with numerous other commodities are shipped to and from the Region via truck. For the most part, trucking is considered more efficient for short-haul trips as compared to rail transport which is much more conducive to long-haul trips. Some especially favorable characteristics of motor truck transport are their flexibility, predictability, and speed of service. The smaller capacity of trucks makes them more attractive to small lot shippers and the variety of truck and trailer bodies make them adaptable for most commodity types.

There are basically four classification types for truck transport. (1) Common motor carriers hold themselves out to the public as willing to undertake for hire the transporting of goods by motor vehicle for any shipper, whether it be truckload or less than truckload quantities. (2) Contract motor carriage is when they hold themselves out to the public to transport for-hire to any company or individual on a contractual basis. (3) Private motor carriage is any person or company engaged in the transportation of property by motor vehicle other than common or contract carriers. (4) Exempt motor carriers are those persons engaged in the transport of unprocessed agricultural commodities and certain specific processed commodities.

All motor carriers operating for-hire in Michigan must have authority to operate in the form of a license from the Michigan Public Service Commission for intrastate movement and a license from the Interstate Commerce Commission for interstate movement. Under the 1935 Federal Motor Carrier Act, any motor carrier hauling an exempt commodity is free from regulation as long as nonexempt commodities are not moved in the same vehicle at the same time.

Since motor common carriage is a regulated industry, competition is rarely manifested in prices, but does appear in the quality of service. There are two common carriers authorized to transport goods in the Upper Peninsula: Clairmont Transfer Company and CW Transport. Both of these carriers have markets geared toward the southern Wisconsin-northern Illinois area. Clairmont Transfer has the most extensive route coverage in the U.P.

The shipper of small quantities or with an unpredictable or seasonal demand is required by the nature of his distribution system to utilize common carriers. Shippers of truckload quantities at reasonably regular intervals, particularly over repetitive routes, have two alternatives to common carriage: private trucking or contract carriage. Private trucking is usually adopted because of its service rather than its cost advantage. The transport by private truck operators enables a company greater control over its distribution system. Private carriers are also not burdened by the stringent requirements for route franchises as are common carriers. The economies of contract carriage are similar to those of private carriage with one important exception. The contract carrier may undertake to balance its traffic on the empty return by seeking out a shipper in the reverse direction. There are numerous private and contract carriers in the Central U.P.

A healthy and prosperous trucking system is vital to the economic well-being of the Central Upper Peninsula. With the gradual phasing out of less than carload service by the railroads, motor carriage has become virtually the only mode of transportation for shipments of less than carload quantities. The trucking industry is particularly dependent upon an adequate road network.

FINANCING OF HIGHWAYS, COUNTY ROADS, AND CITY AND VILLAGE STREETS

The principal source of funds for the operation of roads in the CUPPAD Region, as well as the rest of Michigan, is the Motor Vehicle Highway (MVH) Fund, established by Act 51 of 1951 as amended and supplemented. The MVH Fund includes all motor fuel taxes collected in the state (except 1½%, which is dispersed by the Waterways Commission for small boat facilities) and all motor vehicle license fees, minus the cost of administering those revenue programs. However, the MVH Fund is not the only source of funds for road improvements.

Other funding sources include federal aid from the Federal Highway Administration, National Forest reserve funds, and the Economic Development Administration. Also grants from county or city commissions have been made for road improvements, along with contributions from townships for construction on local roads.

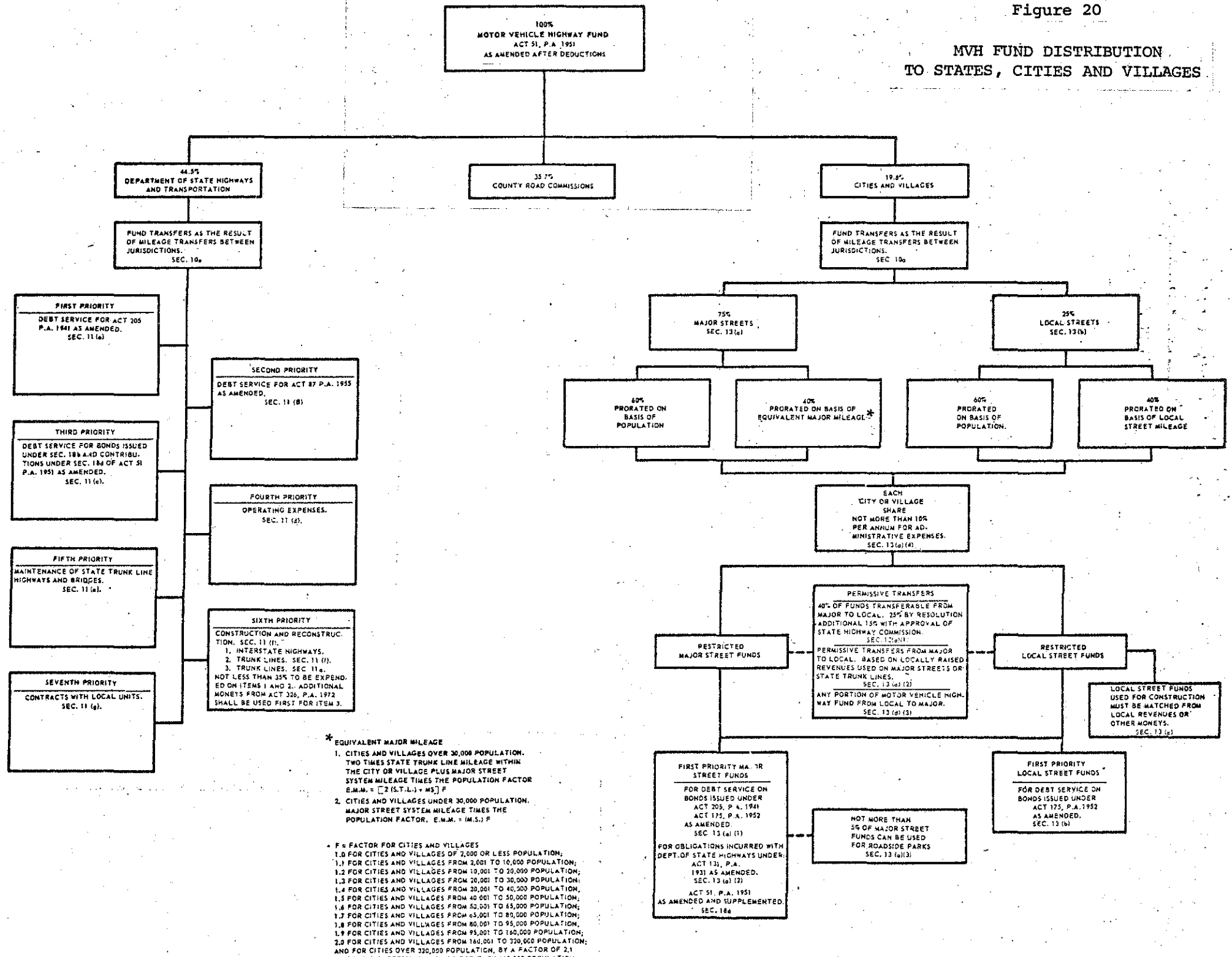
First claims on the Motor Vehicle Highway Fund are for a critical bridge program, which receives one million annually, and the general transportation fund, which receives the revenue corresponding to ½¢ per gallon fuel tax. After these deductions, the MVH Fund is divided into three portions: 44.5% goes to the Department of State Highways; 35.7% goes to the 83 county road commissions, and 19.8% goes to the 556 cities and villages.* These percentages are then adjusted, according to a complicated formula. See Figures 20 and 21 for a distribution of the Motor Vehicle Highway Fund.

As was mentioned earlier, the amount of revenues the counties receive through the MVH Fund has remained rather stable over the last few years, while their expenditures have increased substantially. A similar situation has burdened cities and villages in the Region. One particular problem is that only 25 percent of the counties MVH Fund receipts can be spent on local roads, yet two out of every three miles of county road in the Region is considered local. Another problem relating to local roads is that, under Act 51 of 1951, 50 percent of the costs of local road improvement must be derived from other sources, primarily townships. However, townships are the only unit of government in Michigan which receives no funds for road purposes. Townships often are the least capable of coming up with the matching funds. With increasing demands being placed on the county and city street systems, additional funding will be required to maintain the road system from further deterioration.

*25th Annual Progress Report, MDSH&T, 1976.

Figure 20

MVH FUND DISTRIBUTION TO STATES, CITIES AND VILLAGES



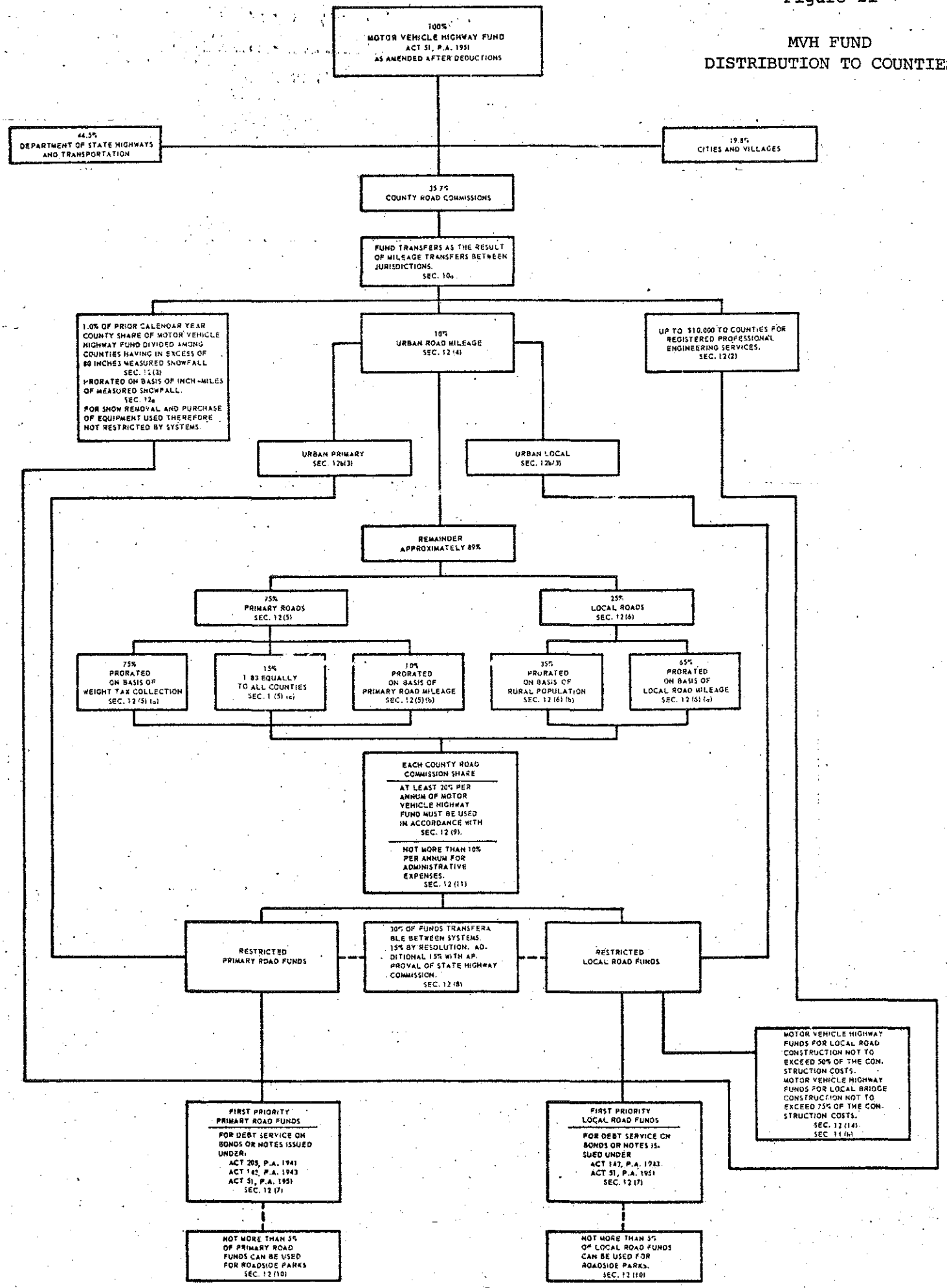
* EQUIVALENT MAJOR MILEAGE

1. CITIES AND VILLAGES OVER 30,000 POPULATION. TWO TIMES STATE TRUNK LINE MILEAGE WITHIN THE CITY OR VILLAGE PLUS MAJOR STREET SYSTEM MILEAGE TIMES THE POPULATION FACTOR
   E.M.M. = [2 (S.T.-L.-) + MS] F
2. CITIES AND VILLAGES UNDER 30,000 POPULATION. MAJOR STREET SYSTEM MILEAGE TIMES THE POPULATION FACTOR. E.M.M. = (M.S.) F

* F = FACTOR FOR CITIES AND VILLAGES
1.0 FOR CITIES AND VILLAGES OF 2,000 OR LESS POPULATION;
1.1 FOR CITIES AND VILLAGES FROM 2,001 TO 10,000 POPULATION;
1.2 FOR CITIES AND VILLAGES FROM 10,001 TO 20,000 POPULATION;
1.3 FOR CITIES AND VILLAGES FROM 20,001 TO 30,000 POPULATION;
1.4 FOR CITIES AND VILLAGES FROM 30,001 TO 40,000 POPULATION,
1.5 FOR CITIES AND VILLAGES FROM 40,001 TO 50,000 POPULATION;
1.6 FOR CITIES AND VILLAGES FROM 50,001 TO 65,000 POPULATION;
1.7 FOR CITIES AND VILLAGES FROM 65,001 TO 80,000 POPULATION;
1.8 FOR CITIES AND VILLAGES FROM 80,001 TO 95,000 POPULATION,
1.9 FOR CITIES AND VILLAGES FROM 95,001 TO 160,000 POPULATION;
2.0 FOR CITIES AND VILLAGES FROM 160,001 TO 320,000 POPULATION;
AND FOR CITIES OVER 320,000 POPULATION, BY A FACTOR OF 2.1
[illegible] BY 0.1 FOR [illegible] 160,000 POPULATION,
[illegible] NT OVER

Figure 21

MVH FUND
DISTRIBUTION TO COUNTIES



Highway Needs Study

The purpose of the highway needs study is to determine the deficiencies of Michigan's highways, roads and streets, and to estimate the cost of improvements necessary to bring the system up to acceptable standards. The latest highway needs study was conducted for the years 1974 to 1994.

The information gathered for the needs study revealed that there were 115,372 miles of road in the state, of which 9,282 are state trunklines, 87,549 miles are county roads, and 18,541 miles are city and village streets. To improve system deficiencies, it would take approximately $40.4 billion based on 1973 cost data.*

To make improvements to the regional road system would take almost $1.2 billion, broken down as follows:

Table 38

Total Highway Needs
CUPPAD Region
1974 to 1994

Jurisdiction	Total
State Trunkline	$ 349,638,000
County Roads	659,052,000
Primary	362,222,000
Local	296,830,000
City and Village Streets	187,811,700
Major	88,866,200
Local	98,945,500
Total	$1,196,501,700

For a further breakdown of the cost of upgrading the road system by county, city, and village refer to Appendix C.

The costs of improving the road system in the Region, according to the Highway Needs Study, far exceeds the conventional sources of funds. There will have to be quite substantial increases in the amount of money available to bring the road system up to adequate standards. It is doubtful if this will ever come about, so consequently, state trunkline, county road, and city and village street improvements will have to be prioritized in order to gain the greatest benefits with a given amount of funds.

SUMMARY

In this chapter an attempt was made to describe the existing highway facilities, their classification and financing, where general improvements are needed, and some specific issues relating to the road system. The importance of an adequate highway system to the social and economic viability of the Region cannot be over estimated. The highway system tends to bring the people, the places of production, and the places of consumption closer together.

*Michigan's Highway Needs, 1974 to 1994, MDSH&T.

There are over 6,000 miles of road in the CUPPAD Region, of which 660 miles are state trunklines, 4,900 miles are county roads, and 530 miles are city and village streets (Table 39). In addition to these roads, the Forest Service maintains over 1,500 miles of forest development roads in the Central Region.

Table 39

Highway, County Road, and Street Mileage
in the CUPPAD Region, 1976*

	City & Village Streets			County Roads			State	
County	Major	Local	Total	Primary	Local	Total	Trunkline	Total
Alger	9.04	14.57	23.61	198.98	316.64	513.62	105.45	642.68
Delta	38.13	73.79	111.92	352.20	530.98	883.18	112.11	1107.21
Dickinson	42.96	99.29	142.25	200.65	367.08	567.73	61.26	771.24
Marquette	42.16	106.41	148.57	292.20	972.91	1265.11	147.09	1560.77
Menominee	28.73	50.55	79.28	455.58	773.29	1228.87	96.63	1404.78
Schoolcraft	6.02	16.64	22.66	224.49	208.82	433.31	136.38	592.35
Region	167.04	361.25	528.29	1722.10	3169.72	4891.82	658.92	6079.03

*This mileage does not include 1,540 miles of forest development roads in the Hiawatha National Forest.

Source: 25th Annual Progress Report, MDSH&T, 1976.

It is evident that vehicle registration and average daily traffic are increasing on the regional highway network. It is also obvious that there is a vast influx or increase in summer as compared to winter travel. To keep abreast this increasing demand, additional revenues will be needed to maintain the highway system in the future.

The state trunkline system in the Region is oriented toward both east-west and north-south travel. Major improvements needed are an upgrading of both US Highway 2 and the US-41/M-35 corridor. Improvements to US-2 will facilitate recreational travel, while improvements to the US-41/M-35 corridor will stablize and promote economic expansion. Improvements are also needed on US-41/M-28 between Marquette and Negaunee to help ameliorate the congestion problem there.

There are approximately 4,900 miles of county roads within the Region. Recreational travel, forest, and agricultural production are particularly dependent upon good county roads and bridges. The overall adequacy of the road system has not been increasing despite concerted efforts to upgrade it. The bridge condition in the Region is poor. School buses loaded with children must cross bridges sometimes over or dangerously close to the load limit. Inadequate bridges also cause social and economic hardships for area residents and businesses.

City and village street mileage in the Central Region totals almost 600 miles. Urban and secondary centers are the major focal points for social and economic activity. These population centers are areas where traffic congestion is most severe. Average daily traffic in and around these centers is much greater than in

the rural countryside. Improvements to the street system, such as increased traffic control, additional parking, and improvements to downtown congestion, will be necessary in the future. These problems presently exist in the Cities of Marquette, Iron Mountain, and Menominee. Truck and urban trunkline traffic are especially evident in the Cities of Iron Mountain and Menominee. A possible solution to this congestion could be the rerouting of traffic around the cities.

A good and sound highway network is the keystone to an adequate transportation system. It is one of the major forms of transportation for the conveyance of both goods and people. An adequate highway network also complements the other modes of transportation.

Public transportation uses the same roadway space as do autos and trucks. Persons wishing to commute via air transportation must rely on some form of over-the-road transportation at their origin and destination. Intermodal relationships exist between rail and water transportation as well. The distribution of commodities from and to harbor facilities, in some instances, takes place over the highway system. As a result of rail abandonments, the primary shift in commodity movement has been to truck. The effects of rail abandonment have to be analyzed in terms of what the effect will be on the highway system. Intermodal cooperation has taken place in the form of piggyback rail service or trailer on flat car. Substantial financial commitments have been and will continue to be made for improvements that will benefit not only the highway system, but all modes of transportation.

ISSUES IN HIGHWAY/MOTOR VEHICLE TRANSPORTATION

Some specific issues related to problems in highway oriented motor vehicle transportation have been listed below. This is not meant to be all inclusive, but rather responsible to major problem areas.

- Commercial and industrial development in the Central U.P. is hindered by the lack of a fully developed highway transportation system.

- The orientation of the state trunkline to east-west access and the Lower Peninsula does little to promote distribution of U.P. products to major market areas in the Green Bay-Milwaukee-Chicago corridor.

- A need exists for more and stronger road links between urban and secondary centers.

- The overall adequacy of the road system is not increasing despite concerted efforts to upgrade it. Rural roads and bridges, in particular, suffer from insufficiency of improvement funds.

- Continued development on seasonal roads often leads to requests for conversion of these roads to year-round use. This places increased burden on the County Road Commission for the benefit of a few people.

- Only 25% of the county's MVF receipts can be spent on county local roads, regardless of the condition and traffic carrying function of the local roads. This places a financial burden on townships needing road improvements.

- The system through which Federal Forest Highways receive improvements funding is antiquated and detrimental to areas served by Forest Highways.

- Constantly rising traffic volumes and increased commercial and recreation vehicle road use has accelerated highway deterioration.

- Vastly increased summer traffic renders much of the area's highway mileage overcapacitated and unsafe.

- Many grade railroad crossings still exist and have become unsafe with increased traffic.

- Traffic in urban areas has been increasing, compounding problems of traffic control and safety.

- Parking in urban areas has become a serious problem and will worsen with increased development.

- State trunkline in urban areas has become clogged with local traffic, hindering the movement of thru traffic.

- Development along highways undermines the transportation function of arterial and collector roads. Lack of access control promotes strip development on highways not suited for such activity.

- There needs to be greater coordination between planning and construction programs of state agencies, county road commissions, and private industry.

- Industrial development considerations do not weigh heavily in state trunkline improvements planning.

- Circuitous and constricted highways increase delivery time for goods entering and leaving the Region by truck.

- Increasing use of contract and private carriers has decreased the "pool" of goods for distribution by common carriers. This potentially can increase user costs.

- The impact of abrupt deregulation of the trucking industry may have an adverse effect on smaller communities in the Region. Careful examination of regulatory laws and recommendations for sensible changes may offer benefits to the Region.

- Lack of cooperation between different modes of transportation results in higher than necessary transportation costs.

CHAPTER IV

AIR TRANSPORTATION

There are a number of factors which are vital to the economic health of any community or area. These factors include satisfactory services, utilities, highways and reasonable taxes. The availability of adequate airport facilities is another factor of ever increasing importance. These airport facilities are needed to serve general aviation users, as well as airline passengers.

Manufacturing and industrial concerns need air transportation for the movement of executives, to ship and receive repair parts, and to expedite the delivery of orders. Benefits derived from airport development go not only to actual air transportation users, but to everyone in the community. Airports tend to generate and sustain new industry, new jobs, new money, and a broader tax base.

