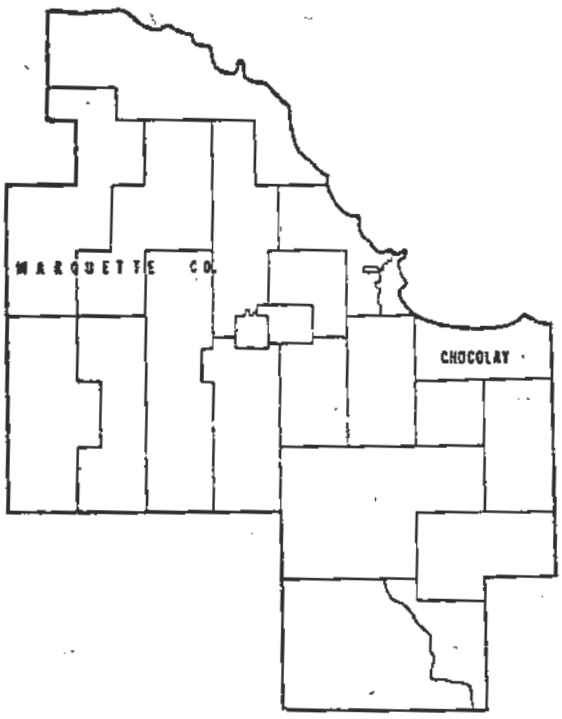

CHOCOLAY TOWNSHIP
COMPREHENSIVE PLAN

Prepared by the

Chocolay Township
Planning Commission

January, 1990

CHOCOLAY TOWNSHIP PLANNING COMMISSION

Thomas Budgick - Chair
Lynn Swadley - Vice Chair
John Stevens - Secretary
Estelle DeVooght - Vice Secretary
Glen Shaw
Rod Smith
Thomas Thomas

Public Hearing Held: August 14, 1989

Comprehensive Plan Adopted by
Planning Commission: January 8, 1990

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A NOTE TO THE READER

Who Prepared This Plan

This plan is a culmination of almost two years of study, discussion and debate by the Chocolay Township Planning Commission. The Planning Commission is a seven member advisory body appointed by and responsible to the Chocolay Township Board. The Planning Commission's duties and responsibilities are outlined in P.A. 168 of 1959, as amended.

The Commission was assisted in its work by Mark Maki, Supervisor of the Department of Land Use Management of Chocolay Township.

What the Plan Contains

The plan consists of fourteen chapters divided into three parts. Part I, consisting of chapters one through eight, is an in-depth inventory of the Township's resources -- physical, social, economic, natural, and cultural. It outlines past, present, and future conditions and trends, where applicable, within the Township. Specific issues and problem areas are identified. This information provides the framework for establishing a comprehensive plan.

Part II, Growth Policy Alternatives, contains chapter nine through twelve and provides a guide for decision-making. It outlines alternative growth strategies and the goals, policies, and objectives to make decisions. It defines areas that require special attention and includes an overall decision-making map.

Part III, Continuing Planning, contains chapters thirteen and fourteen. This portion will provide a discussion of future needs and recommendations.

The various maps included in the Plan are intended to be diagrammatic. That is, they cannot be used to determine whether or not a specific parcel of land has poor soils or steep slopes, or whatever. Large scale maps showing a higher level of detail are on file with the Supervisor of the Department of Land Use Management. They were used to prepare the maps in this Plan.

Why the Plan was Prepared

A common refrain often heard is "we have been studied to death; we need action, not more studies." While there is some truth underlying this comment, the fact remains that public decisions are not being made with any common purpose in mind. Consequently, unpredictable and often undesirable side effects result from these actions. This Plan provides a framework for decision making for the time period 1989-2000. The Plan is entitled, "Chocolay Township 2000." The Plan does not, in and of itself, make any decisions. Neither is it cast in bronze. Periodic review and updating will be necessary, perhaps annually.

CHAPTER ONE

POPULATION

A basic component of the Comprehensive Plan is the population study. It provides a profile of the people who live, work, and play in Chocolay Township. A thorough understanding of the people of Chocolay Township is a necessary basis for determining the future needs and opportunities of the community. The residents weave the cultural fabric of Chocolay Township; they demand its services, develop its lands, pay the taxes and ultimately determine the success of the Township. This chapter will examine the trends, composition and characteristics of Chocolay's population, and will conclude with a discussion of relative issues and problems.

POPULATION TRENDS

A study of population growth trends is necessary for understanding the historic pattern of growth within communities. Without adequate knowledge of past growth, it is difficult to evaluate alternative techniques to be used in projecting the future population. Past population fluctuations may provide insight to possible patterns of change in the future. The growth trends of Chocolay Township should be compared with other geographic areas which may affect growth either within the community itself or its immediate region.

Table I-1 compares population changes of Chocolay Township with five other units of government over the last thirty years. For ease of comparison, the percentage change has been included in each column for the previous decade. When considering the percentage change of a population group, it is important to recognize the true magnitude of this variation to the community. For instance, Chocolay Township's population increased an impressive 85% between 1950 and 1960 but this only added 1,030 persons to the community. The use of percentages or rates of growth allows comparison of the relative growth of each area.

For example, it can be seen that since 1950 the population of Marquette County has been increasing steadily by about 16% every ten years. The City of Marquette increased considerably between 1950 and 1970, then tapered off to a lesser rate between 1970 and 1980. The Township's population seems to be following a similar growth curve but at a more accelerated rate. Total population of

Chocolay Township has increased an average of 68% every ten years from 1950 to 1980. A review of Table I-1 confirms that Chocolay Township has experienced a relative population explosion.

Table I-1
Comparison of Population Trends[1]

	1960	1970	1980	1990	2000
Chocolay Twp.	2,235 (+85)	3,299 (+48)	5,685 (+72)	6,286 (+10)	6,778 (+7)
Marquette City	19,824 (+15)	21,967 (+11)	23,288 (+6)	26,500 (+12)	29,000 (+9)
Marquette Co.	56,154 (+18)	64,686 (+15)	74,101 (+15)	76,629 (+3)	81,815 (+6)
Central U.P.[2]	157,257 (+5)	165,744 (+5)	182,390 (+10)	187,743 (+3)	198,118 (+5)
Michigan	7,823,194 (+23)	8,875,083 (+13)	9,262,078 (+4)	9,387,715 (+1)	9,775,108 (+4)

[1] Numbers in parenthesis are percent changes over previous decade.
[2] Central Upper Peninsula contains the counties of Alger, Delta, Dickinson, Marquette, Menominee, and Schoolcraft.