The Central Region is relatively far removed from the major market areas so existing and potential industries are dependent upon safe, fast, and convenient transportation. Modern air transportation service places the Central Region in a more competitive position with other not so geographically disadvantaged areas and tends to stabilize the employment market. Air transportation is important for recreation, serving to bring tourists into the Region as well as to other parts of the country. Another purpose which must not be overlooked is that of an emergency field in case of a major disaster.

AIRPORT CLASSIFICATION

Airports are classified as to what functional and operational role they play. The functional role is a means of categorizing airports according to a combination of total operation and enplaned passengers.

Table 40

Airport Functional Roles

Functional Role	Annual Aircraft Operations* (Thousands)	Annual Enplaned Passengers*	Representative Michigan Airport (1975)
P1	over 350	Over	Detroit
P2	250 to 350	1	
P3	under 250	Million	
S1	over 250	50,000	
S2	100 to 250	to	Flint
S3	under 100	Million	Pellston
F1	over 100	under	
F2	20 to 100		Escanaba
F3	under 20	50,000	Ironwood

*Total of air carrier and general aviation activity.

The operational role is a means of categorizing the nature and extent of activity accommodated by a given airport (Table 41). The air transportation industry within the Central Region is comprised of a variety of airports and airfields, which are owned and operated by public and private interests. The main functions fulfill a multitude of local and regional transportation needs.

Table 41

Airport Operational Roles
CLASSIFICATION OF AIRPORTS SERVING AIR CARRIERS

Code for Operational Role*	Type of Activity: Length of Longest Flight	Type of Activity: Examples of Largest Aircraft Accommodated
A1	Over 1,500 miles	Large Jet Aircraft (i.e., B-747, B-707 and DC-8)
A2	500 to 1,500 miles	
A3	less than 500 miles	
B2	500 to 1,500 miles	100 Passenger Jet (i.e., DC-9)
B3	less than 500 miles	
C3	less than 500 miles	50 Passenger Turbo-prop (i.e., CV-580)
C5	less than 500 miles	Small (i.e., 15 passenger) Aircraft

Airport Operational Roles
CLASSIFICATION OF AIRPORTS SERVING GENERAL AVIATION

Code for Operational Role	Airport Type	Level of Activity
BI	Basic Utility, Stage I	Less than 10 aircraft based at airport
BII	Basic Utility, Stage II	More than 10 based aircraft. Less than 20,000 operations per year
GU	General Utility	More than 20,000 operations per year or 500 operations per year by general utility type aircraft
BT	Basic Transport	500 or more operations per year by business jet aircraft
GT	General Transport	Substantial operations by very large general aviation aircraft (over 60,000 pounds gross weight)

*Includes those roles applicable only to Michigan

EXISTING CENTRAL REGION AIRPORTS

The CUPPAD Region is presently served by ten airports available for public use. Eight are commercial airports meeting the requirements of the Michigan Aeronautics Commission. Four of these have regular air carrier* service provided by North Central Airlines. Figure 22 illustrates the location of the ten airports in the Region. Also shown are the service areas for the air carrier airports.

In addition to these ten airports, K.I. Sawyer Air Force Base operates a facility in Marquette County. It has a 12,300 foot main runway, however, it is not open to the public, except for emergencies.

Some basic characteristics for Central Region airports are portrayed in Table 42. Eight of the Region's airports are publicly owned, however, all ten are open to the public. The majority of general aviation facilities have turf or sod runways and are open seasonally, usually mid-May to the first part of November. Of major importance to general aviation in the Region, is the tourism industry. These facilities provide expanded recreational opportunities due to increased accessibility of recreation areas and wider opportunities for pleasure flying. In addition to providing recreational opportunities, general aviation provides a base from which local industry can operate in meeting their air transportation needs.

Air Carrier Airports

The four air carrier airports are located in the urban areas of Escanaba, Iron Mountain, Marquette, and Menominee. North Central provides regularly scheduled jet DC-9 service to Chicago, Lansing, Detroit, and points beyond, via Green Bay from each of the airports with the exception of the Twin County Airport in Menominee. The Twin County Airport runway is not long enough (5,100') to handle DC-9's, consequently, service is limited to Convair 580's. Each of the other airports served by North Central is also served by Convair 580's. The routes flown by North Central in the Region are depicted in Figure 23.

During most of the 1960's, aviation increased both in Michigan and nationwide. In fact, passenger levels showed substantial increases. These increases were also present in the Central Region. Between 1962 and 1969, regional air carrier airports increased their passengers handled by 134 percent (Table 43). When referring to passengers handled, it is meant the total number of enplaned passengers at the airport as well as those passengers continuing on through to another destination. During the 70's, there was not the dynamic increase in passengers handled, as was the case in the 60's, however, a steady increase was evident in the Central Region. The Marquette County Airport showed the largest increase for air carrier airports between 1970 and 1976 (Table 44). All air carrier airports showed an even distribution of passengers handled throughout the year.

In addition to passengers, air carrier airports transport cargo and mail. In 1976, regional air carrier airports handled over three million pounds of cargo and mail (Table 45). Ford Airport handled about one-half of the 1976 total pounds for the Central Region. A substantial amount of Ford Airport's commodity traffic is mail. Iron Mountain is one of eight regional post offices located in Michigan. For the remaining air carrier airports, the majority of pounds handled were cargo.

*An air carrier airport is an airport used by certified scheduled airline service.

Figure 22

AIRPORTS IN THE CENTRAL UPPER PENINSULA

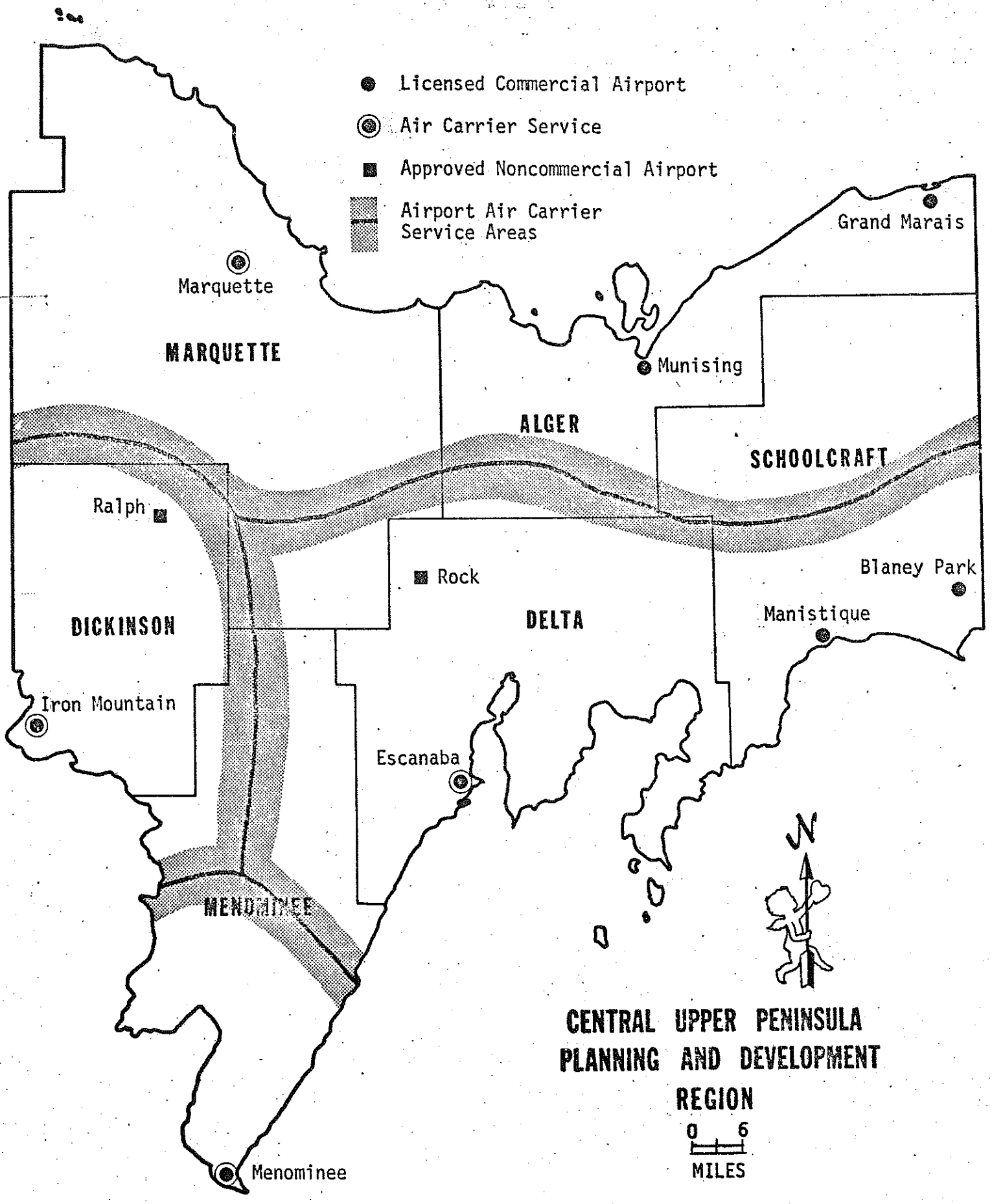


Table 42

Central Region Airports

City	Airport	County	Ownership	Period of Operation	Functional Role	Operational Role	Length of Longest Runway	Runway Width	Runway Type
Escanaba	Delta County	Delta	Public	All Year	F-2	B-3	6,500'	100'	Paved
Iron Mountain	Ford	Dickinson	Public	All Year	F-3	B-3	6,500'	150'	Paved
Marquette	Marquette County	Marquette	Public	All Year	S-3	B-3	6,500'	100'	Paved
Menominee	Twin County	Menominee	Public	All Year	F-2	C-3	5,100'	100'	Paved
Manistique	Manistique	Schoolcraft	Public	All Year	F-3	BT	5,000'	100'	Paved
Gulliver	Blaney Park	Schoolcraft	Private	All Year	F-3	B-I	2,600'	60'	Paved
Grand Marais	Grand Marais	Alger	Public	May 15 - Oct. 15	F-3	B-I	4,000'	200'	Turf
Munising	Hanley	Alger	Public	May 15 - Oct. 15	F-3	B-II	3,200'	75'	Turf
Rock	Rock	Delta	Private	May 15 - Nov. 1	F-3	B-I	3,000'	200'	Turf
Ralph	Ralph	Dickinson	Public	May 15 - Nov. 1	F-3	B-I	2,000'	260'	Turf

Source: Michigan Aeronautics Commission; CUPPAD

Figure 23

NORTH CENTRAL ROUTES

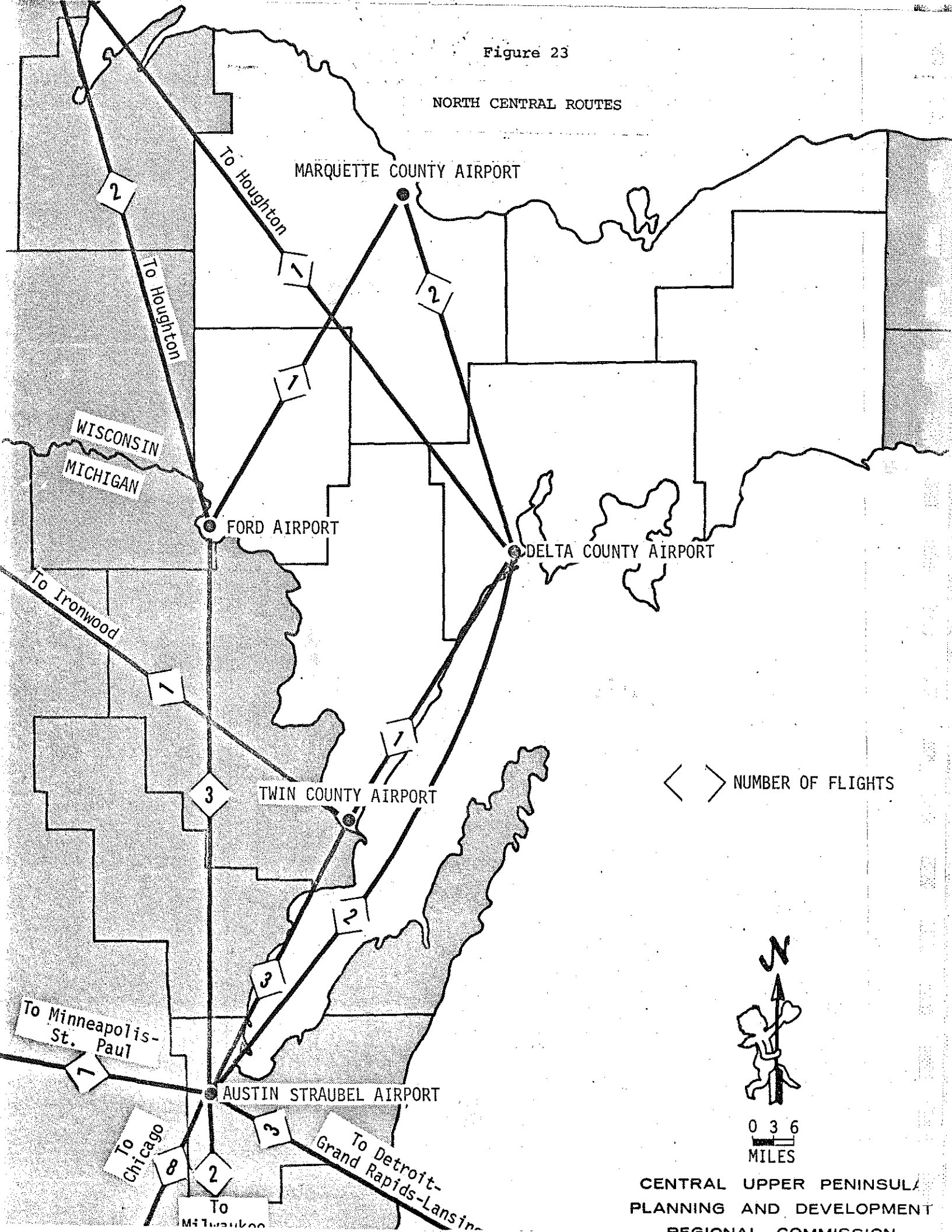


Table 43

Regional Air Carrier Passengers, 1962 & 1969

City	Airport	Airline Passengers		
		1962	1969	% Change
Escanaba	Delta County	9,602	23,935	149
Iron Mountain	Ford	10,840	22,875	111
Marquette	Marquette County	19,190	43,939	129
Menominee	Twin County	6,530	17,171	163
Region		46,162	107,920	134
State		3,598,028		

Source: Michigan Aeronautics Commission
Airline Record Statistics, 1962 and 1969.

Table 44

Passengers for Regional Air Carrier Airports
1970-1976

Airport	1970	1971	1972	1973	1974	1975	1976	% Change 1970-1976
Delta County	28,169	28,641	32,753	27,562	30,514	28,986	33,370	18.5
Ford	25,904	26,662	25,546	27,600	32,221	32,757	35,637	37.6
Marquette County	49,050	52,107	59,667	55,080	59,967	63,393	70,625	44.0
Twin County	16,540	15,382	15,998	16,228	18,940	19,192	19,423	17.4
Total	119,663	122,792	133,964	126,470	141,642	144,328	159,055	32.9

Source: Michigan Aeronautics Commission
Airline Record Statistics, 1970-1976

Table 45

Total Pounds of Airline Cargo and Mail

1970-1976

Central Region

Airport	1970	1971	1972	1973	1974	1975	1976	1970-1976 % Change
Delta County	387,399	328,168	472,825	539,789	499,108	409,927	447,113	15.4
Ford	872,255	499,831	725,639	943,596	1,170,456	1,252,834	1,577,805	80.9
Marquette County	731,236	562,480	677,204	765,686	650,565	712,338	765,024	4.6
Twin County	483,910	318,333	370,037	486,635	479,526	383,809	406,785	-19.0
Region	2,474,800	1,708,812	2,245,705	2,735,706	2,799,655	2,758,908	3,196,727	29.2

Source: Michigan Aeronautics Commission

PLANNING EFFORTS

Airports in the Region are planned at several levels of significance. Nationally, the Federal Aviation Administration (FAA) designates certain airports which have been determined to be of national interest. This designation qualifies these airports for federal funding of certain types of improvements. The National Airport System Plan is the official document designating those airports of national interest.

At the state level, the Michigan Aeronautics Commission completed a comprehensive Michigan Airport System Plan (MASP) in 1974. Applicable portions of the plan will be integrated into the National Airport System Plan. An airport must be included in the MASP to qualify for federal participation in the funding of development.

The purpose of the study was to produce a plan for the orderly and timely development of a system of airports adequate to meet the short, intermediate, and long-range air transportation needs of the state. The plan provides a basis to assist state, regional, and local agencies in planning for aviation facilities to meet expected demand levels over the next two decades. This plan is not meant to replace the master plan for local airports, but rather to provide a framework to assist in the development of these master plans.

The basis for this study's projection of future aeronautical demand was based on forecasts of population and economic growth for Michigan. These forecasts were prepared for three planning periods, as follows:

Planning Period	Fiscal Years	Base for Forecasts
Short-range	1973-1977	1975
Intermediate	1978-1982	1980
Long-range	1983-1992	1990

Michigan's population and economic growth is expected to parallel that for the United States. Therefore, the rates of growth in air passengers and air cargo for Michigan should follow national trends during the 1970 to 1990 time period (as was generally the case in the 1960's).

In addition to the forecasts of aviation activity, initial study efforts included the collection of data on existing airport facilities and surveys of freight and passenger movement.

Forecasts were made for total aircraft operations, based aircraft and enplaned passengers for Central Region air carrier airports during the short, intermediate, and long-range planning periods (Table 46). It should be noted that the projections in Table 46 were prepared before the emergence of the current energy crisis. Recent events, such as the curtailment of oil imports from the Middle East, raise the possibility of national fuel shortages for an intermediate period. There is also the prospect of substantial increases in the cost of transportation. It is too early to assess what potential effects these factors will have on the aviation industry. In comparing the projected short-range aircraft operations (1975) with the actual counts, (Table 44), it is interesting to note that two of the projections were close (Delta and Marquette Airports), while Twin County Airport was over estimated and Ford Airport was substantially under estimated. In terms of the latter two, the intermediate and long-range projects should be reviewed with caution.

Table 46

Projected Air Carrier Aircraft Operations

Central Region

Airport	BASED AIRCRAFT			TOTAL AIRCRAFT* OPERATIONS (100/yr.)			ENPLANED PASSENGERS					
							AIR CARRIER (1000/yr.)			GENERAL AVIATION (1000/yr.)		
	S.R.	In.R.	L.R.	S.R.	In.R.	L.R.	S.R.	In.R.	L.R.	S.R.	In.R.	L.R.
Delta	21	27	40	256	303	425	17	24	58	13.3	16	21.8
Ford	17	21	33	151	192	277	15	26	59	7.7	9.5	14.9
Marquette	62	74	116	633	775	1207	60	89	180	29	35	53
Twin County	22	27	40	314	342	687	9	12	51	16	19	25

*Total Aircraft Operations This is the total number of passengers handled on air carrier aircraft, both enplanements and passengers continuing on through to another destination.

S.R. Short Range (1973-1977)
In.R. Intermediate Range (1978-1982)
L.R. Long Range (1983-1992)

Source: Michigan Airport System Plan; Technical Report.

Improvements will have to be made to regional airports to keep abreast the increased safety and passenger demands expected over the next two decades. The Michigan Airport System Plan has recommended some generalized developments at Central Region air carrier airports for the three planning periods (Table 47). In addition to air carrier development the Michigan Airport System Plan has recommended some development at general aviation airports in the Region (Table 48). Three new general aviation airfields are recommended, while Blaney Park Airfield, in Gulliver, is not recognized in the plan (Figure 24).

Considerable financial investments by local units of government have been made for existing airport facilities. These facilities are periodically in need of routine maintenance and improvements as the demand for their use increases. Emphasis by both the Michigan Aeronautics Commission and local government should be placed on improving those facilities already in existence. Since local units of government must bear much of these costs, extensive cost-benefit analysis is needed to determine at what point more airport capital improvements will bring no more benefits to the community.

An issue which was examined thoroughly was the "regional airport concept". Stanford Research Institute, as a consultant to the Michigan Aeronautics Commission, looked at the possibility of a regional airport in selected areas of Michigan. The regional airport concept considers the possibility of combining traffic for communities located close to one another to yield improved air service. The Central Region airports at Escanaba, Iron Mountain, and Menominee were examined in conjunction with a regional airport in northern Menominee County. The analysis focused on traveler benefits and costs.

After reviewing several alternatives, it is the finding of Stanford Research Institute that a general concept of a few regional airports throughout the State of Michigan could not be supported. It is recommended that air carrier service continue at all three airports through 1990, but that air traffic from Iron Mountain and Escanaba be routed through Menominee, thus, justifying frequent nonstop service from Menominee to Detroit and Chicago.

Finally, airports are planned at the local level. Master plans are developed for individual airports in the local communities. These long-range master plans indicate the role of the airport in the community and the role it will be expected to play in the future. Detailed specifications of desired improvements and modifications to the airport are laid out in the master plan.

To implement the recommended development in the MASP, will take considerable funding and cooperative efforts from all levels; federal, state, and local. The initiative will rest with local governments and airport authorities to carry out the necessary steps needed in accomplishing airport development.

Some major improvements to regional air carrier airports have either been recently undertaken or are scheduled in the near future. All airports presently have new terminal facilities, with Ford Airport completing theirs in 1977. As a result of the Federal Aviation Administration releasing some of their discretionary funds, the picture looks brighter for additional federal funds for regional airports. Delta County Airport was a recipient of a $2.5 million grant from the FAA. This will be coupled with a $250,000 grant from the Michigan Aeronautics Commission and $250,000 local share to make a $3 million improvements project. This money will be spent on land clearance, widening and surfacing the east-west primary runway, a new taxiway, apron, reconstructing the north-south runway, and security fencing. In addition to these improvements, a new instrument landing system will be installed at the Delta County Airport.

Table 47

Recommended Air Carrier Development
for the Central Region

Airport	RECOMMENDED DEVELOPMENT		
	Short-Range	Intermediate	Long-Range
Delta County	Acquire additional land, widen primary runway, extend and widen N-S runway. Construct parallel taxiway for both runways, runway and taxi lights. Expand terminal, construct fire/crash building, obstruction removal, and upgrade approach aids.	Expand terminal and expand auto parking.	Expand terminal, expand auto parking, and upgrade approach aids.
Ford	Acquire additional land, extend primary runway to 7,000', and complete parallel taxiways to both runways. Expand apron, runway, and taxiway lights. Install VASI and REIL Approach Aids, construct new terminal and fire/crash building, obstruction removal, and runway and taxiway marking.	Expand terminal and expand auto parking.	Expand apron, upgrade approach aids, expand terminal, and expand auto parking.
Marquette County	Acquire additional land, extend and widen primary runway to 6,900', extend N-S runway, and runway and taxiway lights. Install VASI, REILS, and Control Tower. Construct new terminal, expand auto parking, obstruction removal, and runway and taxiway marking.	Expand terminal and expand auto parking.	Expand apron, expand terminal, and auto parking.
Twin County	Acquire additional land, construct new NE/SW runway to 5,550', widen N-S runway, construct parallel taxiways to both runways. Runway and taxiway lights, upgrade approach aids, expand terminal, and construct fire/crash building. Expand auto parking, obstruction removal, and runway and taxiway marking.	Expand terminal.	Extend NE/SW runway to 6,600', extend N-S runway to 5,700', extend both taxiways, runway and taxiway lights, upgrade approach aids, expand terminal and parking, obstruction removal, and runway and taxiway marking.

Source: Michigan Airport Systems Plan: Technical Report

Table 48

Recommended General Aviation Development
for the Central Region

RECOMMENDED DEVELOPMENT			
Airport	Short-Range	Intermediate	Long-Range
Schoolcraft County	Airport paving: Extend and widen N/S runway to 3,000', partial parallel taxiway to E/W runway. Airport lighting: taxiway lights, relocate N/S runway lights. Install VASI and REILS Approach Aids. Obstruction removal, runway and taxiway marking.	No development	No development
Hanley Field	Airfield paving: Construct primary runway 3,200', partial parallel taxiway, connecting taxi, apron, turf crosswind runway 3,200'. Runway and taxiway lighting, lighted wind cone, beacon. Administrative building. Install VASI and REILS Approach Aids. Fencing, auto parking, entrance road, segmented circle, runway and taxiway marking, obstruction removal.	No development	Airfield paving: Extend and widen primary runway to 3,800', pave crosswind runway 3,000', partial parallel taxiway to crosswind runway, widen existing taxiways, and expand apron. Runway and taxiway lights. Install VASI and REILS Approach Aids, enlarge administrative building, and obstruction removal.
Grand Marais	Airfield paving: Construct new runway 2,700', construct stub taxiway, construct new apron. Administrative building, fencing, auto parking, entrance road, segmented circle and wind cone, runway marking, obstruction removal.	No development	No development

Table 48 (continued)

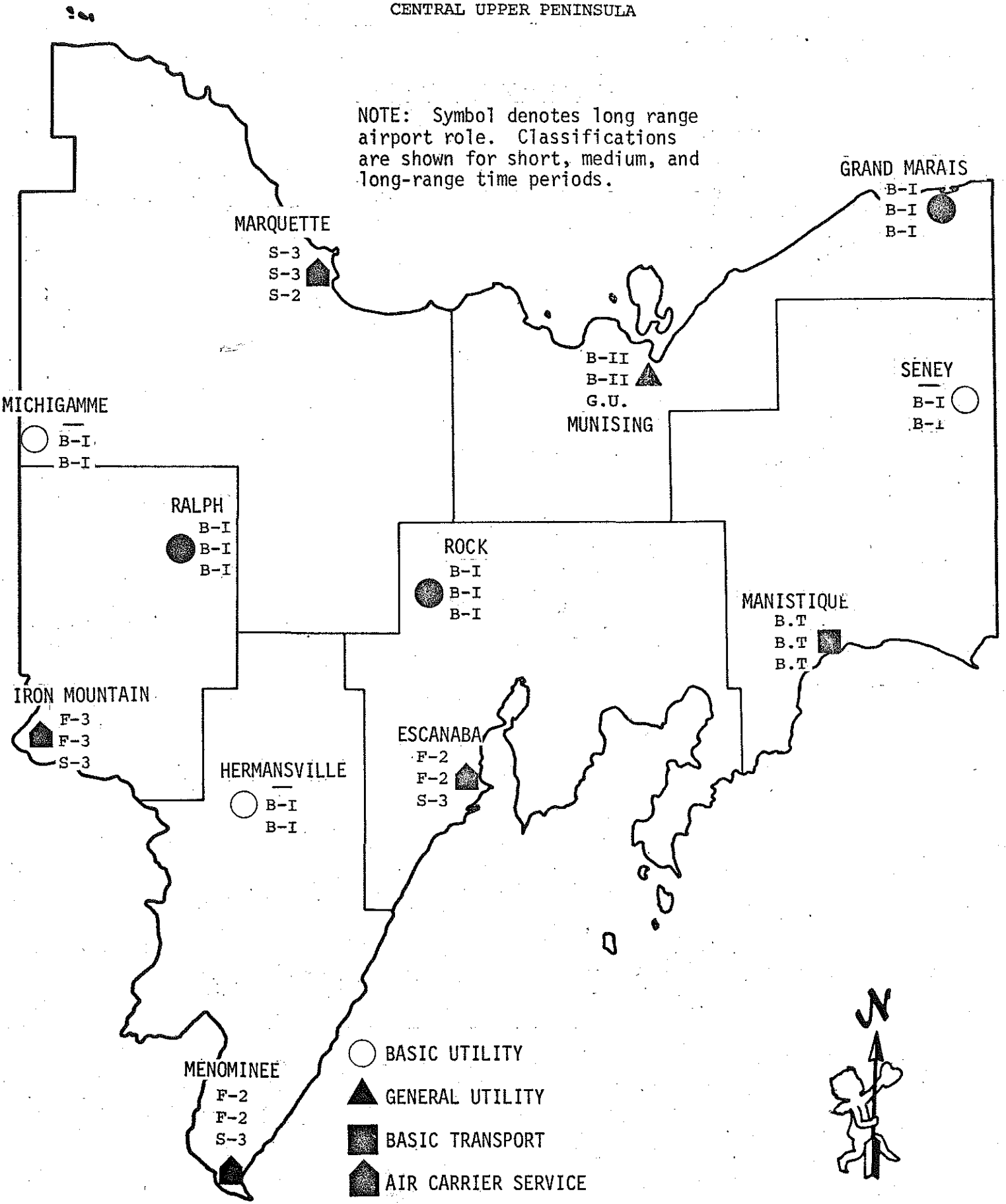
Recommended General Aviation Development
for the Central Region

RECOMMENDED DEVELOPMENT			
Airport	Short-Range	Intermediate	Long-Range
Ralph	No development	Purchase land, construct new runway 2,700', construct stub taxiway, construct new apron. Administrative building, fencing, auto parking, entrance road, segmented circle and wind cone, runway marking, and obstruction removal.	No development
Rock	No development	Purchase land, construction runway 2,700', construct stub taxiway, conconstruct new apron. Administrative building, fencing, auto parking, entrance road, segmented circle and wind cone, runway marking, and obstruction removal.	No development
Hermansville, Michigan and Seney (new airfield)	No development	Purchase land, construct new primary 2,700', stub taxiway, new apron. Administrative building, fencing, auto parking, entrance road, segmented circle and wind cone, runway marking, and obstruction removal.	No development

Source: Michigan Airport Systems Plan: Techincal Report.

Figure 24

PROPOSED MICHIGAN AIRPORT SYSTEM PLAN
CENTRAL UPPER PENINSULA



Solid symbol = Existing airport
Open symbol = New airport site

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT

It is hopeful that additional FAA funding will become available for air carrier airports, particularly Twin County Airport in Menominee. Considerable improvements are needed such as land acquisition, road relocation, a new northeast-southwest runway, an instrument landing system, among other improvements. The Twin County Airport's primary runway is only 5,100 feet long and will have to be expanded if they are to continue to be served by North Central Airlines. The only aircraft presently capable of landing at Twin County, for airline passengers, is the Convair 580. North Central has indicated that in the early 1980's all their aircraft will be the jet type (DC-9) and consequently, will be phasing out their Convair 580. This leaves Twin County in a position of either upgrading their facility to accommodate DC-9's, or dropping North Central's service and picking up a commuter airline. The Twin County Airport is in need of improvement and is the number one project on the 1978 Regional Transportation Project Priority List (see Chapter 8).

Because airport planning is a continuous process, the need will arise for variations from planned development in master plans and the Michigan Airport System Plan. It is possible that a given airport project may be accelerated or put off by changes in the growth rate, brought about by socio-economic factors, travel patterns, safety conditions, or local initiative.

Public assistance has become increasingly imperative in the development of efficient airport facilities across the nation. Of Michigan's 294 airports in 1970, almost one-half were improved with the assistance of public funding.

FUNDING FOR AIRPORT DEVELOPMENT

The source of federal funding for airport development, up to June 30, 1970, has been the Federal Aid Airport Program (FAAP). A new federal assistance program was enacted, replacing the FAAP, called the Airport Development Aid Program (ADAP). In most states, including Michigan, the federal government provides up to 90% of approved costs of a project. In 1979, FAA participation will drop to 80% of certain airport improvements. Eligible work included land, construction, and improvement of all or part of a public airport, including lowering, removing, relocating, or marking airport hazards. Only work on buildings to house facilities or activities directly related to safety of persons at the airport is eligible for the program. Also, the ADAP Program provides funding on the basis of an airport's enplanements. All the Upper Peninsula air carrier airports are below the minimum specified, and consequently, each of the Region's air carrier airports receive $150,000 annually, which can be accrued up to three years before having to spend the funds.

In addition to federal funding, the Michigan Aeronautics Commission (MAC) administers several programs for airport development. MAC can provide up to $250,000 to be matched by local contributions in securing federal funds for air carrier development. MAC programs include the airport marking, air marking, hazard removal, state nav-aid program, and has recently initiated two new programs: the Small Airports Program and the Small Loan Program. All of these programs are designed to assist local airports, and those using the air space of Michigan, to increase safety and utility.

LAND USE AND ENVIRONMENTAL CONSIDERATIONS

Until a few years ago, airport development was planned and accomplished largely on the basis of technical and economic criteria, with little regard to possible environmental consequences. Today, in contrast, both federal and state policy recognize environmental criteria as being highly important in airport planning. Indeed, it is virtually certain that all major future analysis relating to airport

development in the state will include some version of the critical question, "What environmental costs, as well as economic costs, are required to provide the indicated benefits to travelers, shippers, and others?" It is also highly likely that both federal and state funds will be withheld from any airport development projects that are in clear violation of environmental and related social goals.

Airport planning must be recognized as an integral part of an areawide comprehensive planning program. Airport planning must be coordinated with patterns of residential and other major land uses in the area as well as with other transportation facilities and public services. The social and economic impact, together with the environmental effects of airport development and operations, can then be evaluated in order to guide development to make the airport environs compatible with airport operations and, conversely, physical development and use of airports compatible with existing and proposed patterns of land use. Effective planning can reduce the conflicting pressures for both the further expansion of our transportation systems and for urban growth. Efforts, therefore, should be directed to developing and implementing both preventive and remedial programs to achieve land use compatibility.

One method to minimize conflicts would be for local jurisdictions with zoning power to take effective measures to help ameliorate this potential or existing problem. Two air carrier airports in the Central Region (Marquette County and Ford Airports) have adopted height zoning ordinances to help reduce land use conflicts. The Twin County Airport is in the process of updating their ordinance, while Delta County is considering adopting a similar ordinance for their airport. The purpose of these zoning ordinances is to provide additional safety and protection to the users of the airport and to the people who live and work in its vicinity.

ISSUES IN AIR TRANSPORTATION

Problems in air transportation will inevitably arise and so will alternative viewpoints as to the appropriate response to these problems develop. As these viewpoints are more strongly expressed, issues evolve from the problems. Some of the more persistent issues center around local budgetary capabilities to finance airport improvements and the effects of airports on airport environs.

Some issues associated with air transportation and Michigan's proposed improvement program include:

1. Airport improvements are being proposed that are very expensive and costly to maintain. Since local units of government must bear much of these costs, extensive cost benefit analysis is needed. It should be determined at what point more airport capital improvements will bring no more benefits to a community.

2. Lack of coordination between highway and airport planners has resulted in several of the Region's airports being relatively inaccessible to their service area.

3. Increased coordination is necessary to mesh airport plans with long-range local land use and economic development plans.

4. Some severe social and environmental impacts are generated by airports and should be accounted for in comprehensive planning.

CHAPTER V

PUBLIC TRANSPORTATION

For many years, mobility in the Central Region and nationwide has been primarily limited to one mode: the private automobile. The broad availability of this incredibly convenient and personal form of locomotion has been a profound force. It has drastically affected our travel patterns, both in intercity travel and within our own communities. It has set a standard of convenience and comfort by which the public transportation system is judged.

The term "rural transportation" is not widely or commonly used, in the context of public transportation because its basic ingredients are not commonly recognized. In rural areas it has long been, or seemed to be, sufficient to discuss transportation in terms of the condition of county roads and highways. A slightly different perception of rural transportation began in the late 1960's and early 70's. No longer is it just a matter of the roads used, but now rural transportation encompasses the mobility of people, or lack of it, in moving from place to place on these roads.

The term public transportation is defined to mean the movement of people and goods by publicly or privately owned vehicles (car, bus, railroad, water, taxicab) or other conveyance which provides general or special transportation service to the public. The State of Michigan has been actively involved in providing public transportation services to increase the mobility of its citizens.

Transportation Disadvantaged

A major objective of Michigan's public transportation program is to provide basic transit services to the transportation disadvantaged segment of the population. Transportation disadvantaged may be defined to include those individuals who have problems relating to the;*

1. cost of obtaining transportation service;
2. availability of transportation service; and,
3. design of transportation vehicles or equipment.

Certain segments of the population are more susceptiable to the problems than others. These include elderly, handicapped, and/or low income persons. Table 49 illustrates the transportation disadvantaged population for the Central Region and the state. As the table indicates, there is a greater proportion of transportation disadvantaged in the Central Region than for the state as a whole.

Table 49

Transportation Disadvantaged Population, 1970

County	Total Pop.	Handicapped 0-64	Poor 0-64	Elderly 65+	Total	% of Pop.
Alger	8,568	817	701	951	2,469	29%
Delta	35,924	2,649	3,076	4,154	9,879	27%
Dickinson	23,753	1,761	1,703	3,752	7,216	30%
Marquette	64,686	4,436	4,478	5,185	14,099	22%
Menominee	24,587	1,812	2,243	3,210	7,265	30%
Schoolcraft	8,226	568	1,014	1,129	2,711	33%
Region	165,744	12,043	13,215	18,381	43,639	26%
State	8,875,083	643,772	597,837	755,098	1,996,707	22.5%

*Source: Interim Findings and Recommendations of the Governor's Interagency Transportation Coordinating Council. January, 1976.

Population Change and Elderly Distribution

Between 1960 and 1970, the age composition of the Region changed. The change primarily was a decrease in the number of people in the younger age categories and an increase in the number of people in the older age categories as the following chart shows.

Change in Age of Population*

	0-20	21-44	45-64	64+
1960	41.2	26.9	20.9	10.9
1970	39.7	26.1	22.2	11.9

*Composition of population expressed as percentages in each age group.

Source: U.S. Bureau of Census.

It is evident from the chart that a larger percentage of those in the 65 years and older age category exist in 1970 for the Region as compared to 1960. Some concentrations of this age group exist in the Region. Iron Mountain-Kingsford, Manistique, the Munising fringe, Ishpeming-Negaunee, Menominee, the Garden-Cooks area, and Escanaba, all show higher levels of elderly population. Figure 25 illustrates comparative percent of elderly population in the traffic zones in the Central Upper Peninsula.* CUPPAD elderly population estimates indicate that in 1980 there will be over 24,000 elderly (65 and over) in the Region or 12.5 percent of the total population. Special consideration needs to be given to the mobility limitations of this group. A growing number of communities are becoming acutely aware of the special transportation needs of the mobility limited. Currently some public and private agencies are providing special transportation with little or no coordination.

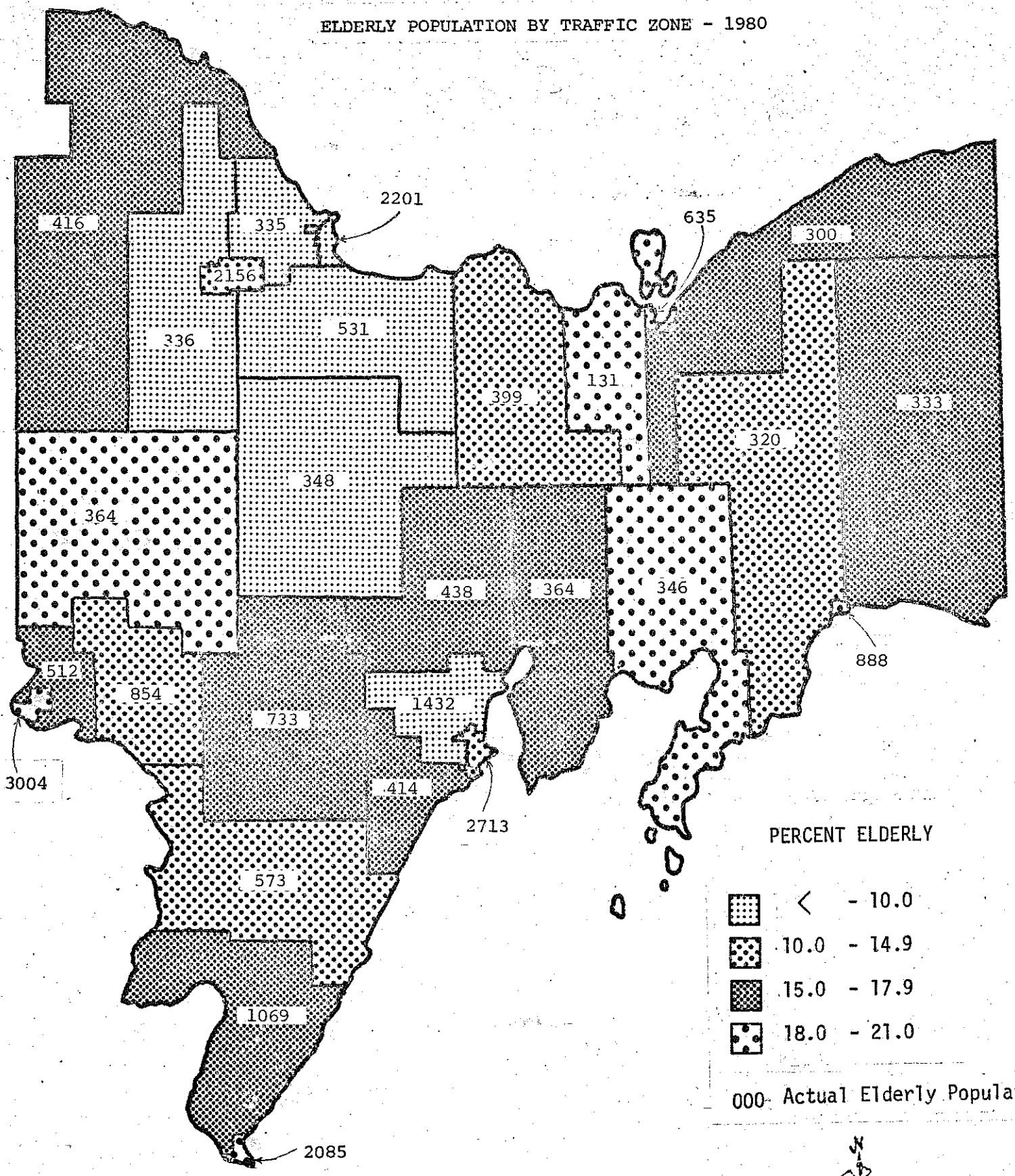
Auto Availability

Auto availability has a large impact on personal mobility. Automobile transportation is by far the most used mode for movement of people. Number of autos available at households is an indicator of personal mobility. Table 50 shows total number of households in each of the Region's six counties by number of autos available at each household. Households having access to no automobiles contribute to problem of mobility limitation. Figure 26 illustrates the percent of households having access to no automobiles in each traffic zone in the Region. No real urban-rural trends appear to exist in the pattern of auto nonavailability in the Central Region.

*The Michigan Department of State Highways and Transportation has divided the state into 547 traffic zones for analytical purposes. Zone sizes and boundaries have been determined on the basis of population, land area and political boundaries. There are 28 zones within the Central Upper Peninsula.