Source: U.S. Census of Population, 1980.
Projections: Chocolay Township - prepared by Planning Intern.
Regional & State - MI Department of Management and Budget, March 1985.

From Table I-1 it is evident that Chocolay Township has been a rapidly growing area, its population increasing at a rate much higher than the City of Marquette, Marquette County, or the central Upper Peninsula region. People have found the township to be an inviting place to live, but what is in store for the future? Will the accelerated growth of Chocolay Township continue into the year 2000?

ESTIMATING THE CURRENT POPULATION

The past trends of population growth in the township indicate rapid increases of population over the last three decades. This explosion of population has leveled off to a moderate rate of increase. Township citizens and board members are asking themselves whether this leveling trend will continue, increase, or decline. The answer to this question has obvious implications for the infrastructure, education system, and public services of Chocolay Township.

By knowing the number of future residents in the township, officials can invest in the proper community facilities needed to serve this future population. Many methods of projecting future population have been developed and tried over the years, but they all have the same shortcoming. They all use past information to predict what is going to happen in the future. Although some methods are more elaborate than others, they all make projections of future actions based on past trends.

Recognizing the limitations of any population projection is essential. However, they are important in planning for community development. The projections offered here for Chocolay Township represent a probable range of growth. The growth range, if based on accurate assumptions, will be a reasonable approximation of Chocolay's future population growth. The first step in this projection is to estimate average household size. Table I-2 illustrates this. This figure, 2.82 is then multiplied by the projected number of household units, as illustrated in Table I-3.

Table I-2
CHOCOLAY TOWNSHIP
AVERAGE HOUSEHOLD SIZE

YEAR	AVERAGE HOUSEHOLD SIZE
1960	3.39
1970	3.42
1980	2.82
1990 *	2.82
2000 *	2.82

* Estimated projection household growth method used

Table I-3
HOUSEHOLD GROWTH METHOD

	2,016	Total Township Housing Units - 1980 Census
	+ 135	Building Permits, 1980-1986
	2,151	Total 1987 Household Units
x	2.82	Persons Per Household
	6,065	1987 Population Estimate

The 1987 projected population of 6,065 represents a 6.6% increase from 1980 to 1987. Table I-1 reveals that the rate of population growth has averaged 60% per decade for the last four decades. However, based on growth estimates, the township has only grown 6.6% this late in the decade.

Population changes are affected by two main factors: natural increase and net migration. Natural increase refers to births and deaths in an area. The age distribution table for Chocolay Township (Table I-5, p.6) shows a decline in young people age 0-20 years between 1960 and 1980. Another look at the age distribution of township citizens shows an increase in the 21-44 year age group and slight decreases in the 45-64 and 65+ age groups for 1970 to 1980. This trend mirrors a national trend as the post-war "baby boom" ages. The declining size of the 0-20 age group points to a national trend of smaller family sizes.

However, in Chocolay's situation, 40% of the females are in their child bearing years which may lead one to expect an increase in the birth rate. Recent examination of birth records and elementary school entrance figures demonstrate this natural increase. In the past, natural increase accounted for a relatively small portion of Chocolay Township's total population growth with the majority of growth attributable to in-migration.

The past migration to Chocolay Township was for a number of reasons. Some of the easiest reasons to identify are more rural environment, lake front property, and proximity to the City of Marquette without the congestion. Most of these township characteristics are still valid and will be for the next few years; however, Chocolay Township's growth and development is

linked to the economic vitality of the county as a whole. In the early eighties, an economic recession was experienced in the state of Michigan that the central Upper Peninsula still has not fully recovered from. Unless an economic up-swing occurs in the Marquette area, in-migration will decline in importance compared to the previous three decades. Putting these two factors of natural increase and net migration into assumptions, the projection can be continued to the year 2000. The assumptions are as follows:

1. Natural increase will have a relatively larger effect on the future population of Chocolay Township.

2. Net migration will continue to have an in-migration effect at a rate substantially lower than previous decades.

3. Based on the above factors, population will continue to grow in Chocolay Township but at a moderate rate.

Based on these assumptions, the 1990 and 2000 population can be projected using the modified exponential curve method. This method is based on the idea that growth occurs at an exponential rate on a curve, increasing sharply, and then leveling off. By applying the growth rate of the last three decades, together with the 1987 estimate, a 1990 population of 6,286 is derived. Continuing this projection one decade further, a population of 6,778 is indicated for the year 2000. As mentioned at the start of this discussion of future population, the projection represents a range of future growth based on some basic assumptions. Table I-4 shows the results of the different projection methods.

Table I-4

	HOUSEHOLD GROWTH METHOD	EXPONENTIAL GROWTH METHOD
1990 Population	6,234	6,286
2000 Population	6,798	6,778

As can be seen above, both methods project a population estimate that is nearly the same. Based on these projections, the estimated population of Chocolay Township is 6,286 for 1990 and 6,778 for 2000.

POPULATION CHARACTERISTICS

Now that an estimate of the number of persons in the township has been established, their characteristics are important. It is necessary for the plan to reflect the character of its people so that facilities and services can accommodate them adequately. For instance, if the population is primarily older, it would point to different needs than a younger generation. Therefore, the age, sex, education, and income of persons are considered.

Table I-5 shows the age distribution of persons in the township. The population has been divided into four age groupings for 1960, 1970, and 1980. Similar data for other areas has been provided for comparison purposes. The proportion of persons in the 21-44 age group has risen sharply while the three other age groups have shown decreases. The 21-44 and 45-64 age groups combined comprise 57% of Chocolay Township's population. These age groups are considered part of the prime work force and a more permanent resident segment of the population. The last age group, those persons over 65 years of age, was only 4.4% in 1980, which is quite low in relation to the other units examined.

Table I-5
Change in Age Distribution[1]

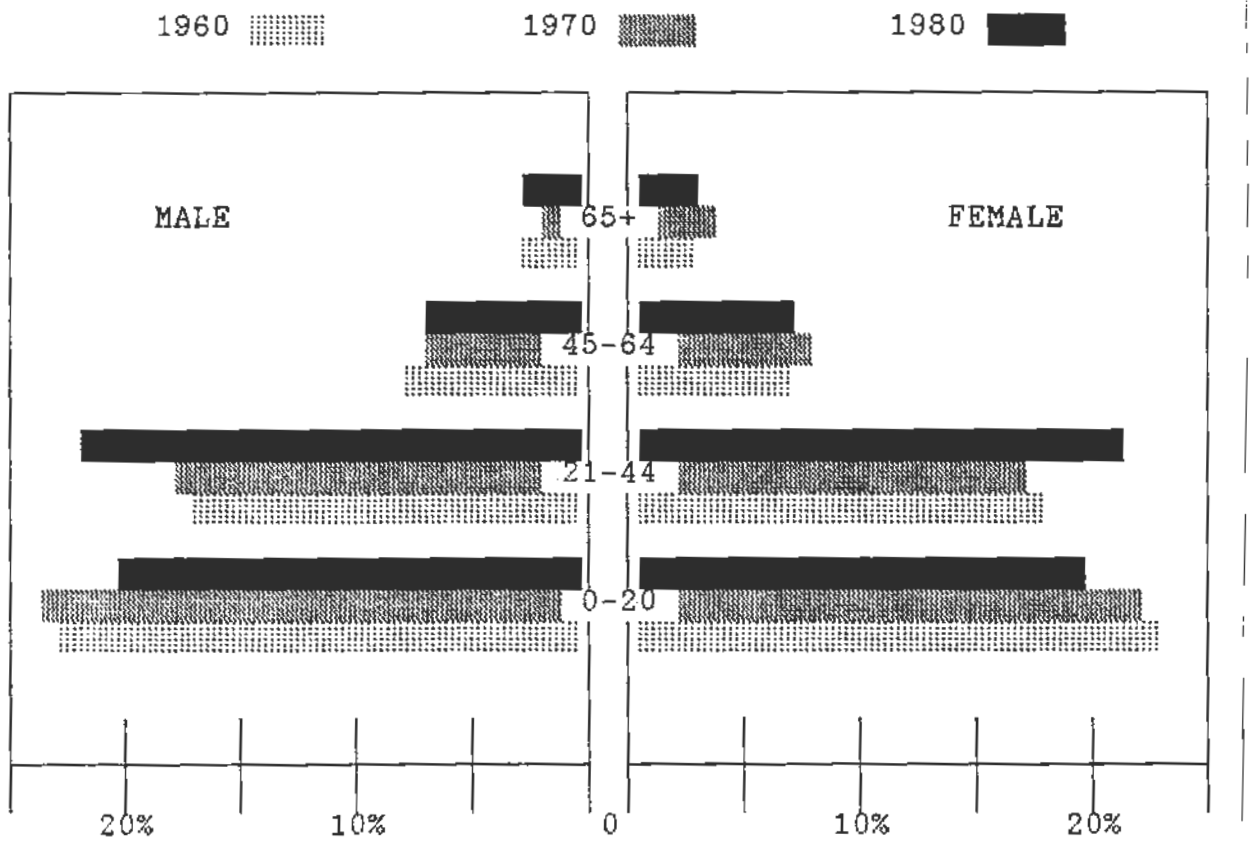
Chocolay Township					City of Marquette			
0-20	21-44	45-64	65+		0-20	21-44	45-64	65+
45.4	34.5	15.2	4.9	1970	43.9	31.9	16.1	8.1
38.9	42.1	14.6	4.4	1980	35.3	41.3	14.3	9.1
Marquette County					**Central U.P.**			
0-20	21-44	45-64	65+		0-20	21-44	45-64	65+
42.6	31.7	17.7	8.0	1970	41.2	27.0	20.7	11.1
36.9	39.1	15.1	8.9	1980	35.4	34.1	18.5	12.0
Michigan					**United States**			
0-20	21-44	45-64	65+		0-20	21-44	45-64	65+
42.0	29.7	19.8	8.5	1970	38.5	29.9	20.5	9.8
35.6	35.2	19.4	9.8	1980	35.3	33.6	19.6	11.3

[1] Numbers for each age group are percentages of total population.
[2] The Central U.P. contains the counties of Alger, Delta, Dickinson, Marquette, Menominee and Schoolcraft.
Source: United States Census

The 1980 age distribution for Chocolay Township can be shown graphically using a population pyramid (Figure 1). To the left of the center line is the male population percentage for each age group, and similarly to the right are the percentages for females. The general shape of this graph resembles a pyramid going from a broad base of young persons to the small percentage of the elderly. This distribution of age groups is considered very stable and balanced. This mix provides Chocolay with a large working class to support the community through taxes and wages. The size of the accompanying younger generation should maintain a sustained level in the upper age groups. In addition, there is not a large number in the dependent elderly group within the township.