Figure 25

ELDERLY POPULATION BY TRAFFIC ZONE - 1980

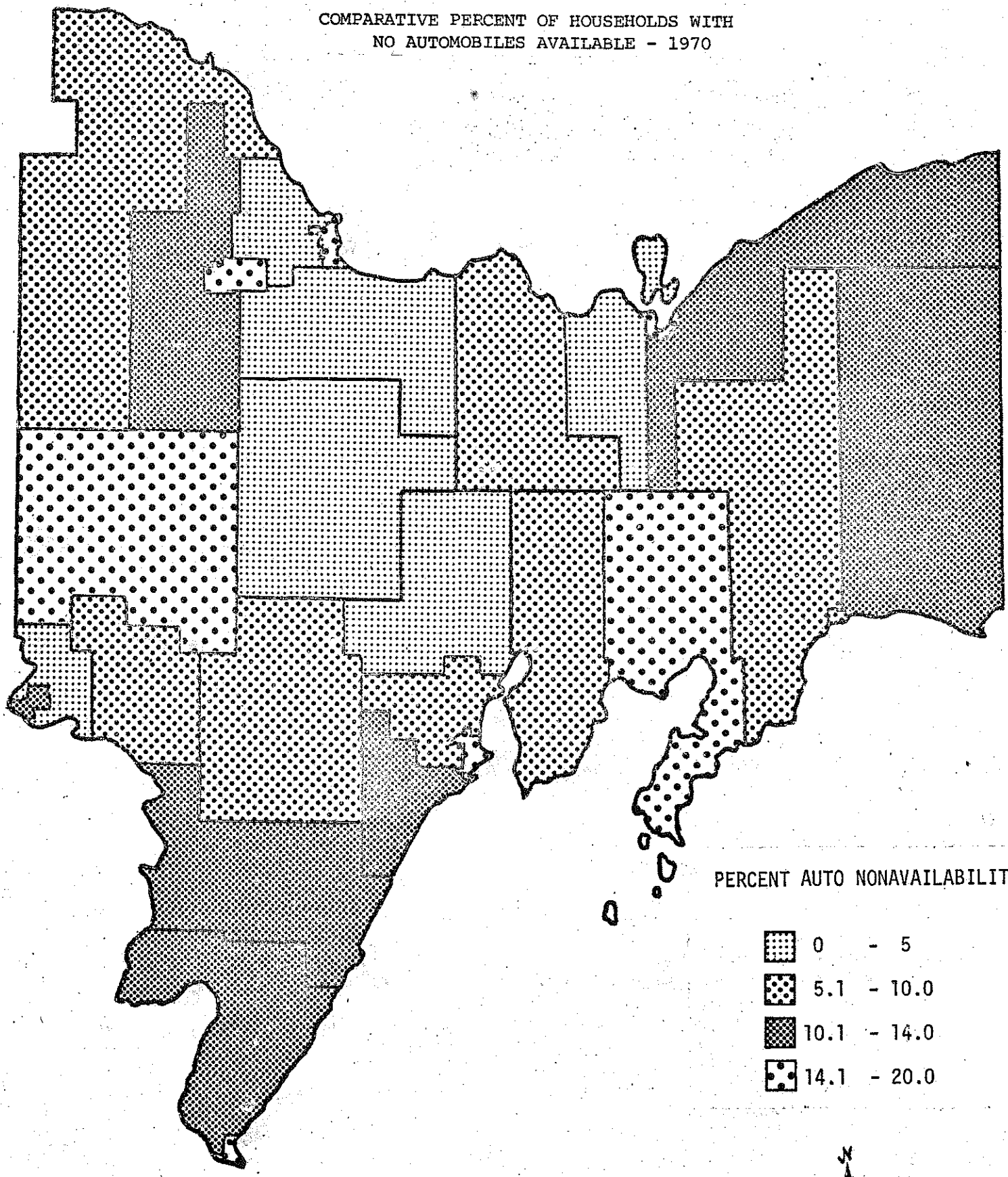


Source: CUPPAD

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Figure 26

COMPARATIVE PERCENT OF HOUSEHOLDS WITH
NO AUTOMOBILES AVAILABLE - 1970



Source: U.S. Census

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Table 50

Auto Availability
Number of Households by Number of Autos Available, 1970

County	None	1 Auto	2 Auto	3 or More	Total
Alger	310	1,380	734	117	2,541
Delta	1,416	6,153	2,813	434	10,816
Dickinson	1,120	3,940	2,479	296	7,835
Marquette	2,097	10,081	5,148	858	18,184
Menominee	932	4,295	2,027	392	7,646
Schoolcraft	282	1,512	680	91	2,565
Region	6,157	27,361	13,881	2,188	49,587

Source: U.S. Bureau of Census.

EXISTING CENTRAL REGION PUBLIC TRANSPORTATION

Public transportation in the Central Region is generally synonomous with bus transportation. There is very limited rail passenger and air services between the Region's communities. These will be explained in a separate chapter.

Existing public transportation consists of urban fixed route and dial-a-ride transportation, taxi cab, school bus, rural elderly and handicapped demand-responsive transportation, car pooling, and intercity bus operations. These services can be grouped into three levels of service: urban, rural, and intercity.

URBAN TRANSIT SERVICES

Urban transit services in the Central Region consists of a fixed route bus operation in the Marquette urban area, elderly and handicapped transportation, and taxicabs.

The fixed route bus operations in the Marquette-Negaunee-Ishpeming area dates from 1970 with the incorporation of the privately owned and operated Marquette Bus Service (MBS). The Marquette Bus Service carried 186,000 passengers during its initial four years of service and operated two Marquette City routes and one route between Marquette, Negaunee, and Ishpeming. During this period, limited experimentation with variable headways and routings took place.

MBS's overall operations incurred significant losses during the four year period. These were offset in part by revenues from incidental charter service. In the likelihood that MBS would be unable to maintain unsubsidized service and would soon cease operations, the Marquette City Commission created the Marquette Transit Authority on June 25, 1973. This statutory body was organized under the State of Michigan Public Act 55 of 1963. Marquette Transit Authority (MTA) was organized to "provide, promote, and regulate bus service in and around the City of Marquette, Michigan, for the benefit and welfare of its citizens." MTA was incorporated by the City Commission in September, 1973, and a seven member board was appointed to oversee the operation of the transit authority.

MTA signed a purchase of service agreement with Marquette Bus Service. MTA through MBS currently provides service on two routes: an intracity route which is a figure eight pattern, one loop in the northern part of the city and one loop in the southern part of the city; and an intercity route providing service between Marquette and the Cities of Negaunee and Ishpeming, with a shuttle service between the main bus stop in Marquette and the Marquette Mall (Figures 27 and 28).

On the intracity route, the twenty-five passenger bus maintains sixty minute headways and on the intercity route, the 45 passenger bus maintains two hour headways. The location of the routes do provide adequate coverage since all basic services of the community (health, social, educational, governmental, and commercial) are adjacent to the route. Some basic characteristics of the Marquette area bus system are portrayed in Table 51.

A five-year transit development program (1975-1980) for MTA was prepared by the Michigan Department of State Highways and Transportation. The alternative selected by MTA was the maintenance of existing routes with reduced headways. Headways on the Marquette City route would be reduced to 30 minutes and headways on the Marquette-Ishpeming route would be reduced to one hour. Capital improvements under this alternative would be the purchase of five 31-35 passenger buses, seven bus shelters, and 50 bus stop signs. In addition, a 10-15 passenger van with hoist would be purchased for the handicapped and elderly. This latter vehicle has already been purchased and is now in operation. Three buses, the shelters, and bus stop signs are expected within the next year. The additional two buses, necessary to reduce headways, are not expected in the immediate future.

Other Urban Area Systems

A number of other systems provide public transportation service within the urban areas. The Marquette Transit Authority operates an eleven passenger van to transport senior citizens, handicapped, and the general public on a priority basis in the respective order listed. MTA also operates a ten passenger van with a hoist for handicapped, elderly, and the general public on a priority basis. These vans are demand-responsive, or users call in advance to make arrangements for their pick-up and delivery.

The Ishpeming Transit Authority provides for transportation of senior citizens with two 18 passenger and one 23 passenger bus (one is reserved as a standby) on a demand-responsive basis. The service is provided to the Cities of Ishpeming and Negaunee, along with adjacent communities and townships. In addition to senior citizens, the service is also available to the general public. Service is provided seven days a week with reduced hours on Sundays. The fare schedule is $.50 with one-half fare for the elderly. In addition to these services, a form of urban public transportation is provided by County Commissions on Aging and Community Action Agencies. These services, albeit urban, are also rural in nature and will be handled in the rural transportation section.

Taxicab Systems

Taxis have long been a major form of fast, flexible public transportation in larger urban areas. Convenience is a cab's major benefit and they can be useful for rural people who are visiting an urban area as well. In many cases, taxicabs are the most accessible form of transportation for elderly and handicapped. However, it is one of the most expensive alternatives, which makes it unfeasible for many elderly and handicapped persons to use the service.

Figure 27

CITY OF MARQUETTE BUS ROUTE

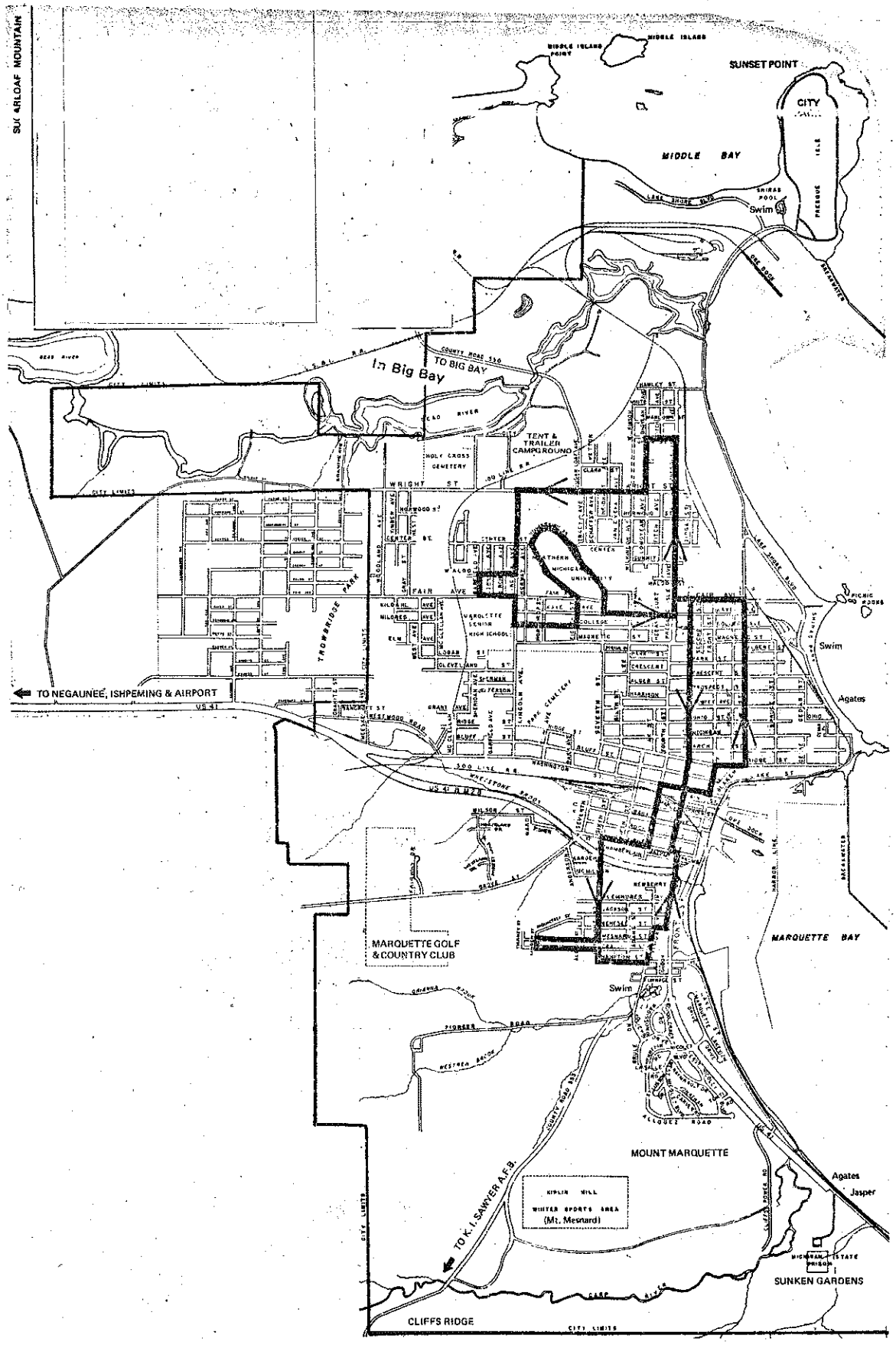
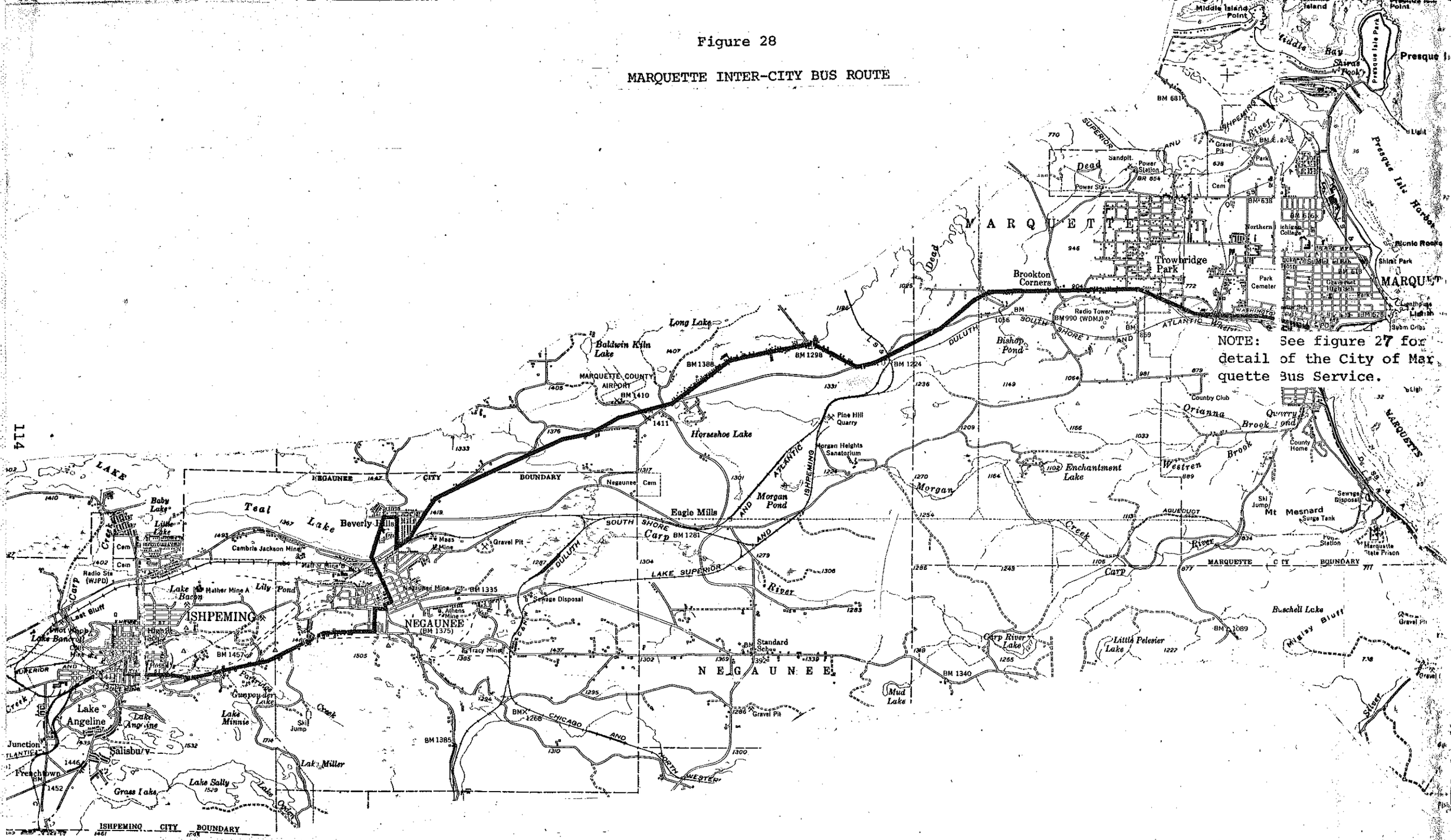


Figure 28

MARQUETTE INTER-CITY BUS ROUTE



NOTE: See figure 27 for detail of the City of Marquette Bus Service.

Table 51

Marquette Transit Authority
Operating Statistics

	Marquette				Ishpeming				Total System			
	Hours of Operation	Miles of Operation	Number of Passengers	Average Passenger/ Hour	Hours of Service	Miles of Operation	Number of Passengers	Average Passenger/ Hour	Hours of Operation	Miles of Operation	Number of Passengers	Average Passenger/ Hour
1974												
Jan. - March	436.5	4,583.5	6,543	15.0	420.5	7,148	6,312	15.0	857	11,731.5	12,855	15.0
April - June	934.5	9,812	9,061	9.6	909.5	15,461.5	9,693	10.6	1,844	25,273.5	18,754	10.0
July - Sept.	936	9,828	8,721	9.3	911.5	15,495.0	11,229	12.3	1,847.5	25,323	19,950	10.8
Oct. - Dec.	934	9,807	12,102	12.9	911.5	15,495	11,920	13.0	1,845.5	25,302	24,022	13.0
Total	3,241	34,030.5	36,427	11.7	3,153	53,599.5	39,154	12.7	6,394	87,630	75,581	12.2
1975												
Jan. - March	919.5	9,702	13,724	14.9	888.5	15,956	11,860	13.3	1,808	25,658	25,584	14.1
April - June	910	9,555	11,316	12.4	874.0	15,732	11,750	13.4	1,784	25,287	23,066	12.9
July - Sept.	898	9,429	10,606	11.8	859.5	15,471	11,098	12.9	1,757.5	24,900	21,704	12.3
Oct. - Dec.	896	8,925	12,312	13.7	859.5	15,471	11,463	13.3	1,755.5	24,879	23,775	13.5
Total	3,623.5	37,611	47,958	13.2	3,481.5	62,630	46,171	13.3	7,105	100,724	94,129	13.2
1976												
Jan. - March	897	9,303	16,614	18.5	859.5	15,300	11,778	13.7	1,756.5	24,603	28,392	16.2
April - June	898	9,429	12,586	14.0	859.5	15,471	10,686	12.4	1,757.5	24,900	23,272	13.2
July - Sept.	898	11,029	10,872	12.1	856.5	15,417	9,800	11.4	1,754.5	26,446	20,672	11.8
Oct. - Dec.	900	9,450	12,633	14.0	860.5	15,309	10,235	11.9	1,760.5	24,759	22,868	13.0
Total	3,593	39,211	52,705	14.7	3,436	61,497	42,499	12.4	7,029	100,708	95,204	13.5

Source: Marquette Transit Authority.

A recent telephone survey in the CUPPAD Region indicated taxi service exists in the communities of Escanaba, Iron Mountain, Marquette, and Menominee. All taxi systems in the Region are privately owned and financially self-supporting. No public monies are used to help keep taxi systems operating. Fares are generally collected on a zonal basis (with the exception of Marquette) with 100% of the costs borne by the rider. However, this is not always the case. In the City of Marinette, Wisconsin, arrangements have been made by the City Council in cooperation with the operating taxi system to allow elderly and handicapped citizens door-to-door transportation service at a reduced rate. The additional cost is borne by the city as an aid to elderly transportation needs. This form of indirect subsidy has provided a segment of the cities population a viable alternative which was previously unavailable.

Taxis within the Region are recognized for their contribution as a transportation mode serving a number of special activities. In addition to providing regular daily service, they provide special transportation services such as emergency trips, airport taxi service, and special delivery for area industries and businesses.

RURAL TRANSPORTATION

Most of the rural transportation services available in the Region are provided by human service agencies. In addition to these services, the Ishpeming Transit Authority provides transportation services to selective townships surrounding the Cities of Ishpeming and Negaunee. These townships include Ishpeming, Ely, Humboldt, Michigamme, Republic, and Champion. Two buses are used, with another as a standby, in serving the general public. The primary users are elderly or senior citizens.

K.I. Sawyer Air Force Base has a shuttle service between the Base and Marquette. Service is provided daily, on holidays, and weekends and is restricted to use by military personnel and their dependents. There are three runs a day and the service is provided to the bus terminal, airport, the mall, and the armory in Marquette.

Forsyth Township also has a bus to transport township residents, however, the only ones to use it are the elderly. Service is provided to everyone in the township, with trips taken to the City of Marquette periodically.

Most of the special transportation services are provided by human service agencies (i.e., Commissions on Aging, Community Action Agencies, Social Service Agencies, etc.). These agencies often must develop a transportation capability to adequately provide their own services. This is accomplished in several ways, such as: 1) purchasing and maintaining their own vehicles; 2) contracting with another operator on a sort of charter basis; or 3) relying on their own personnel or volunteer drivers and vehicles. The following list is an example of special transportation activities which are provided by human service agencies:

Senior citizen center activities
Nutrition center meal programs
Medicaid trips to clinics and doctors
Mentally and physically handicapped to sheltered workshops and work activity centers.
Day care centers
Vocational Rehabilitation
Head Start
Crippled children to school and recreation

In the CUPPAD Region, these services are provided by County Commissions on Aging, Community Action Agencies, County Department of Social Services, School Districts, and Rehabilitation Centers.

County Commissions on Aging

Two counties in the Central Region, Alger and Schoolcraft, have established specialized transportation through their County Commissions on Aging. These Commissions provide transportation services to the elderly and handicapped in their respective counties. Both services are on a demand-responsive basis.

Alger County Commission on Aging transports their elderly and handicapped with one 12 passenger van. Service began in June, 1976, with the Michigan Department of State Highways and Transportation providing the van and $10,000 first year operating expense through their Elderly and Handicapped (E&H) Program. Ridership has been increasing with about 250 different elderly and handicapped using the system. Monthly ridership figures range from 350 to 450 persons on an average. The 450 persons transported represents about the maximum number of riders that can use the system in a given month. This system has a centralized dispatch in Munising and two-way radio in the van to aid in the pick-up and delivery of patrons.

Schoolcraft County Commission on Aging provides elderly and handicapped transportation services with three vans - two in Manistique and one in Germfask - in serving the whole county. Two of the vans were funded through the Urban Mass Transportation Administration's (16)(b)(2) Program and the other is funded through the E and H Program of the MDSHT. Ridership for the 1976 year almost reached 15,000 persons transported. This operation has been in existence much longer than Alger County's and is one of the more successful E and H Programs in the state.

One method of improving the efficiency and effectiveness of Schoolcraft's public transportation program would be for the installation of two-way radios in the vans with a centralized dispatcher. This improvement would reduce the duplicative runs necessary and consequently increase the passengers handled per mile.

Community Action Agencies

There are three community action agencies located in the Central Region: the Menominee-Delta-Schoolcraft CAA; the Marquette-Alger Community Action Board; and the Dickinson-Iron CAA. These agencies provide many diverse human service programs of which transportation is an integral part.

One of the major forms of public transportation available through community action agencies is for senior citizens. The Menominee-Delta-Schoolcraft CAA uses eight vans in providing transportation services to the elderly in Menominee and Delta Counties (Schoolcraft has their own senior citizen transportation program). These vehicles are operated out of the senior citizen centers in the two counties. The Dickinson-Iron CAA operates four vans in Dickinson County for elderly transportation. There is not a senior citizen transportation program within the Alger-Marquette CAB.

Another program administered by CAA's requiring transportation is the Head Start Program. There are 12 vans used in the Region for pre-school education for children whose parents meet income guidelines. Classes meet at various sites and a hot nutrition meal at noon is provided.

There are many other programs administered by the CAA's requiring a form of transportation. For the most part, the individual clients or volunteer drivers provide the transportation needed, using their own vehicles.

Social Service Agencies and Rehabilitation Centers also provide a vital transportation service to eligible clientele. These organizations either rely on their staff, volunteer drivers, or contract with a private transportation provider in meeting their transportation needs.

School Bus Systems

Many rural and urban school age children rely on school buses for their daily transportation needs. Consolidation of small rural schools into larger school systems have increased the students dependence upon school bus systems. Also, extracurricular activities account for a large number of school related trips such as musical concerts, sports, and special events. Within the four school districts of the Central Region in 1975-76, there are almost 40,000 students, of which nearly 60% depended upon school districts for their transportation needs. These school districts use approximately 300 buses in traveling over 19,000 miles daily.

Table 52

School District Transportation Characteristics

1975-76

School District	Student Membership	No. of Students Transported	No. of Buses	Daily Miles
Delta-Schoolcraft Intermediate	11,861	6,865	78	7,010
Dickinson-Iron Intermediate*	5,356	2,717	31	1,917
Marquette-Alger Intermediate	17,147	10,392	133	7,377
Menominee Area Intermediate	5,493	3,086	51	2,812
Region	39,857	23,060	293	19,116

*These figures are for Dickinson County only.

Source: The Primer Data Report, 1976-77. Marquette-Alger Intermediate School District coordinated by Frank W. Mead.

Transportation expenditures for regional school districts totaled nearly $3 million in 1975-76. This represents almost six percent of the four school districts total expenditures for education. Costs per student for those transported was highest in the Delta-Schoolcraft Intermediate School District and lowest in the Dickinson-Iron ISD.

Table 53

School District Transportation Expenses

1975-76

School District	Transp. Expense	Cost of Transp. per student	Cost of Transp./ student transp.	% of Expend. for Transp.
Delta-Schoolcraft Intermediate	964,224	81.30	140.45	7.15
Dickinson-Iron Intermediate*	275,468	51.43	101.39	4.0
Marquette-Alger Intermediate	1,234,696	72.01	118.81	5.6
Menominee Area Intermediate	422,180	76.86	136.80	6.7
Region	2,896,568	72.67	125.61	5.9

*These figures are for Dickinson County only.

Source: The Primer.

INTERCITY PUBLIC TRANSPORTATION

Public intercity bus service within the Region is provided by four privately owned and operated bus systems, namely Greyhound Lines, Wisconsin-Michigan Coach Lines, Huron Bay Transit, and the Marquette Bus Service. These services are approved through the regulating agency of the Michigan Public Service Commission and the Interstate Commerce Commission.

Greyhound Lines has the most extensive intercity bus system in the Upper Peninsula. There are primarily three routes in the Central Region; two east-west, and one north-south. The two east-west routes are dubbed the "Pathfinder" and the "Copper Country". The Pathfinder travels through Iron Mountain, Escanaba, Gladstone, and Manistique in providing connections east to Detroit and west to Duluth and the Twin Cities via US-2. The Copper Country travels along M-28/US-41 serving Munising and Marquette, among other communities, with connections to Houghton and Detroit.

The Timberliner, a north-south route, is the most successful Greyhound line in the Region. Passengers have the option of three departures from Marquette, Escanaba, and Menominee to Green Bay and points south and likewise three trips north daily.

Wisconsin-Michigan Coach Lines provide one trip south and north daily out of Iron Mountain. The Huron Bay Transit Company provides intercity public transportation primarily serving the Tilden and Republic Mines. This service is provided seven days a week and accommodates all three shifts during the day. Four buses are used, one as a standby, in serving Marquette and Baraga Counties. The Marquette Bus Service has a contract with the Marquette Transit Authority to provide intercity bus transportation between Ishpeming and Marquette. In addition, the Marquette Bus Service and Huron Bay Transit Company have charter service available to any group of individuals.

Together these services provide an interconnecting system of intercity bus transportation through the Upper Peninsula. Greyhound operates the three routes under a two-year contract with the Michigan Department of State Highways and Transportation. The state provides financial assistance for these lines as a part of a statewide program to supplement existing intercity services and to encourage new services where public transportation is limited. This assistance is made available through Act 51 of P.A. of 1951 and Act 295 of P.A. of 1976.

Car Pooling

Car pooling has taken place for many years and is a common form of intercity transportation. Car pooling is when two or more individuals get together to make arrangements for transportation from a common origin to a destination. Pooling programs have succeeded in large and small communities and among white and blue collar workers. They are increasingly effective as the length of the commuter trip increases.

It is not uncommon for Central Region residents to travel in excess of 50 miles in commuting to work, especially employees working in the mines. A park-and-ride program can be seen in the Region, however, it is very informalized. This is when individuals travel to a given location close to their origin and match up with other employees traveling to a common destination. An example of this park-and-ride transit can be seen at the intersections of US-41 and US-2 near Rapid River. There are numerous locations scattered throughout the Region where this is evident. Efforts can be made by both employers and employees in getting a car pooling program established which is much more formalized. This type of program has enormous potential for savings in fuel and costs for motorists who use it.

FEDERAL AND STATE FUNDING SOURCES

The principal sources of federal public transportation funding assistance are the Federal Highway Administration (FHwA) and the Urban Mass Transportation Administration (UMTA). Other federal funding sources are the Department of Health, Education and Welfare (HEW); Community Services Administration; among others who provide for specialized public transportation needs.

UMTA is the principal funding source. The Mass Transportation Assistance Act of 1974, authorized a total of $11.8 billion, of which only $500 million is used for nonurbanized or rural areas during the six-year period from 1975-1980. Such nonurbanized areas include cities, towns, and rural places with less than 50,000 population. Funds are available for planning and program development activities, demonstration activities, vehicle acquisition, and other capital investments in support of general or special transit services, including those services for elderly, handicapped, or transit dependent persons. The one-half billion is for capital assistance only, not operating expenses. MDSHT administers this program in the State of Michigan.

UMTA is not the only federal funding source which finds its way into rural areas. The Older American's Act, Title XX of the Social Security Act, CETA, and the Economic Opportunity Act have provided funds aimed at reducing isolation and facilitating access to service areas from rural places.

In virtually all instances, each of these programs is administered by a separate agency. Each agency in using these funds develops a transportation capability to meet the needs of their own clientele. On occasion, two programs may share a vehicle, however, any significant coordination between agencies is extremely rare. Although federal policy seems to favor coordinated transportation systems, federal program guidelines make it very difficult to bring about.

Michigan Interagency Transportation Coordinating Council has conducted an analysis of the state's public transportation expenditures. It has estimated that seven state departments will spend approximately $171 million in federal and state funds for transportation during fiscal 1976 (Table 54).

Act 327 of the Public Acts of 1972 provided for the implementation of Dial-A-Ride Transportation systems in Michigan's small/medium sized communities and rural counties. The one-half cent of the nine cent gas tax provides $22 million for public transportation purposes. These funds are used in a variety of ways. Half of the $22 million is used for operating expenses being dispersed on a formula basis - half on population and half on vehicle miles traveled. Although the state funds DART projects at 100% of capital and operating costs the first year, the local community must be actively involved from the start. A resolution of intent to continue DART if successful beyond the first year from the city commission or board of county commissioners is required, as well as a $1,000 good faith contribution.

DART systems are eligible at the end of the first year for operating funds of 33% by the state. Usually fare box revenue makes up about 20-30% and the local governmental unit picks up the remaining 37-47%.

A few of the applicable programs administered by the MDSHT that could be used in our Region include:

The Bus Capital Program is designed to provide state financial assistance for the acquisition of bus-related equipment and facilities to be used in providing local transit services.

The Demonstration and Development Program provides grants for either demonstration projects, such as urban core improvements, passenger information systems, vehicle access improvements and related feasibility analysis work, or for management information projects to apply and demonstrate new ideas and concepts designed to improve the efficiency and effectiveness of public transportation facilities and services in Michigan.

The Formula Operating Assistance Program consists of state grants for the provision of public transportation services as outlined by Section 10e(1)(b) of Act 51. Annually, the requirements of communities for formula operating assistance are determined, and legislative appropriations are requested. Formula operating assistance is distributed quarterly on the basis of actual vehicle miles of service provided and the population of the service area.

The Small Vehicle Program provides for new, improved, continued or expanded public transportation services using a variety of operating modes. This program will finance initial capital equipment acquisitions and provides first year operating costs for such operating modes as dial-a-ride, elderly and handicapped transit, or modified line-haul.

The Intercity Bus Operating Assistance Program provides funds for actual operating costs for expanded or improved service to existing intercity bus corridors or new service in corridors or between communities where no similar service has been previously provided.

The Intercity Passenger Terminal Facilities Program provides funds to develop intercity terminal facilities and improvements designed to provide better services to intercity rail and bus passengers and to integrate where possible all available public transportation services.

Table 54

MICHIGAN PUBLIC TRANSPORTATION EXPENDITURES

FISCAL YEAR 1976

		FEDERAL	STATE	TOTAL
Department of Social Service				
Adult Conveyance (Title XX)		$ 50,250	$ 16,750	$ 67,000
Youth Conveyance (Title XX)		46,500	15,500	62,000
Payments to Volunteers (Title XX)		637,500	212,500	850,000
Early Health Screening (Title XIX)		30,000	30,000	60,000
Sheltered Workshops (Title XX)		926,175	308,725	1,234,900
General Assistance			1,500,000	1,500,000
Medical Assistance (Title XIX)		1,005,925	1,005,925	2,011,850
Assistance Payments - ADC (Title IVA)[1/]				
	Subtotal	$ 2,696,350	$ 3,089,400	$ 5,785,750
Department of Education				
Regular Education		$	$ 52,100,000	$ 52,100,000
Special Education			9,000,000	9,000,000
Contractual Services			1,000,000	1,000,000
Vocational Education			3,200,000	3,200,000
In City Services			5,200,000	5,200,000
Vocational Rehabilitation (SST)		54,263		54,263
Vocational Rehabilitation (SSTF)		143,149		143,149
Vocational Rehabilitation (Rehabilitation Act 1973)		888,256	222,064	1,110,320
	Subtotal	$ 1,085,668	$ 70,722,064	$ 71,807,732
Department of Public Health				
Crippled Children (Title V, Maternal & Child Health and Crippled Children Services, and Title XIX of the Social Security Act)		$ 124,200	$ 124,200	$ 248,400
Detroit Maternal and Infant Care Program (Title V, Maternal & Child Health and Crippled Children Services, and Title XIX of the Social Security Act)		276	1,934	2,210
Developmental Disabilities (P.L. 91-517 -- Developmental Disabilities Services and Facilities Construction Act		38,117	52,750	90,867
	Subtotal	$ 162,593	$ 178,884	$ 341,477
Department of Mental Health[2/]				
Community Mental Health Services			$ 1,023,530	$ 1,023,530
State Facilities			1,187,550	1,187,550
	Subtotal		$ 2,211,080	$ 2,211,080
Department of Labor				
Community Action Agencies		$ 6,000	$ 41,119	$ 47,119
Head Start		134,589	700	135,289
	Subtotal	$ 140,589	$ 41,819	$ 182,408
Office of Services to the Aging				
State and Community Program (Title III, Older Americans Act)		$ 381,898		$ 381,898
Nutrition Program (Title VII)		135,208		135,208
	Subtotal	$ 517,106		$ 517,106
Department of State Highways and Transportation				
Bus Capital		$16,064,356	$ 5,935,635	$ 22,000,150
Demonstration		347,280	405,000	752,280
DART Continuation			427,088	427,088
DART Expansion			1,985,540	1,985,540
Elderly and Handicapped (UMTA - 16(b)(2))		$72,000	563,000	1,135,000
Formula Operating Assistance		22,957,000[3/]	10,906,676	33,863,676
Intercity Bus			631,209	631,209
Intracity Transit Improvements			1,275,000	1,275,000
Rail[4/]		6,738,934	7,697,758	14,436,692
SEMTA Action Program		2,000,000	9,200,000	11,200,000
100% State Programs			659,000	659,000
Special Programs			126,901	126,901
Water Transport[4/]		1,482,000	202,000	1,684,000
	Subtotal	$50,161,770	$ 40,014,807	$ 90,176,577
	TOTAL	$54,764,076	$116,258,054	$171,022,130

1/ Transportation expenses are budgeted in individual ADC grants to clients but no estimate is presently available.

2/ Dollars expended specifically exclude any reimbursed funds provided by other non-mental health state or local agencies, and thus do not reflect the total amount of dollars expended for transportation services to mental health centers. Estimates include state and local funding.

3/ The total state apportionment of funds for fiscal year 1976 under Section 5 of the National Mass Transportation Assistance Act of 1975 is $22,957,000. The funds can be used for capital and/or operating assistance in urbanized areas.

4/ Passenger service related projects.

Note: The information in this table is based upon available data or estimates provided by each state department.

Source: Mass Transportation Planning Section, Michigan Department of State Highways and Transportation

ISSUES IN PUBLIC TRANSPORTATION

The problems of mobility in the Central Region are real and obvious, as there are vast distances between shopping and medical centers and the rural areas. It is evident that there is a large percent of people in the "transportation disadvantaged" category in the Region. This group and those who do not have access to an auto or one-car families, may find a need for alternative transportation. This need for alternative transportation was brought out in a 1976 Michigan Public Opinion Survey undertaken to determine how Michigan residents feel about a variety of community issues.* This survey was conducted in each of the 14 Planning and Development Regions within the state. Central Region resident responses to 55 areas of general concern revealed that public transportation to other communities and public transportation within the community were the fifth and seventh most important areas of concern to the Region.

The availability of public transportation is very fragmented and is provided, for the most part, by human service type agencies. In some areas there is an overlapping of transportation services, while in other areas it is virtually nonexistent (Figure 29). An obvious duplication of service results where there are so many separate federal programs under which financial assistance can be obtained. This myriad of federal program assistance is one of the factors which has contributed to the lack of coordination in program development.

A study is warranted to examine who is providing public transportation services in the Region, their funding, where gaps exist, and how the service could be better provided through coordination.

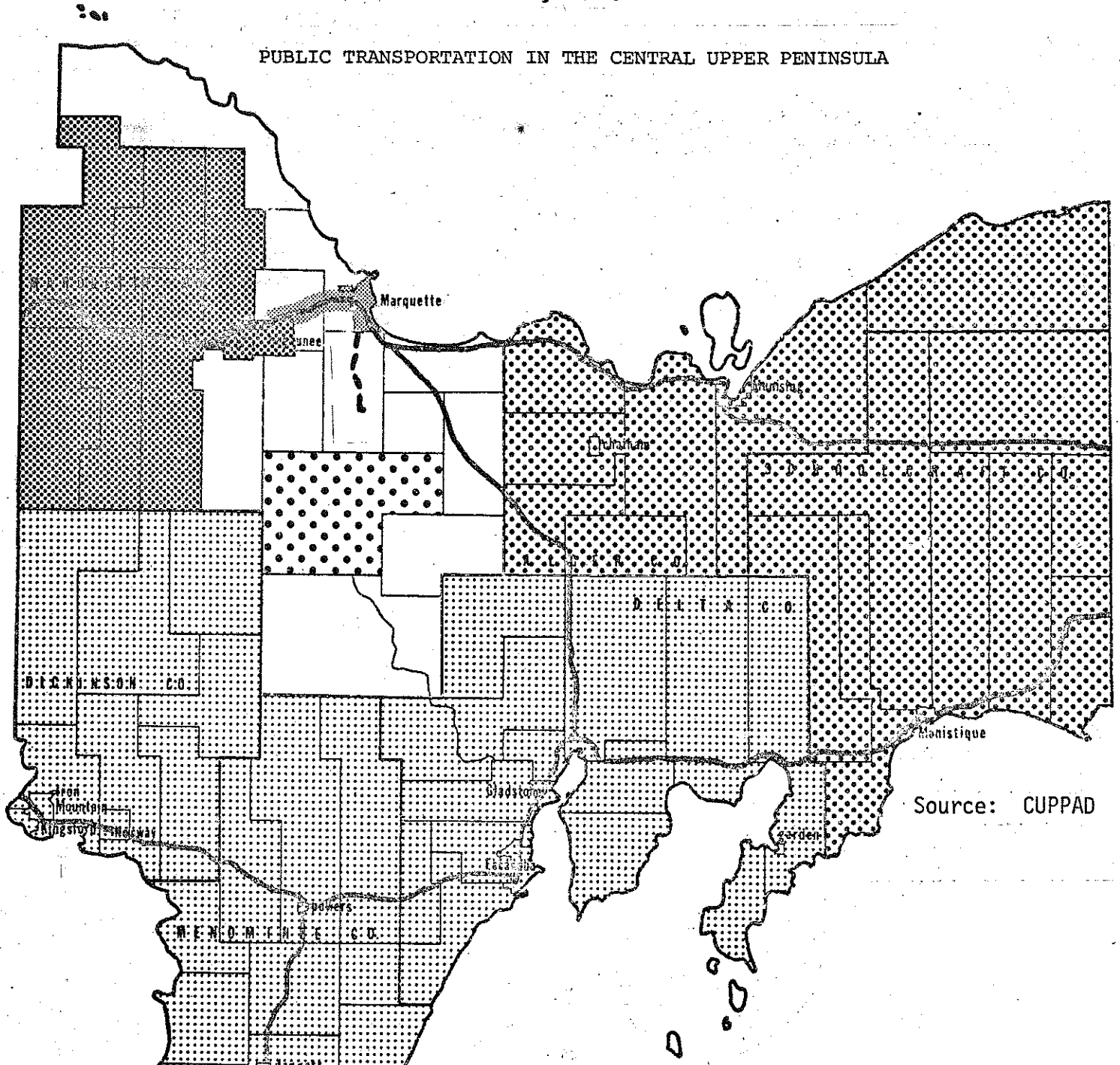
Innovative solutions are needed to public transportation problems in the Upper Peninsula due to the varying nature of the problem. Some specific issues related to public transit are:

- There is no public transit available in many areas of the Region. The rural nature of the area, coupled with the high percentage of persons potentially in need of service, indicates a need for provisions of some sort of public transit.
- Long trip lengths and low population densities force higher per passenger transit costs.
- Special transit services are now provided in a rather fragmented fashion. Coordination of existing service many distribute services more evenly.
- No enabling legislation exists to create county-wide or regional transportation authorities necessary for provision of high level coordinated service.
- "Prepackaged" transit programs available from the state lack flexibility needed to adjust to diverse needs of various communities.

*Community Needs and Priorities as revealed by the Michigan Public Opinion Survey for the Central Upper Peninsula. Department of Resource Development, 1976.

Figure 29

PUBLIC TRANSPORTATION IN THE CENTRAL UPPER PENINSULA



Source: CUPPAD

PROVIDER OF PUBLIC TRANSIT	CLIENTELE SERVED
Marquette Transit Authority	General Public
Community Action Agency	Elderly and Handicappe
County Commissions on Aging	Elderly and Handicapped
Ishpeming Transit Authority	General Public
Forsyth Township	General Public
No Bus Service	
Greyhound Intercity Bus Service	General Public
K.I. Sawyer Bus Shuttle	Military Personnel

CENTRAL UPPER PENINSULA PLANNING AND DEVELOPMENT REGIONAL COMMISSION

CHAPTER VI

WATER TRANSPORTATION

The Great Lakes are the largest body of fresh water (95,000 square miles) in the world. These lakes, their connecting channels, and the St. Lawrence Seaway form a 2,300 mile waterway stretching from the heart of the North American continent to the Atlantic Ocean. The Great Lakes have acted both as a hindrance to overland transportation and as a vital link in our transportation system. The availability of low-cost waterborne transportation, in conjunction with rich natural resources of the area was a primary factor in the initial growth of the Region. Commercial navigation on the Great Lakes dates back to the 17th century. Because highways and railroads were not developed, water transport provided the only means of getting products to the eastern markets. From the viewpoint of economic development, the dominant characteristics of the Great Lakes is the location within the highly industrialized and well populated north central United States.

NATURAL RESOURCES

The abundance of iron ore and limestone near or on the shore of the upper lakes and the high quality of coal within 200 miles of the southern lake ports constitutes an incomparable resource combination. The proximity of these raw materials to the lakes and and resulting potential for their low-cost waterborne transportation to steel mills is a circumstance of paramount economic importance.

The major mineral contributor to the economic life of the Central Upper Peninsula has been the iron ore industry. There are two principal areas where iron ore is produced in the Central Region: the Marquette Range and the Dickinson Range. The vast majority of iron ore produced originates in the Marquette Range. A summary of iron ore production from Michigan iron mines is portrayed in the following table.

Table 55

Summary of Iron Ore Production

1971-76

	1971	1972	1973	1974	1975	1976
Tons Produced	12,152,358	11,841,880	11,513,381	11,513,077	15,032,865	17,023,658
Tons Shipped	12,164,964	11,828,149	12,314,156	11,530,796	14,378,227	15,687,910

Source: General Statistics Covering Production of Michigan Iron Mines, Department of Natural Resources, 1971-1976.

As can be seen in the preceeding table, significant increases in iron ore production has occurred over the last two years. These increases are attributed to mine expansion and still further expansion of the mining industry is anticipated for the future.

The majority of the iron ore flows to the Detroit area and ports on southern Lake Michigan and Lake Erie to be used in the steel making process. The bulk of the iron ore leaves the Region through the ports of Escanaba and Presque Isle in Marquette.

The State of Michigan has historically been and is forecasted to be the principal source of limestone entering commerce on the Great Lakes. Practically all of the stone is shipped from private ports on Lake Huron and the northern portion of Lake Michigan. Limestone is a low-value commodity, with an inability to support much transportation costs. Fortunately, limestone is not only produced at lakeside, it is generally

consumed at or near lakeside too, which minimizes the cost of getting it to and from lake vessels. Most of the limestone movement is to the steel producing areas. Port Inland in the Central Region is a major limestone shipping harbor.

Coal is another important item of commerce shipped on the Great Lakes. Coal is shipped predominantly from ports on Lake Erie and southern Lake Michigan. Destinations for coal are numerous and generally are areas where electric utilities and the iron and steel industries are predominant. Often times instead of having an empty backhaul, the ship will move in ballast to a port where they load iron ore or limestone and then sail to its port of destination. This enables the vessel to sail with as high a load factor as possible, thus, reducing the overall transportation cost.

The principal items of commerce shipped on the Great Lakes and their 1974 tonnages are shown below:

Table 56

Commerce Shipped on the Great Lakes: 1974

Item	1974 Traffic (Million Tons)
Iron Ore	90
Coal	35
Limestone	36
Grain	9
Other	37
Total	207

Estimates of potential Great Lakes traffic in iron ore, bituminous coal, and limestone were made for the 50-year period, 1970 to 2020. These three commodities comprise approximately 80 to 85 percent of the total tonnage handled at U.S. Great Lakes ports. Traffic estimates are based on the following assumptions: (1) Improvements to channels, locks, and harbors will be made during the project period if and when they are required to accommodate the projected traffic, but such improvements will not include an increase in the present controlling depth, which is 27 feet. (2) There will be no radical changes in the present general pattern of traffic. (3) By 1995, all harbors shipping or receiving a significant volume of one or more of the three bulk commodities analyzed will have been deepened to 27 feet. (4) By 1995, additional 1,200 by 110 foot locks will be in operation on the Seaway and Welland Canal.