Figure 1

CHOCOLAY TOWNSHIP
PERCENT OF POPULATION BY AGE & SEX

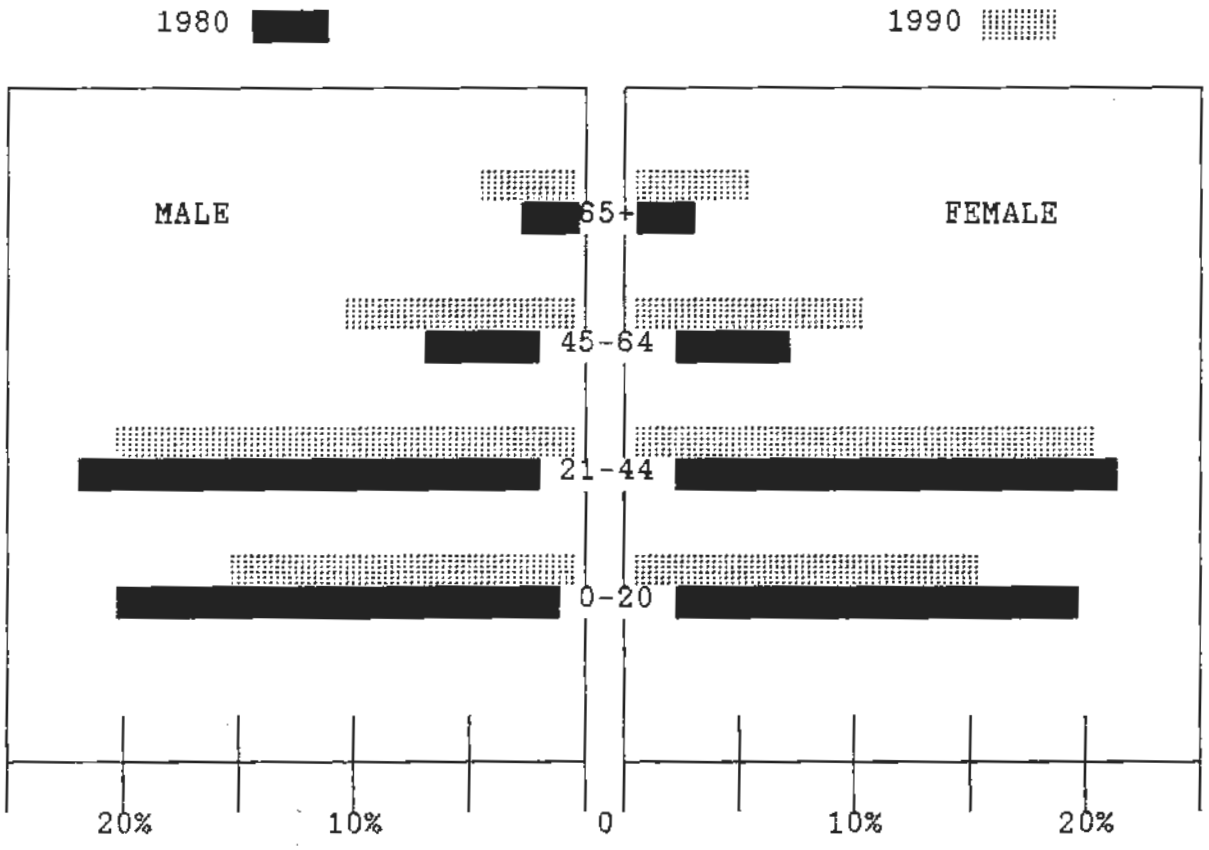


Source: U.S. Census

Figure 2 represents a comparison of the 1980 population distribution and the projected distribution for 1990. The assumptions made earlier in this chapter concerning population growth in Chocolay Township were also made for this distribution projection. These assumptions include: the township will grow at a moderate rate with in-migration and natural increase having approximately equal influence.

Figure 2

CHOCOLAY TOWNSHIP
PERCENT OF POPULATION BY AGE & SEX
1990 PROJECTION



Source: 1980 - U.S. Census
1990 - projection utilizing TREND Population Analysis Software.

Chocolay Township Population by Age and Sex

Table I-6
Chocolay Township Population by Age and Sex
1980 Census

AGE	MALE	FEMALE	TOTAL
0-20	19.86%	19.01%	38.87%
21-44	21.70%	20.41%	42.11%
45-64	7.50%	7.15%	14.65%
65+	2.06%	2.31%	4.37%
	51.12%	48.88%	100%

As compared to the 1970 census, the following conclusions were made by reviewing Table I-6 regarding the change in age distribution and population by age and sex:

-A substantial decrease in the number of males and females in the 0-20 age group. This was typical of the Central Region, Michigan and the United States.

-A substantial increase in the number of males and females in the 21-44 age group. This was typical of the Central Region, Michigan, and the United States.

-A decrease in the number of males and females in the 45-64 age group. This was typical of the Central Region, Michigan, and the United States.

-A decrease in the number of males and females in the 65+ age group. This contrasts with a substantial increase in this age group in the Central Region, Michigan, and the United States.

Number of Persons by Race and Ancestry - 1980 Census

Table I-7
Number of Persons by Race - 1980 Census

White	5,595
Black	0
American Indian	59
Asian & Pacific Islander	18
Other	13

Table I-8
Number of Persons by Ancestry - 1980 Census

Single Ancestry Group:	
Dutch	44
English	319
French	406
German	441
Greek	6
Hungarian	7
Irish	101
Italian	90
Norwegian	0
Polish	130
Portuguese	0
Russian	8
Scottish	17
Swedish	218
Ukrainian	6
Other Single Ancestry Groups	444
Multiple Ancestry Groups	2,898
Ancestry Not Specified:	
Other	124
Not Reported	426

Education

Education of persons in the township for 1970 and 1980 is depicted in Table I-9. The data indicate the percentage of persons 25 and over that have completed the years of school shown at the top of each column. It is evident that Chocolay Township's population has shifted to a high level of education from 1970 to 1980. For example, in 1970, 18.5% of the people 25 and over had received 13 years or more of schooling. By 1980, this percentage had almost tripled to 43.9%. The education level of the the township is comparable with State averages and is higher than those for the Central Upper Peninsula. The fact that Chocolay Township is a "bedroom" community of Marquette City explains this higher level of education. Many of Chocolay's residents are employed by Northern Michigan University and Marquette General Hospital, both of which require advanced education.

Table I-9

Years of School Completed
Persons 25 Years Old and Older[1]

Chocolay Township	0 - 8	9 - 11	12	13+
1970	25.2	14.8	41.5	18.5
1980	7.7	8.7	39.7	43.9

[1] Numbers in table are percentages.
Source: U.S. Census

Level of Family Income

The last characteristic of Chocolay Township's population is level of income. As previous discussion indicated, the education level of township residents is somewhat higher than comparable units. This is reflected in the income figures for township residents. Table I-10 shows the range of incomes by family for Chocolay residents in 1979.

Table I-10

1979 Family Incomes for Chocolay Township

Income Range	Number of Families	%
Less than 2,500	12	.8
2,500 - 4,999	50	3.3
5,000 - 7,499	55	3.7
7,500 - 9,999	82	5.54
10,000 - 12,499	38	2.5
12,500 - 14,999	83	5.5
15,000 - 17,499	137	9.1
17,500 - 19,999	117	7.8
20,000 - 22,499	191	12.7
22,500 - 24,999	155	10.3
25,000 - 27,499	125	8.3
27,500 - 29,999	118	7.9
30,000 - 34,999	142	9.4
35,000 - 39,999	55	3.7
40,000 - 49,999	74	4.9
50,000 - 74,999	55	3.7
75,000 and Over	15	1.0

[1]Income figures for gross family income.
Source: U.S. Census

Then for comparison purposes, Table I-11 shows family income, per capita income, and families below poverty level. It is evident that on the average, Chocolay Township residents have higher incomes than the residents of Marquette City or Marquette County.

Table I-11

Income Levels for 1979

	Median Family	Per Capital	% Families Below Poverty
Chocolay Township	$21,489	7,300	6.5
City of Marquette	14,632	5,932	14.5
Marquette County	19,492	6,187	6.5

[1]Median family and per capita income based on gross income yearly
Source: U.S. Census

Education Issues

1. New Elementary School for Chocolay Township

Advantages:

1. Neighborhood school.
2. Improved educational opportunities.
3. Reduction in transportation costs.

Disadvantages:

1. Financing and result in increased taxes.

Siting Considerations:

1. Currently sufficient land zoned to accommodate a new school site.
2. Location near transportation network/population center is desired.

CHAPTER TWO

ECONOMY

Introduction

The economy of Chocolay Township is a complicated maze of ties with the surrounding area. The employers within the Township only form a small segment of the economic picture for the Township. Neighboring employers are a major income and employment source for Township residents. Within the Township itself, no single business dominates and employment is a mix of government, industry, and retail business.

Area Economy

This section will begin with a historical perspective of employment over the last several decades in Marquette County. Table II-1 and Table II-2 show employment figures by broad industrial categories both in actual numbers and by percentage.

Table II-1
Marquette County Employment
Numerical Figures

	1940	1950	1960	1970	1980	1988
Total Labor Force	17,946	16,934	18,952	21,200	30,575	28,125
Unemployment	2,239	1,129	1,502	1,380	3,925	2,975
Govt. Employment[1]	731	1,455	2,087	4,154	8,100	8,350
Mining	3,074	3,408	2,830	3,210	No Data	2,700
Wholesale/Retail Trade	2,225	2,714	2,625	4,127	4,950	4,775
Finance, Ins. & Real Estate	152	294	300	597	825	900
Services[2]	2,312	1,974	2,490	3,855	No Data	5,050

1 - Does not include public education services

2 - Includes public education services

Table II-2
Marquette County Employment
Percentage Figures

	1940	1950	1960	1970	1980	1988
Unemployment	12.5%	6.7%	7.9%	6.5%	12.8%	10.6%
Govt. Employment[1]	4.1%	8.6%	11.0%	19.6%	26.6%	29.6%
Mining	17.1%	20.1%	14.9%	15.1%	No Data	9.6%
Wholesale/Retail Trade	12.4%	16.0%	13.8%	19.4%	16.1%	13.4%
Finance, Ins. & Real Estate	0.8%	1.7%	1.6%	2.8%	2.6%	3.2%
Services[2]	12.9%	11.7%	13.1%	18.2%	No Data	17.9%

1 - Does not include public education services

2 - Includes public education services

The figures on total labor force show that there has been an increase from 1970 to 1980 when the labor force grew substantially from 21,200 to 30,575, which is an increase of 44% in a ten-year period. Between the period 1980 to 1988, a drop of 8.7% was recorded in the total labor force, which is a numerical drop from 30,575 in 1980 to 28,125 in 1988.

The unemployment figure, which was at 7.9% in 1960, dropped to 6.5% in 1979, but then rose to 12.8% in 1980. In 1988, it was 10.6%. During a thirty year period, government employment grew from 19.6% in 1970 to 29.6% in 1988. The slow-down in the mining industry is represented by the fact that in 1970, mining accounted for 15.1% of the employment in Marquette County, where as in 1988, it only accounted for 9.6%.

Without doing a complete survey of the labor force not only in

Marquette County, but in the central U.P. as well as Michigan and the United States, including a survey of employment of major employers in Marquette County and Chocolay Township, it is difficult to make determinations as to the trends in the economy. Suffice it to say that in Chocolay Township, much of the employment is derived outside of the Chocolay Township boundaries. For example, being located five miles outside of the city of Marquette provides a variety of employment opportunities in retail business and the government and service sectors, including personnel in the Marquette School system and Northern Michigan University. Many ancillary jobs are also created as a result of these facilities. In addition, Marquette General Hospital and the Michigan State Branch Prison employ many Township residents.

Chocolay Township Employment

The Township is mostly residential in character and relies heavily on outside employment. Recent developments in and around the greater Harvey area have added to the Chocolay Township tax base and will increase local employment within the Township. In addition, these new businesses will add services desired by local residents.

In reviewing employment within the Township, three segments stand out. They are:

1. Government
   A. Marquette Area Public Schools (Silver Creek Elementary)
   B. Michigan Department of Natural Resources (fish hatchery)
   C. Chocolay Township

2. Retail
   A. Grocery stores
   B. Restaurants
   C. Other retail stores including gas stations

3. Light Industry and Manufacturing
   A. Car sales
   B. Service contractors and trucking
   C. Manufacturing (block plant)

Issues and Problems

-Area employment is based primarily on the following four industries: government, wholesale-retail trade, services, and mining.

-Township employment is primarily based on jobs located outside of the Township.

-Past development surveys indicated citizens would welcome more retail and service businesses in the Township. One important factor in this economic profile alludes to the fact that the main source of tax revenue for the operation of local government and the schools is the citizen. The Township does not have many industries or large corporate bodies to help pay local property taxes. Many of Chocolay Township's residents have moved to Chocolay Township for the many benefits of residential single family dwellings and for an absence of heavy industry. In fact, past development surveys have reflected mixed feelings on the desirability of large firms or industries being added to the Township.

Since the Township does not have these types of businesses to help pay local property taxes, township and county government and education financing falls primarily on the single family homeowner. As shown, the population of Chocolay Township has grown steadily over the past twenty years. This normally means the need for more and more locally financed public improvements. Chocolay Township citizens are going to have to pay this bill since there are no large firms to assist in this financing.

CHAPTER THREE

NATURAL FEATURES

The physical elements that make up Chocolay Township are its natural features. This includes its surfaces and bedrock geology, soil characteristics, mineral resources, topography, wetlands, and its other unique land and water formations. Analysis of this is basic to planning because each of these features yield both opportunities and constraints for development. Soil and bedrock conditions will influence water supply and wastewater drainage. Steep topography can pose developmental problems, and in turn, community problems. The presence of valuable mineral resources can vastly determine future land uses. While wetlands provide constraints to development, they provide the unique ecological setting for wildlife. The natural features themselves are dependent on each other. If one area is disturbed or abused, it will affect others.

All these factors are important and in planning for a community, these physical characteristics cannot be ignored. This chapter intends to provide the proper analysis and inventories of Chocolay Township's natural resources. It will identify natural features, such as geology, topography, vegetation, water, etc., and it will focus on those characteristics which offer themselves as determinants for development. These factors, coupled with the man-made features to be identified in the following chapter, will provide a framework wherein public policies can be formulated to produce a better environment.

Bedrock Geology

This is the solid rock layer usually found below the soils and surface geology. Its formation occurred during the earliest periods of the earth's history. Bedrock can be found hundreds of feet below the surface or protruding out of the soil as rock bluffs. In either case, the bedrock can help or hinder development.

The occurrence of bedrock at the surface can be a problem in constructing a septic tank drain field or public sewer line. This

factor has been considered in the soils section of this chapter.