In developing the shipment estimates for each of the three commodities, consideration was given to: (1) past and anticipated demand requirements of consuming industries in areas having access to Great Lakes transportation, (2) the present and future production capability of suppliers, (3) resource availability in the Great Lakes Region. Projected waterborne commerce for the three commodities is shown in the following table.

Table 57

Projected Waterborne Commerce for Great Lakes - St. Lawrence System - Selected Commodities (Millions of Net Tons)*

Commodity	1980	1995	2000	2020
Iron Ore	123.8	153.7	164.0	221.0
Coal	62.0	74.0	74.0	74.0
Limestone	46.4	63.3	70.0	103.8
Total	232.2	291.0	308.0	398.8

*High, medium, and low projections were made for these commodities, however, just the medium figures are portrayed here.

Source: Commercial Navigation, U.S. Department of the Army, Corps of Engineers, 1975.

COMMERCIAL NAVIGATION IN THE CENTRAL REGION

Vast amounts of the Region's mineral production is exported by commercial shipping. Large volume bulk cargos are best served by this low-cost mode. There are eleven commercial harbors in the Central Region as defined by the Army Corps of Engineers, as shown in Figure 30. These include harbors used only for commercial fishing. Six of the harbors are deep-draft and handle significant amounts of cargo, as the table below illustrates. In addition to commercial ports, many of the harbors are used for recreational purposes.

Table 58

Harbors in the Central U.P.*

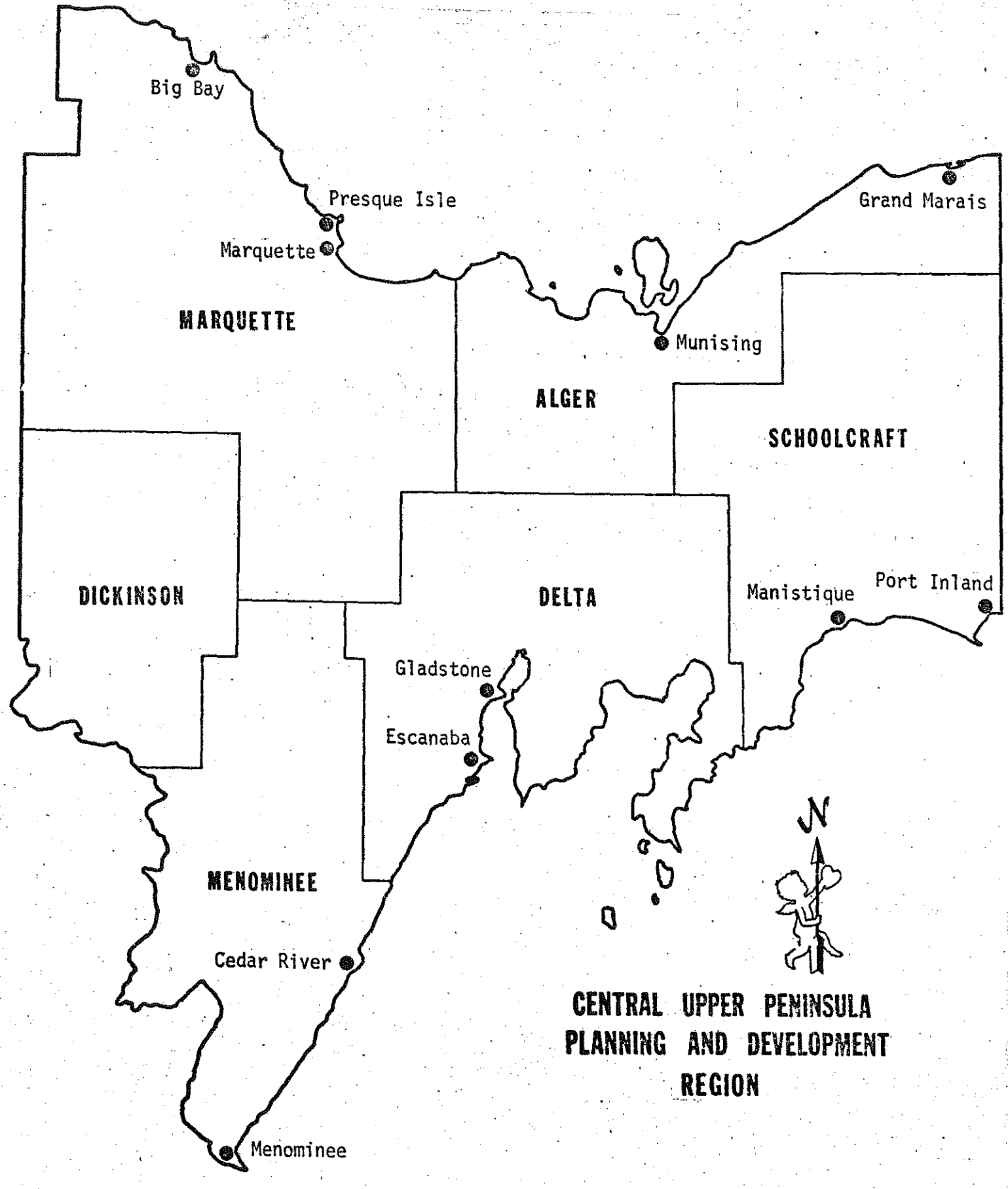
Name	Vessel Draft Deepest 1974 Use	Freight Traffic 1974 (short ton)
Presque Isle	28 feet	3,118,370
Marquette	27 feet	1,036,070
Escanaba	29 feet	9,685,677
Gladstone	22 feet	230,924
Port Inland	27 feet	4,324,129
Menominee	21 feet	152,398
Cedar River	5 feet	1,897
Manistique	5 feet	93
Grand Marais	5 feet	12
Munising	No commerce reported in 1974	
Big Bay	No commerce reported in 1974	
	Total	18,549,570

*Waterborne Commerce of the United States, Army Corps of Engineers.

Escanaba and Port Inland are private harbors, the rest are federal project harbors. All are commercially operated and very few, if any, handle a general commodity type cargo. Harbors do not have the docks or loading equipment available for handling of small cargos. The major export is iron concentrates mined in the Marquette and Menominee ranges. Imports consist primarily of coal and fuel oil. Table 59 gives a breakdown by commodity shipped and received by harbors in the Central Region.

Figure 30

WATERPORTS IN THE CENTRAL UPPER PENINSULA



Source: Army Corps of Engineers

Table 59

Freight Traffic by Type of Commodity: 1974
(Short tons)

Harbor	Commodity		Tons
Presque Isle	Iron ore and concentrates (S)		3,074,683
	Gasoline (R)		18,883
	Distillate Fuel Oil (R)		24,804
		Total	3,118,370
Marquette	Coal and lignite (R)		909,581
	Slag (R)		99,521
	Distillate Fuel Oil (R)		14,518
	Gasoline (R)		12,311
	Fresh Fish (S)		139
		Total	1,036,070
Escanaba	Iron ore and concentrates (S)		9,220,829
	Coal and lignite (R)		231,683
	Gasoline (R)		99,658
	Distillate Fuel Oil (R)		118,463
	Kerosene (R)		14,882
	Fresh Fish (S)		162
		Total	9,685,677
Gladstone	Gasoline (R)		116,381
	Distillate Fuel Oil (R)		110,533
	Kerosene (R)		4,009
	Fresh Fish (S)		1
		Total	230,924
Port Inland	Limestone (S)		4,303,258
	Iron ore and concentrates (S)		12,620
	Coke, pet asphalts, solvents (R)		8,251
		Total	4,324,129
Menominee	Pulp (S)		60,042
	Coal and lignite (R)		49,822
	Nonmetallic minerals (R)		40,926
	Fresh Fish (S)		1,608
		Total	152,398
Cedar River	Fresh Fish (S)		1,897
Manistique	Fresh Fish (S)		93
Grand Marais	Fresh Fish (S)		12

(S) Shipped -- (R) Received

Source: Waterborne Commerce of the United States, Army Corps of Engineers.

Bulk commodity projections have been made at selected harbors in the Central Upper Peninsula for 1980, as shown in Table 60. These projections were made in the early 1970's, and have become somewhat outdated. The most notable changes have occurred at the Presque Isle and Marquette harbors. The Marquette Coal Dock has been closed and the Presque Isle Self-Unloading Dock has been opened to substantially switch the inbound movement of coal from the former to the latter. With the expansions expected in the mining industry, the amount of coal handled at Presque Isle, in 1980, should be much greater than what was portrayed for Marquette in the same time period. In addition to increased coal usage, the mine expansions should result in greater exports of iron ore concentrates at Presque Isle and Escanaba in 1980.

Table 60

Actual and Projected Bulk Commodity Movements
for Selected Harbors in the Central Region
(thousands of short tons)

	Actual		Projected
Harbor & Commodity	1970	1974	1980
Presqu Isle	3,879	3,118	4,549
Iron Ore	3,816	3,075	4,465
Major Petro Products	63	43	84
Marquette	1,446	1,036	1,668
Iron Ore	769	---	900
Coal	629	910	704
Major Petro Products	48	27	64
Other	---	99	---
Escanaba	10,354	9,685	12,137
Iron Ore	9,864	9,221	11,541
Coal	275	232	308
Major Petro Products	215	233	288
Gladstone	262	231	348
Major Petro Products	253	231	339
Coal	9	---	9
Port Inland	4,881	4,324	6,443
Limestone	4,881	4,303	6,443
Other	---	21	---
Menominee	248	152	288
Coal	106	50	119
Nonmetallic Minerals	55	41	73
Wood and Forest Products	87	60	96

Source: Waterborne Commerce of the U.S. Corps of Engineers. Origin - Destination Study of Bulk Commodity Movement - Upper Great Lakes; Corps of Engineers.

Other changes in water transportation that can be expected to occur in the future are a de-emphasis in use of eastern coal to be substituted by increased use of western coal. This switch can be attributed to the passage of the 1970 Clean Air Act. Eastern coal is high in sulfur content, while western coal is low in sulfur. Western coal would be unit trained to Duluth and transferred to bulk carrier for distribution. This movement of western coal down-lake may disrupt the iron ore-limestone-coal triangular movement and result in less back hauls for lake carriers.

As mining expansions occur, a corresponding increase will be needed at port facilities to handle this additional output. In addition to mining expansions in the U.P., a huge copper and zinc find has been announced in north central Wisconsin which may have an impact on Central Region ports. The harbor facilities at Escanaba and Menominee are the closest water ports to the abundant copper and zinc area near Crandon, Wisconsin. At this time no permanent plans have been announced by the mining company, however, the Central U.P. has not been ruled out. This movement, if it were to materialize, would be by rail to the harbor and then transferred to bulk carrier.

Multimodal coordination is very important to the shipping industry. Complementary services are needed in getting the commodity to harbor and in distributing the commodity to the hinterland. The railroads provide the most significant complementary service to harbor facilities. Rail lines, for example, pickup huge quantities of iron ore at inland locations for movement to lake loading ports at Presque Isle and Escanaba. This is also true of coal. Before coal is shipped via water, usually trains carry it from the mines to ports for delivery.

Motor carriers serving the Region also complement water transportation. For example, the process of distribution of distillate oil, gasoline, and coal has been accomplished to a great extent by trucks. The efficient transfer of commodities from truck or rail to ship or vice versa, depends on a highly coordinated transportation system.

EXTENDED NAVIGATION SEASON

Studies have been conducted in the recent past and more are going on presently in trying to demonstrate the practicability of extending the navigation season to year-round shipping. The Great Lakes system provides low-cost, energy efficient transportation. Each year, this important waterway has been forced to close down in mid-December until early April. Industry has had to resort to stockpiling or shifting to more expensive and less energy efficient modes of transportation during the winter months. Great Lakes bulk carriers have had to lay up their fleet each winter, resulting in increased cost of operation. The potential twelve-month navigation season would increase the utilization of the fleet and facilities, and enhance the present investment in this water resource.

There are many questions yet to be resolved concerning year-round navigation. Some principal problems center on the need for ice control techniques to maintain a stable ice cover, prevent ice jams, assure uninterrupted river flow, and avoid flooding. An important further requirement is some type of winter navigation aid system since conventional buoys must be removed prior to ice formation. Other significant problem areas involve potential environmental impacts, ice forecasting improvement, engineering techniques for ice structures, and survival equipment for vessel crews.

ISSUES IN COMMERCIAL NAVIGATION

Experimental winter navigation projects have allowed some of the harbors to remain open year-round in the past years. The project has been relatively successful and has received further funding. Some issues specific to waterborne commerce in the Region might include:

- An examination of potential future industrial output requiring waterborne transportation should be made to determine future port facility needs.
- The possibility of development of general cargo docks should be studied in the scope of a total transportation system.
- Consideration should be given to support of the winter navigation project continuation.

CHAPTER VII

RAIL TRANSPORTATION

The Michigan rail system consists of approximately 6,188 miles of trackage operated by eleven Class I carriers, ten Class II carriers, and six switching and terminal railroads. Of this total, 4,865 miles are located in the Lower Peninsula and 1,323 miles in the Upper Peninsula.

In any analysis of Michigan's rail network, the state's unique peninsular geography must be appreciated. Due to this geographic configuration, three distinctive characteristics of Michigan railroading have emerged. First, Michigan in reality has two different railroad systems which are not physically linked by a direct rail connection. The Lower Peninsula system is oriented towards the Chicago, Toledo, and Cincinnati gateways. Its traffic consists primarily of transportation equipment, bulk agricultural commodities, and chemical products outbound, and coal, primary metal goods, and food products inbound. The Upper Peninsula system serves mainly as an outbound rail route for metallic ores and pulpwood.

Second, since Michigan's two peninsulas have a total of 3,126 miles of Great Lake shoreline, which drastically restricts direct overland rail connections with other states and Canada, an extensive rail carferry service has evolved in Michigan. Currently, six carriers operate ten different carferry routes from Michigan ports. The bulk of these operations involve Lake Michigan service between Wisconsin and the Lower Peninsula. While the Great Lakes' rail carferry routes have played a major role in the development of Michigan's railroad network, the ferry's extensive capital needs and the emergence of new railroad technology and equipment now threaten the existence of this unique element of Michigan railroading.

Third, the state's peninsular geography inhibits the growth of bridge traffic and the resultant heavy density freight routes which are common in most midwestern states. A significant portion of Michigan railroad activities, therefore, involve the origination or termination of freight carloadings, i.e., a terminal or switching function. As the northeastern rail crisis has clearly indicated, a railroad's financial viability is frequently endangered when this particular function dominates.

UPPER PENINSULA RAILROADS

The Upper Peninsula is served by eight railroads, of which four are considered Class I railroads, the Soo Line, the Chicago and North Western, and the Milwaukee Road (Chicago, Milwaukee, St. Paul, and Pacific), and the Lake Superior and Ishpeming Railroads. Class I railroads have gross operating revenues of $5 million or more.

The largest of these railroads in terms of trackage is the Soo Line (655 miles in the U.P.), which operates two east-west lines running the length of the U.P. The Soo Line is the only U.P. connection with the Mackinaw rail ferry and the International Bridge at Sault Ste. Marie.

The Chicago and North Western Railroad (468 miles in the U.P.) operates two principal lines connecting the iron ranges in the Ishpeming area with Escanaba where the ore is exported, and a line along the Wisconsin border running from the western U.P. to Escanaba, with a line south from Powers to Menominee.

The Milwaukee Road (148 miles in the U.P.) enters Michigan at Iron Mountain and runs north to Republic and Ontonagon serving the iron ranges in Marquette and Dickinson Counties.

RAILROADS IN THE CENTRAL REGION

Rail mileage within the Central Region totals approximately 686 miles, of which the majority are Class I railroads. In addition to Class I railroads, there are the Escanaba and Lake Superior, and the Marquette and Huron Mountain Railroad both considered Class II (Figure 31). The Marquette and Huron Mountain Railroad provides, in addition to freight service, passenger excursions between Marquette and Big Bay on a seasonal basis. Most of the railroad routes in the Region are oriented toward the mineral resources, especially iron ore in Dickinson and Marquette Counties, and to a lesser extent toward the pulpwood industry. Rails and rail service have experienced deterioration in some areas hindering movement of the Region's products.

Two railroads in the Central Region have abandonment applications pending before the Interstate Commerce Commission (ICC). The Lake Superior and Ishpeming Railroad has filed an abandonment application for its rail line between Marquette and Munising, with a spur running between Lawson and Little Lake, a distance of 56 miles. The major shipper along this line is the Kimberly-Clark Paper Mill located in Munising. If service were discontinued along this line, it would have a severe rippling economic impact on Munising and Alger County. The CUPPAD Commission has decided to intervene in this case, in the hopes of securing rail service to Munising.

In addition to pending abandonment applications, several railroads have indicated on their systems diagram map, submitted to the ICC, possible areas for future abandonment within the next five years (Figure 32).

The potential effects of rail freight service discontinuance due to bankruptcy or solvent abandonment may be devastating to local economies in some sections of rural Michigan. While many industries can adapt to new transportation modes, others may have to curtail operations or shut down completely. This creates severe and costly social and economic impacts, especially in areas with less diversified economies.

Possible service terminations in the rail system raises the question of alternative modes. While a small percentage of rail traffic may be diverted to water or pipeline transport, the vast majority would be transferred to truck traffic over existing highways. Figure 33 illustrates the Region's rail line in proximity to the state highway system. Funds are available under the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act) to assist rail users to change their fixed facilities to accommodate alternate modes should rail service be discontinued. Many factors need to be considered in changing from rail to truck mode as outlined in a recent MDSH&T report.* These factors are illustrated below and represent potentially significant impacts to both industry and local communities.

Factors to be Considered in Changing from Rail to Truck Mode

1. Docks: Changes required; adaptability of shipper's rail loading facilities; coat of required changeover.

2. Clearances

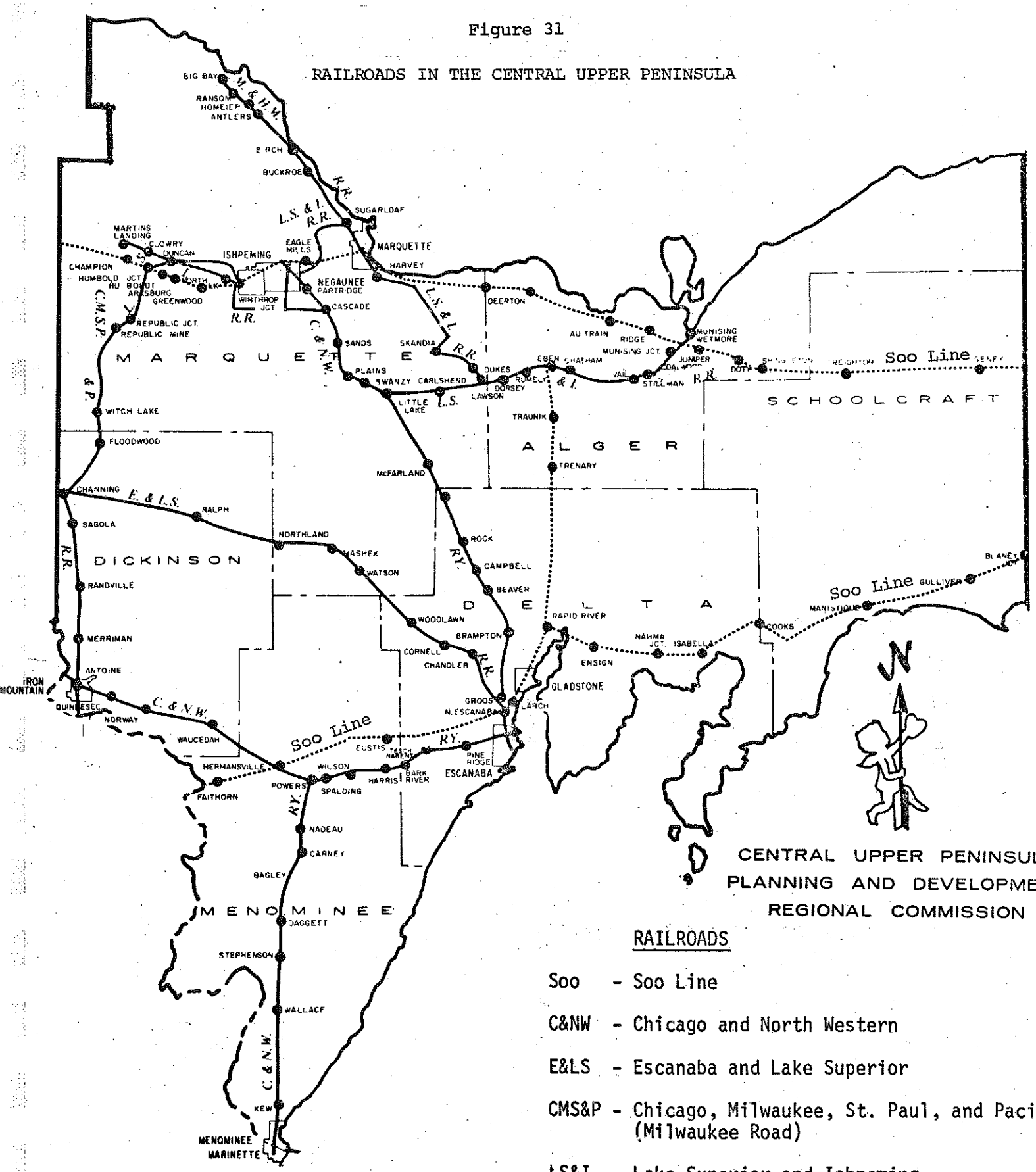
3. Road Characteristics: Capacity (roadbed); width, weight restrictions, height (utility lines, bridges, etc.); strength; seasonal problems.

4. Labor: Factors involved in changing from rail loading to truck loading.

*Michigan Railroad Plan, Phase II, 12/9/75.