The major importance of bedrock as a resource in this investigation is its capacity to supply drinking water. The quantity and quality of well water varies with the type of bedrock the water is retrieved from, and the layers of material through which the water has passed before reaching the bedrock. For each type of bedrock in Chocolay Township, its location and water capacity will be discussed. This data was obtained from the Central Upper Peninsula Regional Water and Wastewater Plan approved September, 1971.

Jacobsville Sandstone

This sandstone occurs throughout Chocolay Township. The only area not having this bedrock is the extreme southwest corner. It is the only important source of water to wells in this area. Although this sandstone is over 1,000 feet thick, most wells tap water at less than 100 feet. As with all bedrock, permeability decreases with depth due to the tremendous pressure that squeezes together the joints and fractures. Water from Jacobsville generally is moderately hard to hard and locally it contains objectionable amounts of iron.

Cambrian Sandstones

This is the only other bedrock formation in the township. It occurs in a triangular shaped area in the southwest corner of the township. If a line was drawn from County Road 480 where it leaves the township at the west boundary and where County Road 545 leaves the township on the south, the line would define the corner where Cambrian Sandstone is located.

Most wells drilled into this bedrock will yield enough water for domestic purposes. Large diameter wells drilled over 50 feet into bedrock may yield more than 100 gallons per minute. Some wells in bedrock will fail because of impermeable shale or crystalline

Surface Geology

This material usually occurs between the soil at the earth's surface and the bedrock formations below surface. It is not as fine textured as the soil, but is a granular material far different from the bedrock. The different deposits of surface geology are categorized by names that relate to the particular process of formation and also variances in material content. For example, glacial deposits occurred in three main ways: material 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. More specifically, surface geology categorizes the deposits by the individual or combined actions of wind, water, and glaciers that are responsible for their formation.

Each category of surface geology that occurs in Chocolay Township will be described as to location and water capacities. The following map, Map 1, shows the areas of Chocolay Township containing the different surface geology types.

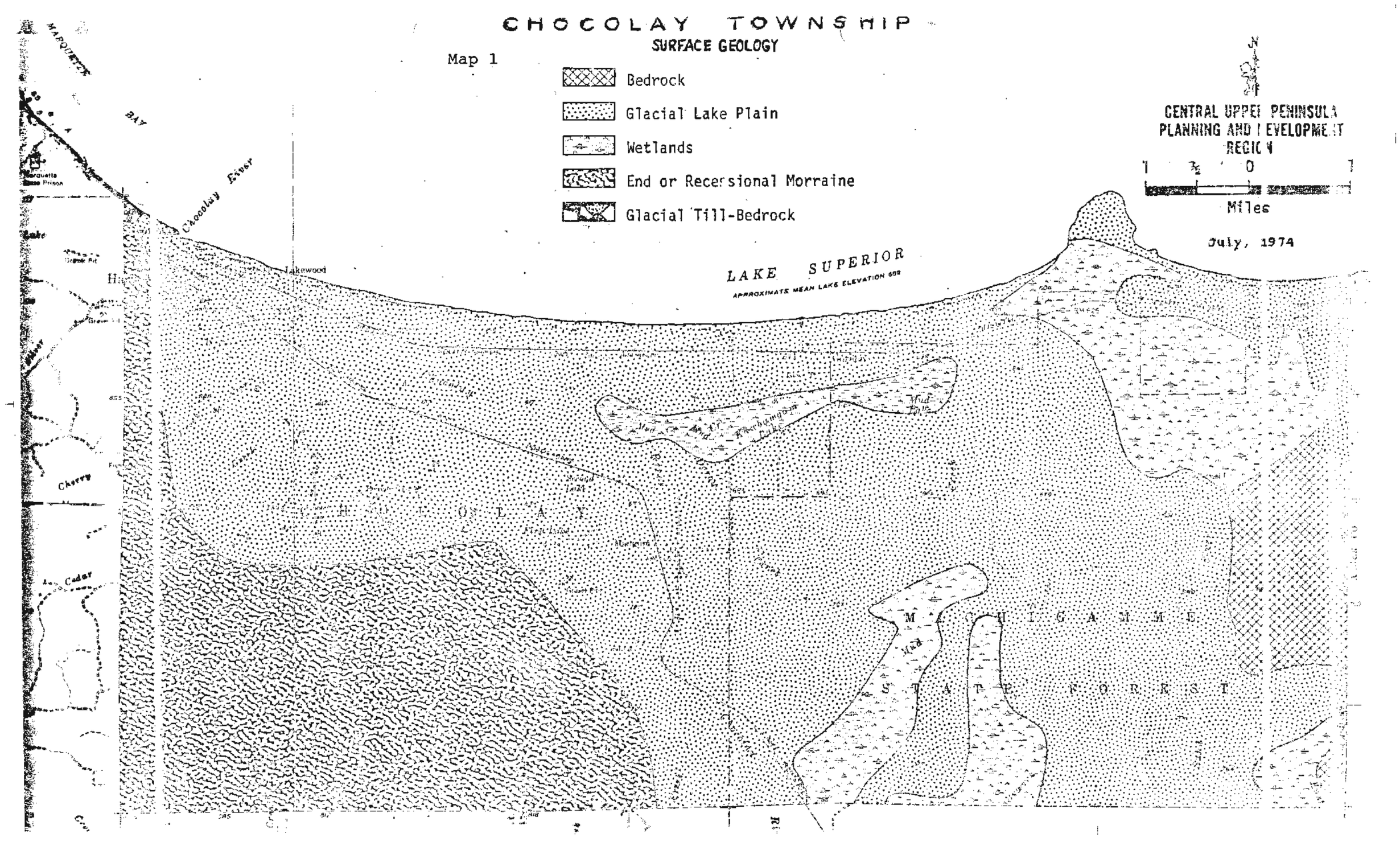
Bedrock

These are areas which have thin or nonexistent layers of glacial deposits over the bedrock formations. Therefore, the bedrock formation is at or near the surface. In Chocolay Township, this area of surface geology occurs along the east border as shown on Map 1.

CHOCOLAY TOWNSHIP

SURFACE GEOLOGY

Map 1



Glacial Lake Plain

This material is usually composed of sand, but sometimes contains silt or clay. Deposits are generally well sorted and well to moderately permeable. Moderate quantities of water are generally obtainable. The amount of silt or clay in the lake plain deposit determines permeability and water yield. Concentrations of more than 25 percent silt or clay impede drainage and the effect in most cases is a swamp or marsh.

These deposits are the most predominant of the surface geology features and occur throughout the township. The locations of these deposits are also shown on Map 1.