Figure 31

RAILROADS IN THE CENTRAL UPPER PENINSULA



CENTRAL UPPER PENINSULA
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RAILROADS

Soo - Soo Line

C&NW - Chicago and North Western

E&LS - Escanaba and Lake Superior

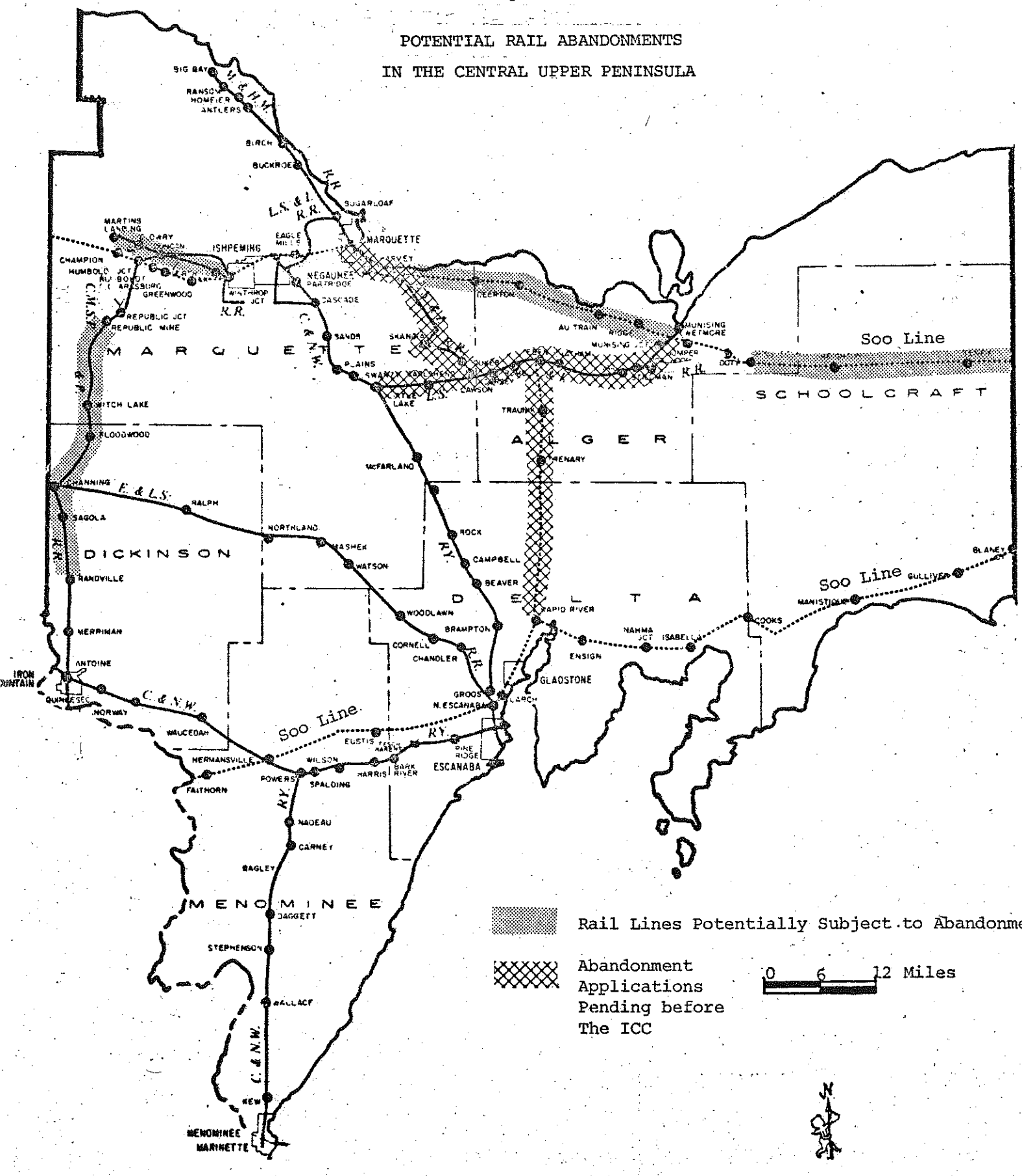
CMS&P - Chicago, Milwaukee, St. Paul, and Pacific (Milwaukee Road)

LS&I - Lake Superior and Ishpeming

M&HM - Marquette and Huron Mountain

Figure 32

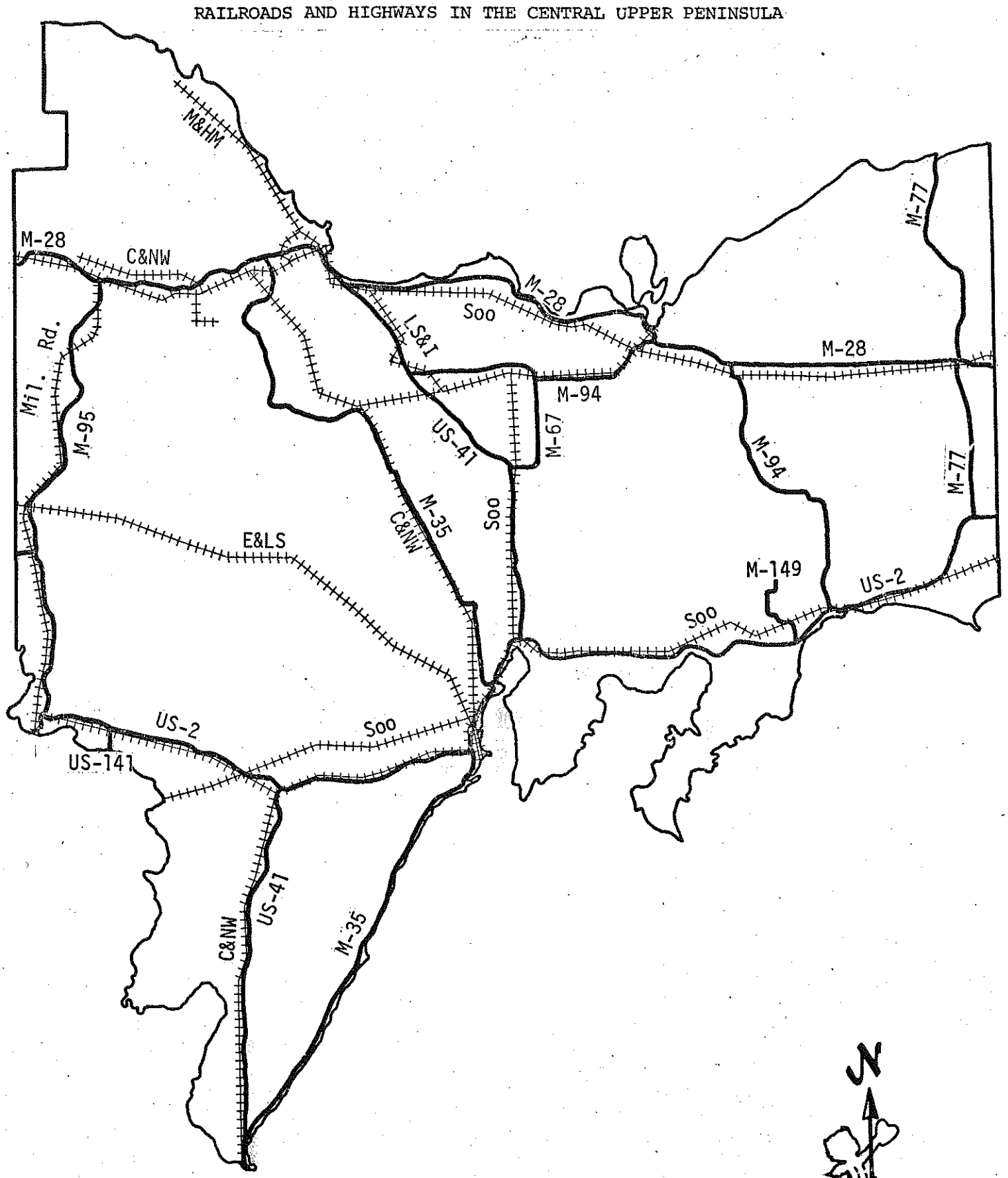
POTENTIAL RAIL ABANDONMENTS
IN THE CENTRAL UPPER PENINSULA



CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Figure 33

RAILROADS AND HIGHWAYS IN THE CENTRAL UPPER PENINSULA



CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

5. Commodity: Rail vs. truck delivery time and cost; loss and damage rates.

6. Trailer-on-flat-car and/or container-on-flat-car

7. Distance and route if trucks were used: Energy cost; pollution cost effects.

8. Convertability: Time period required; cost; motor carrier operating authority (temporary vs. permanent); rates and tariffs; "in-route switch"; cost of all rail route, truckrail, all truck; availability of trucks vs. rail cars.

Source: Michigan State Rail Plan.

The Michigan Department of State Highways and Transportation may become involved in railroad abandonment proceedings at two stages: as an intervenor in possible opposition to the abandonment, or as provider of financial assistance once a certificate of abandonment has been granted. Since jurisdiction over the granting of certificates of abandonment is held exclusively by the Interstate Commerce Commission, the department opposition to abandonment is in the role of protestant. The state process focuses on the trade-off between the cost of public support for rail service and abandonment impacts on the public. There are essentially three possible outcomes of an investigation of an application for abandonment by the state:

- The line is unprofitable to the carrier, and the value of third party consequences or economic impacts resulting from abandonment is less than the amount of financial assistance necessary for continued operation. The state would not subsidize continuation of rail service.

- The line is unprofitable to the carrier, but the value of third party consequences or economic impacts resulting from abandonment exceeds the amount of financial assistance required for continued operation. The state could provide subsidies for continuation of rail service contingent on availability of funds.

- The line is profitable to the carrier.

Not every application for abandonment will be opposed by the state. Opposition from the state's standpoint will serve no useful purpose if preliminary analysis reveals little prospect of future viability and only minor impacts associated with abandonment.

ISSUES IN RAIL TRANSPORTATION

Rail transportation is becoming an increasingly important issue in itself for two obvious reasons. First, changes in rail service can have a profound effect on both local communities and on other modes of transportation. Second, the government is becoming more involved in rail transportation problems and spending an increasing amount of tax dollars on rail service subsidies. It is important that we consider the impact of railroads in the total transportation picture for these reasons.

The rail is extremely important to the Central Region economy as many bulky and large items are shipped that require rail service. Railroads are also highly efficient in terms of energy and environmental constraints. The movement of iron ore and forest products has been identified as particularly dependent upon rail service.

Numerous miles of rail line in the Central Upper Peninsula have abandonment applications pending before the ICC or subject to abandonment in the next five years. The northeastern portion of the Central Region could be virtually devoid of rail service if the ICC grants an abandonment certificate to the LS&I, and the Soo Line follows through with their abandonment proceedings (Figure 32). It appears logical from a regional standpoint that since both the Soo Line and LS&I are in such close proximity to one another, that their pending or subject abandonment applications be handled simultaneously. If this could be accomplished, then possibly a paring down or rationalization of rail mileage could take place to preserve those rail lines which are most profitable to the railroads and most vital to the local communities.

Not only the threat of abandonment, but also deteriorating rails and rail service affect shippers in the area. Slow and unreliable service tends to encourage the modal shift to trucking which decreases revenues at a time when the railroad industry must maintain revenues in order to maintain service. Government has attempted to break this vicious circle wth subsidy payments, with limited success in this area.

Much attention has been centered on the recently enacted Rail Reorganization Act. This Act does not directly affect the Region, as no bankrupt railroads exist in the U.P. Some lines have petitioned to abandon lightly used trackage in certain areas, however. Industries in these areas must either change to another mode of shipping or relocate. No long-range planning has been done to date which would determine areas profitable for future rail service. Studies are needed that would consider which areas have the greatest need and potential for rail service based on industrial development potential. Study is also needed to predict how much rail service is needed by the Region's industries and how much industrial output could be transferred to truck should rail service be terminated in a given area. Some issues of particular concern regarding rail transportation include:

- While the Central Region is not directly affected by the recently enacted Rail Reorganization Act, an evaluation of its impact on the Region as it relates to extra regional product distribution is necessary.
- A study of the Region's future rail needs related to economic development is needed. The truckability of products in certain areas of possible decreased rail service should be examined.
- Deteriorating rails and rail service in some areas hamper industrial development.
- Lack of cooperation between different modes of transportation results in higher than necessary transportation costs.

CHAPTER VIII

GOALS, POLICIES, OBJECTIVES, AND PROJECTS

REGIONAL GOALS AND POLICIES

In order to make sound decisions, a guide or outline of what the Region wants to accomplish in the area of transportation should be established. Goals and policies are general ideas about what should be developing in the transportation system.

The terms goals and policies mean various things to different people. Used within the context of this and other plans prepared by CUPPAD, they have specific meaning and purposes. Definitions of goals and policies are as follows:

A Goal is: A generalized end toward which effort is directed. Normally stated in terms of the fulfillment of broad public needs, or the alleviation of major problems.

A Policy is: A course or method of action, or a statement of position, selected from among alternatives and in light of given conditions, to provide direction in the formulation of objectives and to guide future decisions.

Goals and policies have been formulated at the comprehensive and functional planning level. The CUPPAD Commission has adopted five comprehensive goals, one of which is for man-made facilities: "Develop a system of communities linked by adequate transportation and communication systems which contain facilities and levels of service consistent with their size and function." The goals and policies for this plan (functional planning) were approved at the CUPPAD Commission meeting on July 23, 1976.

REGIONAL TRANSPORTATION SYSTEMS GOALS WITH RELATED POLICIES

GOAL I: Fully develop a transportation system to link the Region's communities to each other and to areas outside the Region.

RELATED POLICIES: Priority should be given to transportation improvements that:

- Improve linkage between urban areas in the Region and their service areas
- Improve linkage between urban centers
- Reduce travel time between areas of industrial/commercial concentration in the Region and market areas to the south

GOAL II: Develop multimodal coordination in the transportation system as necessary to minimize transportation costs.

RELATED POLICIES: Priority should be given to transportation improvements that:

- Increase the number and improve the condition of intermodal transfer facilities
- Result in reduction of transport cost for people and goods
- Promote flexibility in the transportation system necessary to adjust to changing conditions

GOAL III: Develop transportation facilities and services in communities in the Region consistent with their size and function.

RELATED POLICIES: Priority should be given to transportation improvements that:

- Will strengthen urban-rural hierarchical development and promote the regional growth concept
- Promote development in areas suited to such development
- Not require annual subsidies greater than local budgetary capability

LOCAL AND REGIONAL OBJECTIVES

Objective statements must describe what is to be accomplished and when, in quantitative terms. They describe results expected, rather than tasks to attain the results. They must be consistent with adopted policies.

An Objective is: A specific attainable end, derived from a related goal, to be accomplished within a specific time. When attained, represents significant and measurable progress toward the related goal, thus, providing a means of evaluating progress.

There are two levels of objectives in the CUPPAD process.

Regional Objectives are the ends or results expected from CUPPAD activities or the collective activities of others.

Local Objectives are the ends or results expected from the individual activities of local units.

Objectives, drawn properly, provide the only rational means of measuring progress. They must be within the authority and responsibility of the CUPPAD Regional Commission or the respective local organization(s).

Local and regional transportation objectives have been prepared after extensive communication with local elected officials and interested groups and individuals. These objectives were approved by the CUPPAD Commission on May 27, 1977.

TRANSPORTATION REGIONAL OBJECTIVES

1. Reduce the number of inadequate bridges in the Region by 6% a year.
2. Obtain a 25% increase in financial support for maintenance and reconstruction of county roads and city streets in the Region by 1978.
3. Reach agreement with MDSHT on initiation of a US-41/M-35 corridor study through the Region as part of their Project Planning Process by 1978.

4. Beginning with the rail shipment needs, determine and document the transportation requirements of the Region's major industry by 1980.

5. Determine and document the need for a general cargo dock facility in the Region by 1979.

6. Determine and document the regional potential for rural public transportation expansion and coordination by 1978.

7. Make improvements to regional airports to comply with Federal Aviation Administration recommendations by 1980.

LOCAL OBJECTIVES

ALGER COUNTY

1. Make improvements to North Bridge on the Au Train River and the Diffin Road Bridge crossing the White Fish River on the county road system by 1979.

2. Resurface nine (9) miles of the county road system each year.

3. Obtain an agreement with the Park Service and MDSHT on providing a scenic lakeshore drive through Pictured Rocks National Lakeshore.

4. Maintain rail service to the county by at least one viable rail carrier.

5. Maintain the senior citizens public transportation program in the county.

6. Increase the amount of traffic data available for county local and primary roads.

MUNISING CITY

1. Maintain rail service to the City of Munising and the Kimberly-Clark Corporation.

2. Make improvements to the substandard Anna River Bridge in the city.

DELTA COUNTY

1. Make improvements to Ten Mile and Ford River Bridges on County Road 537 which are in critical need of repair by 1979.

2. Increase the amount of traffic data available for county local and primary roads.

3. Maintain the present level of rail service available in the county.

4. Make improvements to Delta County Airport to comply with Federal Aviation Administration recommendations.

5. Maintain the current level of elderly and handicapped public transportation services available in the county.

6. Determine and document the need for a general cargo dock facility in the county.

ESCANABA CITY

1. Review items that have not been acted upon for compliance with the Uniform Major Street Criteria. Conduct study to evaluate course of action needed to implement further changes or document reasons for exceptions by 1980.

2. Examine the various public transportation systems available and explore the feasibility of implementing a system for the city.

3. Make improvements to the following major streets during the 1977 and 1978 construction seasons:

	Street	From	To
A.	3rd Ave. N.	West of Lincoln Rd.	Extension West to 30th St. N.
B.	14th St. S.	5th Ave. S.	8th Ave. S.
C.	Sheridan Road	Stephenson Ave.	C&NW Railroad property
D.	30th St. N.	Hwy. US-2 & 41	Extension North of 3rd Ave. N.

GLADSTONE CITY

1. Review items that have not been acted upon for compliance with the Uniform Major Street Criteria. Conduct study to evaluate course of action needed to implement further changes or document reasons for exceptions by 1980.

2. Conduct a parking study on all local streets in the city and implement the recommendations by 1979.

3. Make improvements to the following major streets during the 1977 and 1978 construction seasons:

	Street	From	To
A.	North 8th St.	Railway Ave.	3rd Ave. N.
B.	Lake Shore Drive	Marble Ave.	13th St.
C.	South Hill Road	Loudea	29th St.
D.	Marble Ave.	18th St.	Minneapolis Ave.
E.	12th St.	Delta Ave.	Superior Ave.
F.	8th St.	Delta Ave.	Superior Ave.

4. Make improvements to the following local streets during the 1977 and 1978 construction seasons:

	Street	From	To
A.	Superior Ave.	10th St.	6th St.
B.	Minnesota Ave.	8th St.	10th St.
		12th St.	14th St.
C.	Wisconsin Ave.	6th St.	7th St.
		10th St.	15th St.
D.	7th St.	Delta Ave.	Minnesota Ave.
		Wisconsin Ave.	Dakota Ave.
E.	8th St.	Delta Ave.	Minnesota Ave.

DICKINSON COUNTY

1. Make improvements to the one-lane bridge crossing the west branch of the Sturgeon River on the Meriman East Road.

2. Make improvements to the Traders Mine and Metropolitan Roads by 1978.

3. Increase the amount of traffic data available for county local and primary roads.

4. Explore the feasibility of providing a truck route bypassing the City of Iron Mountain.

5. Continue to provide the current level of elderly and handicapped public transportation services in the county.

6. Maintain the present level of rail service available in the county.

7. Construct a new parking lot, lighted apron, and beacon tower for Ford Airport by 1977.

8. Provide jet fuel for general aviation aircraft at Ford Airport.

CITY OF IRON MOUNTAIN

1. Rehabilitate and/or construct curb and gutter on all necessary major streets in the city by 1980.

2. Reconstruct and/or resurface 50% of the alleys in the city by 1980.

3. Rehabilitate and/or construct curb and gutter on 30% of the city's local streets by 1982.

4. Reconstruct and/or resurface the remaining 50% of the city's alleys by 1982.

CITY OF KINGSFORD

1. Extend Pyle Drive to Hooper Street and Hooper Street to Pyle Drive to facilitate the movement of public safety vehicles in and around the city's industrial and commercial areas by 1979.

2. Obtain an agreement with MDSHT to provide a traffic safety device at the intersection of Carpenter Avenue (M-95) and East Boulevard - Nelson Drive by 1979.

CITY OF NORWAY

1. Review items that have not been acted upon for compliance with the Uniform Major Street Criteria. Evaluate course of action needed to implement further changes or document reasons for exceptions by 1980.

MARQUETTE COUNTY

1. Continue to resurface fifteen (15) miles of county primary road each construction season.

2. Improve at least one inadequate bridge on the county road system each construction season.

3. Gain an agreement with MDSHT on the future of M-35 from Little Lake north.

4. Conduct a study to evaluate the problems and possible solutions to the traffic safety problems along US-41/M-28 between Marquette and Negaunee.

5. Obtain equitable agreement with MDSHT to provide county-wide public transportation services.

6. Maintain the present level of rail service available in the county.

MARQUETTE CITY

1. Document the rising parking and traffic congestion problems in downtown Marquette.

2. Establish an additional north-south thoroughfare in the City of Marquette.

3. Increase ridership on the City of Marquette's public transportation system by 5% a year.

4. Make improvements to the following major streets during the 1977 and 1978 construction seasons:

	Street	From	To
A.	Division St.	County Road 553	Genesee St.
B.	Genesee St.	Division St.	Champion St.
C.	Wright St.	Soo Line Railroad	Ontario St.
D.	Wright St.	Ontario St.	City Limits
E.	West Fair Ave.	Soo Line Railroad	City Limits
F.	N. 7th St.	Washington St.	Michigan St.

ISHPEMING CITY

1. Improve access to the Tilden Mine.

2. Obtain an agreement with MDSHT for making improvements to Washington Street between M28BR and Saginaw Street.

NEGAUNEE CITY

1. Make improvements to the following major streets during the 1977 and 1978 construction season:

	Street	From	To
A.	Croix St.	US-41	US-41
B.	Iron St.	Tobin St.	Lincoln St.

MENOMINEE COUNTY

1. Document the need and secure local support for a bypass of the Cities of Menominee and Marinette.

2. Resurface thirty (30) miles of the county road system each construction season.

3. Make improvements to one inadequate bridge on the county road system each construction season.

4. Increase the amount of traffic data available for county local and primary roads.

5. Maintain the present level of rail service available in the county.

6. Make improvements to the Twin City Airport to comply with Federal Aviation Administration recommendations.

MENOMINEE CITY

1. Determine the need for a left turn signal for the shopping center at 10th and 13th.

2. Make improvements to the following streets during the 1977 construction season:

Street	From	To
Major		
A. 10th Ave.	18th St.	26th St.
B. 26th St.	10th Ave.	West End Bridge
C. 25th St.	10th Ave.	14th Ave.
D. West Drive	11th Ave.	14th Ave.
Local		
A. 22nd St.	11th Ave.	18th Ave.
B. 18th St.	10th Ave.	18th Ave.