Wetlands

Typical wetland areas include marshes, swamps, and bogs. Typical characteristics include the presence of water or wetland vegetation. Wetland areas differ in one major way from glacial lake plain deposits. Because of poor drainage and high water tables, an accumulation of muck and peat overlies the glacial lake plain. Water yields are similar to lake plain yields. These deposits occur in several areas in the east half of Chocolay Township. More specific locations are shown on the surface geology map.

All wetland areas possess unique environmental qualities and should be preserved as Areas of Particular Concern. Wetland regulation in Michigan is provided for by the Geomaere-Anderson Wetlands Act, P.A. 203 of 1979, which is administered by the Department of Natural Resources.

Floodplains

Typical floodplain areas occur along the shore of Lake Superior, in wetland areas, and along river and stream watershed courses. Currently, floodplains are regulated in part by the Wetlands Act, but also by local building codes which require special treatment for structures built in a floodplain. In addition, the Township participates in a Federal Flood Program which provides for insurance of structures within a floodplain area or near a floodplain against losses occurring as a result of flooding.

A finalized Floodplain Map was compiled in May of 1987 for the Township. This map identifies floodplain areas based on a 100 year flood possibility. Identification of these areas is important in establishing land use development patterns.

Because the floodplain provides an area of water retention in times of flooding to prevent flooding into other areas, these floodplain areas should be preserved as Areas of Particular Concern, and development should be discouraged. Indiscriminate filling of these floodplains can affect other areas by causing damage and loss of property due to flooding, and therefore efforts to manage these floodplains and flood prone properties are essential to all concerned.

A floodplain map is on file in the office of the Township Zoning Administrator for review.

End or Recessional Moraine

These deposits show where the glaciers stopped their forward progress and began receding. On the surface, these deposits appear as large hills. End or recessional moraines are composed predominantly of sands and gravel till, with small areas of sand and gravel outwash. Locally, till is clayey or silty. Permeability varies greatly, being low in clayey till and high in

outwash areas. Moraines are a source of domestic water supply, and in some areas may yield moderate supplies of water. Morainal deposits can reach a depth of over 300 feet. On the surface they appear as ridges which are steep and rugged and were not exposed tc wave action; elsewhere they are somewhat subdued. As shown on the surface geology map, the deposits are found in the southwest corner of the township.

Glacial Till - Bedrock

These areas are made up of bedrock with occurrences of glacial till in scattered locations. The bedrock in this area is of Precambrian origin and, like the glacial till, is a poor source of groundwater. The till is thin and bedrock appears at the surface wherever the glacial till is nonexistent. This deposit just touches the northwest corner in the Harvey area of Chocolay Township.

Soils

Soil occurs at the earth's surface and has a finer texture than the bedrock or surface geology previously described.

Formation of the soil was by glaciers. As these huge sheets of ice slowly forced their way over the solid rock, a grinding action took place between the ice and rock. Material was shaved off the rock and trapped under the ice as it moved forward. While the glaciers moved, this trapped materials was ground finer and finer, thus forming the soil that is found here today. The glaciers traveled over various types of rock and added each new type to the trapped material it carried with it. This caused a mixing of rock types. As the rock material changed, sc did the type of soil formed by the glacier. This is why there are so many different soil types.

The composition and texture of the soil was dependent on the glacier's grinding action and the underlying rock material present. However, where the resulting soil was deposited also contributed to its final character. The primary factor is the presence of water. The amount of surface water present, depth to water table, amount of rainfall, and size of watershed all can have a great affect on the characteristics of soils.

By identifying these soil characteristics, the types of development that each can support may be cataloged. Ignoring the character of the material to be built upon can prove a mistake. For example, a soil with seasonal high water table can seem suitable for building during part of the year, but be extremely troublesome during spring or periods of continued rain. Costly engineering and building methods can be used to overcome some soil limitations, but providing public roads and utilities in such areas can cause all taxpayers to share the financial burden. Some of the factors to consider about soil types are the moisture content needed for agriculture, weight supporting capacity for structures, permeability levels affecting drainage, cohesiveness for erosion resistance, and others.

With the cooperation of the Soil Conservation Service, soil types in Chocolay Township were identified and categorized as to their suitability for different potential uses. Following is a brief description of each major soil series found in Chocolay Township.

Au Gres: (AuA) Somewhat poorly drained soils developed in sixty inches or more of sand. Occurs in outwash and till plains. Water table fluctuates between two and ten feet.

Alluvial: (Ad) This is a soil that occurs along streams. It is subject to flooding by stream overflow. Drainage is variable. The water table fluctuates with the level

of the stream. Textures are variable in short distances, but the sandiest material is usually closest to the stream. Water movement through the soil is variable.

Bohemian: (BhB) Well to moderately well-drained soils with loamy surface layer over loam to light silty clay loam, which in turn is underlain with calcareous, stratified silts and very fine sands. Occurs in lake plains. Thickness and texture of layers variable.

Brimley very fine sandy loam (BrA) Somewhat poorly drained soils with loamy surface layer over loamy material. Calcareous, stratified silts and very fine sands at a depth ranging from 24 to 42 inches. Nearly level lake plains. Water table fluctuates between two and ten feet. Texture and thickness of layers variable.

Burt mucky sand (Bu) Poorly drained soils with less than 20 inches of sandy loam sand over sandstone bedrock. Numerous sandstone fragments and slabs on surface and in profile. Water table at or near the surface unless drained. Subject to ponding.

Burt loamy sand (BwA) This is a somewhat poorly drained sandy soil underlain by sandstone bedrock at 10 to 20 inches. It has a seasonally high water table which fluctuates between about six inches to below the bedrock. Water movement through the soil is rapid in the soil material. Natural fertility is low.

Carbondale muck (Ck)	Very poorly drained soils with more than 42 inches of muck and peat. Derived from coniferous woody plants mixed with fibrous materials. Nearly level and depressional areas subject to water ponding. Water table at or near surface unless drained.
Chippeny muck (Cm)	Very poorly drained soils with 12 to 15 inches of muck or peat over limestone bedrock. Organic material derived from wood material mixed with fibrous material. Subject to ponding. Water table at or near surface unless drained. Thin mineral layer is common between organic material and bedrock.
Crosswell sand (CrA)	Moderately well-drained soils with sandy surface layer over acid sands to 60 inches or more. Found in low dunes, outwash and lake plains. Drouthy and subject to wind erosion. Water table commonly below five feet, but can be within three feet of surface in wet periods.
Dawson muck (Da)	Very poorly drained soils with 12 to 42 inches of extremely to strongly acid muck and peat over sands. Level and depressional areas subject to water ponding. Water table at or near surface unless drained.
Deer Park sand (DkB)	Well-drained soils with sandy surface layer over acid sands to 60 inches or more. Found in low dunes, outwash, and lake plains. Drouthy and subject to wind erosion.
Deerton sand (DmB)	Well or moderately well-drained sand or loamy sand soils 20 to 40 inches deep over acid sandstone bedrock of 20 to 40 inches. Occurs in till plains and bedrock benches.