3. Make improvements to the following streets during the 1978 construction season:

Street	From	To
Major		
A. 14th Ave.	West Drive	15th St.
B. 11th Ave.	West Drive	20th St.
C. 38th Ave.	10th St.	13th St.
D. 18th St.	18th Ave.	23rd Ave.
E. 15th St.	18th Ave.	14th Ave.
F. 20th St.	10th Ave.	18th Ave.
Local		
A. 23rd St.	West Drive	14th Ave.
B. 24th St.	10th Ave.	West Drive
C. 18th St.	23rd Ave.	30th Ave.
D. 14th St.	18th Ave.	20th Ave.
E. 15th St.	18th Ave.	20th Ave.

SCHOOLCRAFT COUNTY

1. Rebuild base and surface for a total of ten (10) miles of County Roads 432, 433, 435, 437, and 448 which are in critical need of repair.

2. Obtain federal funding and make improvements to two bridges on County Road 448 which were removed during the Seney Fire.

3. Construct a new county road commission facility to protect their newly purchased equipment which is presently unsheltered.

4. Maintain the current level of senior citizen public transportation services available in the county.

5. Maintain the present level of rail service available in the county.

MANISTIQUE CITY

1. Ensure the relocation of the US-2 Manistique Bridge is completed by 1980.

2. Ensure the installation of a safe passageway for senior citizens crossing the relocated US-2 highway.

REGIONAL TRANSPORTATION PROJECT PRIORITY LIST

In keeping with the policies of the CUPPAD Commission, priorities are set on all projects in the Region. Projects are a planned activity, or series of activities, selected from among alternatives, and intended to bring about a desired result (objectives). In order to focus CUPPAD staff attention on those projects which will have the greatest transportation benefit to the Region, a ranking mechanism has been established to prioritize projects. This ranking mechanism, or set of criteria, has been divided into two sections: (1) a generalized set of criteria for which all projects would receive a numerical point total; and (2) a specific section broken down by modal category. A project can only receive points from one modal category.

Eight projects were submitted from local units for inclusion on the 1978 Regional Transportation Project Priority List. During the review process, one of the projects received improvements funding and was deleted from the list.

Both the criteria and priority list have been reviewed by the County OEDP Committees and approved by the Commission.

PART I

TRANSPORTATION PROJECT PRIORITY SETTING CRITERIA
(for the 1978 Project List)

Beneficial Impacts of the Project

	Points
1. Improve linkage within and/or between: (3 maximum points)	
A. Urban centers in the Region.	3
B. Urban centers and secondary centers in the Region.	2
C. Urban centers and their service areas in the Region.	1
2. Involves financial cooperation between units of local government.	2
3. Provide for multi-modal coordination. (2 maximum points)	
A. More than two modes.	2
B. Two modes.	1

4. Planning. (2 maximum points)

A. A current land use plan is in effect in the project area (adopted within the last five years) or is in the process of being updated.	2
B. A land use plan is in preparation.	1

5. Engineering. (4 maximum points)

A. Both preliminary engineering and final project design are complete.	4
B. Preliminary engineering for the project is complete.	2

6. Increase accessibility to employment opportunities.	1
TOTAL	14

PART II

IMPORTANCE OF THE PROJECT BY MODAL CATEGORY

	Points
Road Projects	
1. Improve direct access to regional and state arterials from primary roads and major streets.	2
2. Estimated average daily traffic. (3 maximum pioints)	
A. For county roads:	
more than 500	3
between 150 and 500	2
less than 150	1
B. For city streets;	
more than 1,500	3
between 750 and 1,500	2
less than 750	1
3. Maintain the existing paved system to prevent further service deterioration.	1
4. Improve roads posted as truck routes.	2
TOTAL	8
Bridge Projects	
1. Increase load bearing capacity and width of structure for increased traffic volumes.	1

2.	Is a noted inadequate bridge that is one of the three highest priority bridges acknowledged by the road commission, or is the number one inadequate bridge in the affected city acknowledged by the city commission.	
3.	Is the number one inadequate bridge in the affected township.	1
4.	Estimated average daily traffic: (2 maximum points)	
	more than 500	2
	less than 500	1
	TOTAL	6

Public Transit Projects

1.	Serves needs of transportation disadvantaged group (handicapped, elderly, and/or low-income persons).	3
2.	Serves needs of the general public.	2
3.	Involves cooperation between units of government in service area.	1
	TOTAL	6

Water Projects

1.	Maintains/improves channel and harbor facilities necessary for commercial navigation.	3
2.	Improves dockside facilities.	1
3.	Improves/preserves access to other modes.	1
4.	Encourages year-round shipping.	1
	TOTAL	6

Air Projects

1.	Maintains/improves air carrier service in urban centers.	3
2.	Maintains/improves general aviation facilities.	2
3.	The project complies with Federal Aviation Administration recommendations.	1
	TOTAL	6

Rail Projects

1.	Is located in an area zoned for industrial use.	1
2.	Result in additional employment for: (3 maximum points)	
	more than 25 persons	3
	less than 25 persons	2
3.	Improves/preserves access to other modes.	2
	TOTAL	6

1978 TRANSPORTATION PROJECTS

PROJECT	ALL PROJECTS: Improving Linkage	Financial Cooperation	Multi-Modal Coordination	Planning	Engineering	Increase Employment Opportunities	Direct Access to Arterials	Average Daily Traffic	Maintaining Paved System	Truck Routes	ROAD PROJECTS: Increase Capacity and Width	#1, 2 or 3 County, or #1 City Inadequate Bridge	#1 Township Inadequate Bridge	Inadequate Bridge	BRIDGE PROJECTS: Average Daily Traffic	Serves Disadvantaged Group	Serves General Public	PUBLIC TRANSIT PROJECTS: Cooperation Between Units of Government	Maintains Channel and Harbor Facilities	Improves Dockside Facilities	Improves Access to Other Modes	WATER PROJECTS: Encourages Shipping	Maintains Year-Round	Maintains Air Carrier Service	AIR PROJECTS: Maintains General Aviation	Complies With FHA	Zoned for Industrial Use	RAIL PROJECTS: Additional Employment	Improves Access to Other Modes	Total Points	Priority Number
	3	2	2	2	4	1	2	3	1	2	1	2	1	2		2	1	3	1	1	1	3	2	1	1	3	2				
Twin County Airport Improvements	3	2	2	1	4	1																3	0	1				17	1
Ishpeming Township Road Improvements	3	2	0	2	4	0	0	2	1	0																		14	2
Old M-94 Improvements	2	0	0	2	4	0	2	2	1	0																		13	3
Negaunee Township North Road Improvements	1	2	0	2	4	0	0	2	1	0																		12	4
Cemetery Road Improvements	2	0	0	2	4	0	0	1	1	0																		10	5
Hannahville Road Improvements	1	0	0	2	4	0	0	2	1	0																		10	6
St. Martins Hill Road Improvements	2	0	0	2	0	0	0	1	0	0																		5	7

1978 REGIONAL TRANSPORTATION PROJECT PRIORITIES

Project	Total Points	Regional Priority
Twin County Airport Improvements	17	1
Ishpeming Township Road Improvements	14	2
Old M-94 Improvements in the City of Munising	13	3
Negaunee Township North Road Improvements	12	4
Cemetery Road Improvements in the City of Munising	10	5
Hannahville Road Improvements in the Hannahville Indian Community	10	6
St. Martins Hill Road Improvements in the City of Munising	5	7

Adopted by CUPPAD Commission
July 29, 1977

CHAPTER IX

APPENDICES

A. FUNCTIONAL HIGHWAY CLASSIFICATION

Reproduced from: "Functional Highway Classification For 1970 Needs Study" prepared by the Joint Coordinating Committee and the Michigan Department of State Highways in consultation with Wilbur Smith and Associates, Consulting Engineers.

Statewide Arterials

The primary function of Statewide Arterial Highways is to provide the highest level of traffic mobility available on the total highway system. These provide direct and unrestricted routings between major metropolitan centers and principally serve movements between, rather than within, activity areas. These are generally located in widely spaced corridors of concentrated travel desire and are characterized by: high capacity design thereby facilitating sustained high speeds; minimal ingress and egrees; and, continuity of routing for regional or interregional travel movements. These facilities should serve the longest trip desires in an expenditious manner. These should also link and serve major sections of metropolitan areas, carrying a majority of the total arterial travel on a minimum mileage with the highest degree of service. This system of highways should include all sections of the Interstate Highway System.

Regional Arterials

Regional Arterial Highways interconnect and augment the Statewide Arterial Highways, forming a continuous, high-mobility network of highways which will efficiently serve major travel desires in all areas of the state. A primary function is to interconnect major population and economic activity centers not served by Statewide Arterial Highways. These highways also provide service to other large areas of special interest and recreation areas which generate or attract a substantial amount of traffic, occasionally subordinating directness of routing in order to perform this secondary function. However, these offer a high degree of trip continuity either alone or as an extension of the Statewide Arterial System.

Local Arterials

Streets in this classification provide service to trips of moderate length at a somewhat lower level of travel mobility than the major arterials. They distribute travel within geographic areas which are smaller than those identified with the higher systems. Local Arterials include those facilities which serve a secondary arterial function at the local level, placing more emphasis on land access than the higher systems and offering a lower level of traffic mobility. They also provide service between smaller cities and connect these cities with the higher arterial systems. They should not, however, penetrate identifiable neighborhoods.

Principal Collectors

These roads function primarily as collector-distributor roads for relatively large areas. These also provide service between minor population and economic centers within the county. Traffic mobility and trip continuity are not as essential as on Local Arterials and serving through traffic may not be a major consideration. Access controls are not provided on these routes thereby permitting a high level of service to adjacent properties. These streets may also serve secondary traffic generators, such as schools, parks, and areas with high population densities.

Access Spurs (CUPPAD definition; this classification is not included in the state functional system).

These roads provide a level of service similar to that provided by principal collectors. However, they carry predominantly single-purpose traffic destined for a major public or private facility (such as a park, military facility, or major factory); due to the isolation of the major facility, they carry a negligible volume of local traffic. These roads connect to a local arterial or principal collector.

Due to the nature of traffic served by an access spur, financial responsibility for its construction or reconstruction logically falls on the owner of the facility being served.

Secondary Collectors

The prime function of Secondary Collector Roads and Streets is to provide traffic service between Local Roads and Streets and higher classified routes. Traffic served will essentially be generated from a relatively small area or a specific traffic attraction. In residential areas, these facilities should be designed to discourage commerical and industrial, as well as through traffic. Ease of access is a major consideration in the design of these streets. Route continuity is of limited importance since traffic will utilize these routes for only a small portion of their total trip length.

Residential Streets, Local Access Streets and Roads, and Commercial Industrial Streets

These streets and roads carry practically no through traffic since traffic desires are mostly local in nature. Thus, route continuity is not important. The major function of these streets and roads is to:

- provide access and service to the residential developments adjacent to them;
- provide access to homes, farms, and other low intensity land uses (these routes are usually the remaining section or quarter line roads and not rural subdivision streets);
- provide access to commercial and/or industrial establishments, (these streets should be constructed to carry heavy vehicles if conditions warrant).

The following table lists criteria to be used as guidelines in classifying streets and roads in rural areas. These should not be interpreted as precise requirements in as much as they will vary according to conditions in each specific area.

FUNCTIONAL CLASSIFICATION OF HIGHWAYS
RURAL AREAS

CLASSIFICATION	PRIMARY SERVICE FUNCTION	ACCESS CONTROL	DESIRABLE OPERATING SPEED (mph)	TRIP LENGTH (miles)	DESIRABLE SPACING (miles)
ARTERIAL SYSTEM					
Statewide Arterials	Through traffic	Complete	45-70	20 or more	20-40
Regional Arterials	Through traffic, some land service	Usually none	55-65	10 or more	10-20
Local Arterials	Lesser arterial service, more emphasis on land access	None	45-60	5-20	5-10
COLLECTOR SYSTEM					
Principal Collectors	Connect local system with arterials	None	40-50	1-10	3-5
Secondary Collectors	Connect local system with arterials and other collectors	None	35-40	--	--
LOCAL ROAD AND STREET SYSTEM					
Residential	Residential land access	None	20-25	1 or less	--
Local Access	Land access, local distribution, recreational land service	None	20-30	5 or less	--
Industrial-Commercial	Industrial and Commercial land access	None	20-30	2 or less	--

B. FINANCING NATIONAL FOREST ROADS

There are three types of road construction and maintenance related to the Hiawatha National Forest: forest highways, forest development roads, and National Forest reserve funds.

Forest highways are designated routes on a Federal Aid highway system which pass through a national forest. Construction of forest highways is handled by the State Highway Department as agent for the Federal Highway Administration, County Road Commissions, and the Forest Service. While forest highway funds may be used for construction or improvement, the scarcity of funds has prevented such use. Consequently, all forest highways are maintained by either the state or county.

Forest highway funds allotted to Michigan for the past several years have been allocated to the Big Sea Water Highway (F.H. 42) on the East Unit of the Hiawatha National Forest; it is anticipated that Michigan's allotment for the next decade will also be concentrated there to complete the proposed project. This is because only a small amount of money is available each year for forest highways, so that the appropriation for several years must be accumulated before any work can be done. On completion of the Big Sea Water Highway, representatives of the State and Federal Highway Departments and Michigan's three national forests (Hiawatha, Ottawa, and Huron-Manistee) will meet to choose the next forest highway project.

Forest development roads are constructed by the Forest Service to help it carry out its tasks of multiple-use forest management and land utilization. The Forest Service enters into cooperative agreements with the counties for maintenance of some forest development roads; other roads are maintained by the Forest Service, either on a regular basis to serve recreation users or on an irregular "as needed" basis to facilitate the removal of wood products. Forest Service maintenance does not include snowplowing. About two-thirds of the total mileage of forest development roads in the Central Region is maintained on an irregular basis; of the one-third regularly maintained, the counties maintain slightly less than half. Detailed information on maintenance of particular lengths of road is maintained by the Forest Service in its Escanaba office.

Forest development road construction may be financed in any one or combination of three ways (P.L. 88-657, Sec. 4; 16 U.S.C. 535): from federal funds appropriated to the Forest Service; by requiring purchasers of forest products, etc., to construct roads as part of the purchase contract; or with cooperative contributions from counties, townships, private individuals, etc. Currently, federal and cooperative local funds are not abundant, and most construction is being done as part of timber removal contracts.

National Forest reserve funds is the name given to a payment made by the federal government to the state for the benefit of public schools and roads of the counties where a national forest is situated, and distributed to the counties in proportion to the area of National Forest land in each county (16 U.S.C. 500). The amount is equal to 25% of the stumpage receipts, after deductions for road building, reforestation, and other expenses. Under state law, 75% of these funds are distributed to the schools in proportion to their areas of National Forest land, while 25% is available for unrestricted use by the County Road Commission.

C. REGIONAL HIGHWAY NEEDS

The 1974 to 1994, Highway Needs Study is the fifth in a succession of studies dating back to 1948. The purpose of this study is to determine the deficiencies of Michigan's highways, roads, and streets and estimate the cost of improvements necessary to bring the road network up to acceptable standards for a 20-year period.

It should be emphasized that this Needs Study is based on 1973 cost data. Unfortunately, 1973 costs do not give a true indication of the amount of revenue that will be required to retire the needs occurring between 1974 and 1994, because road building costs will continue to rise beyond 1973 prices. Therefore, although total highway needs will reach $40.4 billion, the necessary revenue required to retire these needs will be much more.

The total 20-year needs for the Region amount to over $1.1 billion. The following tables breakdown this $1.1 billion for highways, county roads, and the city and village streets within the Central Region. The total highway needs for each jurisdiction is further subdivided into Identified Construction Needs, Stopgap Needs, Maintenance Needs, and Administrative Needs. These catagories and what goes into them are explained below.

IDENTIFIED CONSTRUCTION NEEDS - This item includes cost of improvement of presently deficient sections and also the cost of improvement of those sections which will become deficient during the study period. Future deficiencies were estimated based on predictable obsolescence resulting from structural deterioration, or functional obsolescence caused by increased traffic volumes and traffic demands. Identified construction needs were developed by estimating the cost to improve deficient facilities to design standards 20 years from the time of improvement. Construction or improvement cost estimates were determined from a grouping of many cost items. These, in turn, were combined into the following six major cost categories: (1) right-of-way, (2) grading and drainage, (3) base and surface, (4) miscellaneous, (5) structures, and (6) railroad crossing protection. Other cost items, such as design and construction engineering, were included with the appropriate major cost item.

STOPGAP CONSTRUCTION NEEDS - Since it is not possible to improve all of the backlog of identified construction needs immediately, some projects must be deferred until they can be programmed and funds become available. While these projects are deferred, they will require certain amounts of minor improvements or extraordinary maintenance to retain them in a serviceable condition until identified construction needs can be met. Extraordinary maintenance programs, such as resurfacing, expedient traffic control installation, minor repair of structures, etc., will be necessary in the time period involved in overcoming these existing deficiencies (often called the catch-up period) before the facility can be brought up to design standards. Costs of this work are known as stopgap needs.

Stopgap construction needs were not determined for individual projects but are a function of the magnitude of backlog needs and the limitations on the size of the highway construction program. These needs are based on the cost of deferred construction and the average time that needed projects are deferred.

MAINTENANCE - Maintenance costs for highway systems are second only to the cost-of-construction needs. Maintenance represents those expenditures required for minor repair and operation of the highway plant. They also include allowances for preventive maintenance and repair of structural elements of the roadway, such as wearing surfaces, shoulders, ditches, structures, culverts, and other drainage facilities. Operation

costs include cutting and clearing vegetation, snow removal and ice control, debris removal, roadside planting maintenance, upkeep of guard fences, drainage pumping, electric lighting, and operating cost of traffic signals. Maintenance costs are developed by multiplying unit costs by the miles in several categories based on functional classification, surface type, and number of lanes. Estimates of maintenance needs take into account changes in mileage in each of these categories brought about by improvement to facilities to appropriate design standards. Maintenance needs also vary with the rate at which the backlog of existing deficiencies is reduced.

ADMINISTRATIVE - Administrative needs include those costs that cannot be directly related to either construction or maintenance performed by various highway agencies. They include salaries of top management personnel, accounting and legal operations, highway planning and research, and general office expenses. Estimates of administrative needs are based on the proportion of total highway expenditures which have normally been used for administrative activities and are directly proportional to the magnitude of the construction and maintenance program.

Total Highway Needs
State Trunkline
1974 to 1994

County	Identified Construction	Stopgap	Maintenance	Administration	Total
Alger	24,495,000	1,656,000	9,818,000	2,878,000	38,847,000
Delta	50,393,000	2,538,000	11,370,000	5,172,000	69,473,000
Dickinson	28,477,000	688,000	6,744,000	2,872,000	38,781,000
Marquette	83,721,000	1,774,000	15,508,000	8,080,000	109,083,000
Menominee	32,482,000	985,000	8,956,000	3,394,000	45,817,000
Schoolcraft	29,829,000	1,444,000	12,836,000	3,528,000	47,637,000
Region	249,397,000	9,085,000	65,232,000	25,924,000	349,638,000

Total Highway Needs
1974-1994
County Primary Roads

County	Identified Construction	Stopgap	Maintenance	Administration	Total
Alger	52,064,000	354,000	6,658,000	4,726,000	63,802,000
Delta	44,064,000	3,802,000	14,230,000	4,966,000	67,062,000
Dickinson	31,399,000	892,000	8,762,000	3,282,000	44,335,000
Marquette	46,788,000	2,422,000	11,808,000	4,882,000	65,900,000
Menominee	53,042,000	1,736,000	19,394,000	5,934,000	80,106,000
Schoolcraft	29,497,000	1,764,000	6,718,000	3,038,000	41,017,000
Region	256,854,000	10,970,000	67,570,000	26,828,000	362,222,000

Total Highway Needs
1974-1994
County Local Roads

County	Identified Construction	Stopgap	Maintenance	Administration	Total
Alger	16,598,000	140,000	4,244,000	1,680,000	22,662,000
Delta	32,425,000	2,732,000	9,676,000	3,588,000	48,421,000
Dickinson	30,200,000	98,000	7,960,000	3,060,000	41,318,000
Marquette	69,113,000	3,580,000	14,972,000	7,014,000	94,679,000
Menominee	50,011,000	1,106,000	15,438,000	5,326,000	71,881,000
Schoolcraft	11,705,000	946,000	3,894,000	1,324,000	17,869,000
Region	210,052,000	8,602,000	56,184,000	21,992,000	296,830,000

Total Highway Needs
1974-1994
City Major Streets

City	Identified Construction	Stopgap	Maintenance	Administration	Total
Chatham	504,000	14,000	34,000	44,000	596,000
Munising	1,982,400	38,000	388,000	194,000	2,602,400
Escanaba	9,804,500	440,000	1,966,000	978,000	13,188,500
Iron Mountain	7,251,300	216,000	1,624,000	728,000	9,819,300
Ishpeming	5,003,100	0-0	932,000	474,000	6,409,100
Kingsford	5,156,400	96,000	1,002,000	502,000	6,756,400
Marquette	22,094,200	464,000	2,590,000	2,012,000	27,160,200
Menominee	7,217,100	242,000	1,634,000	728,000	9,821,100
Negaunee	5,941,200	212,000	1,008,000	574,000	7,735,200
Gladstone	3,108,000	122,000	1,196,000	352,000	4,778,000
Region	68,062,200	1,844,000	12,374,000	6,586,000	88,866,200

Total Highway Needs
1974-1994
City Local Streets

City	Identified Construction	Stopgap	Maintenance	Administration	Total
Chatham	636,200	34,000	68,000	58,000	796,200
Munising	2,519,600	40,000	404,000	238,000	3,201,600
Escanaba	7,949,700	314,000	2,032,000	824,000	11,119,700
Gladstone	6,399,500	332,000	958,000	614,000	8,303,500
Iron Mountain	14,655,900	1,140,000	1,688,000	1,398,000	18,881,900
Ishpeming	6,223,500	10,000	1,844,000	646,000	8,723,500
Kingsford	9,272,600	150,000	1,136,000	846,000	11,404,600
Marquette	9,226,400	376,000	2,076,000	934,000	12,612,400
Menominee	7,736,500	132,000	1,594,000	756,000	10,218,500
Negaunee	10,789,600	718,000	1,162,000	1,014,000	13,683,600
Region	75,409,500	3,246,000	12,962,000	7,328,000	98,945,500