Deerton sand wet variant (DoA)	This is a somewhat poorly drained sandy soil underlain by sandstone bedrock of 20 to 40 inches. It has a seasonally high water table which fluctuates between about one foot to below the sandstone. Water movement through the soil is moderately rapid to rapid in the soil materials.
Deerton sand shallow variant (DsB)	This is a well-drained sandy soil underlain by sandstone bedrock at 10 to 20 inches. Water movement through the soil is moderately rapid to rapid.
Deford loamy fine sand (Dt)	Poorly drained to very poorly drained soils with loamy fine sand surface soil over stratified fine sand, very fine sand and loamy fine sand. Thickness and texture of layers vary greatly. Nearly level and depressional areas of outwash and lake plains. Water table at or near surface unless drained.
Dune land (Du)	This miscellaneous land type consists of long narrow strips of sand dunes which occur along the shore lines of Lake Superior. The areas of dune land comprise partly stabilized dunes which lie immediately inland from the lake beach. The dunes have slopes that range from 8 - 40%. Soil profiles developed in these areas are virtually absent. Vegetation is sparse and consists of beach grass, yew, and scattered jack pines.
Gay mucky sandy loam (Ga)	Poorly and very poorly drained soils with loamy surface layers over sandy loam or light sandy clay loam. Acid sandy loam at a depth ranging from 33 to 48 inches. Depressional areas on till plains and moraines. Water at or near surface unless drained. Subject to water ponding.

Greenwood peat (Gw)	Very poorly drained soils with more than 42 inches of strongly acid muck and peat. Derived from mosses and sedges in leatherleaf bogs. Nearly level and depressional areas subject to water ponding. Water table at or near surface unless drained.
Ingalls sand (InA)	Somewhat poorly drained soils with 18 to 42 inches of loamy sand or sand over calcareous stratified silts and very fine sands. Occurs in lake plains. Water table fluctuates between two and ten feet.
Kalkaska sand (KaB)	Well-drained soils with sandy surface layer over acid sands to 60 inches or more. Found in low dunes, outwash and lake plains. Weakly cemented at 10 to 24 inches in some area. Drouthy and subject to wind erosion.
Kawbawgam sandy loam (KbA)	Somewhat poorly drained soils with 20 to 40 inches of sandy loam over sandstone bedrock. Sandstone fragments on the surface and throughout the profile in some areas.
Keweenaw loamy sand (KmA)	Well-drained or moderately well-drained soils having a loamy sand surface layer over loamy sand with a thin sandy loam layer and a very weak to moderate fragipan. Acid loamy sand at about 30 inches. Occurs in till plains and moraines. Strata of sand or sandy loam below 24 inches in some area.
Keweenaw loamy sand wet variant (KmA)	This is a somewhat poorly drained predominantly sandy soil. It has a seasonally high water table which fluctuates between about one and six feet. Water movement through the soil is moderately rapid.

Keweenaw loamy sandy poorly drained variant (Kp)	This is a poorly drained predominantly sandy soil. It has a seasonally high water table which fluctuates between the surface and about three feet. Water movement through the soil is moderately rapid.
Kinross mucky sand (Kr)	Poorly to very poorly drained soils having a sandy surface layer over very strongly to strongly acid sands. Depressions and nearly level areas of outwash and lake plains. Water table at or near surface unless drained. Subject to water ponding.
Munising sandy loam (MuB)	Mull-drained to moderately well-drained soils with loamy surface layer over sandy clay to sandy loam. Acid sandy loam glacial till at a depth ranging from 30 to about 50 inches. Occurs in till plains and moraines. Stony in some areas. Moderate to strong fragipan at about 18 inches.
Ocqueoc fine sand (OcB)	Well-drained and moderately well-drained soils with 18 to 42 inches of sand or loamy sand, over calcareous stratified silts and very fine sands. Occurs in lake plains.
Onota sandy loam (OnB)	Well-drained and moderately well-drained soils having 20 to 40 inches of sandy loam glacial material over sandstone bedrock. Numerous sandstone fragments and slabs on surface and throughout profile in some areas.
Onota sandy loam poorly drained variant (Op)	This is a poorly drained loamy soil underlain by sandstone bedrock at 20 to 40 inches. It has a seasonally high water table which fluctuates from the surface to about three feet. Water movement through the soil is moderate.

Rousseau fine sand (RoB)	Well-drained soils with fine sandy surface layer over acid stratified fine and very fine sands to 60 inches or more. Found in low dunes, outwash and lake plains. Drouthy and subject to wind erosion.
Rubicon sand (RuB)	Well-drained soils with sandy surface layer over acid sands to 60 inches or more. Found in low dunes, outwash and lake plains. Drouthy and subject to wind erosion.
Seney sand (SeB)	This is a well-drained sandy soil. Water movement through the soil is rapid.
Skanee sandy loam (SkA)	Somewhat poorly drained soils with loamy surface layer over sandy loam or sandy clay loam. Acid sandy loam glacial till at a depth ranging from 24 to about 36 inches. Occurs in till plains an moraines. Water table fluctuates between two and ten feet. Weak to moderate fragipan, 5 to 18 inches thick, at about 24 inches.
Tawas muck (Ts)	Very poorly drained soils with 12 to 42 inches of muck and peat over sands. Organic material derived from coniferous woody plants mixed with fibrous material. Level and depressional areas subject to water ponding. Water table at or near surface unless drained.
Wainola fine sand (WaA)	Somewhat poorly drained soils with loamy fine sand surface soil over stratified fine sand, very fine sand and loamy fine sand. Thickness and texture of layers varies greatly. Nearly level areas of outwash and lake plains. Water table fluctuates between one and ten feet.

Yalmer (Ya) — This is a well-drained sandy soil underlain by loamy material at 20 inches to 40 inches. It has a hardpan (fragipan) in the upper 4 to 16 inches of the loamy material. Water movement through the soil is rapid in the sandy layers, moderately slow in the pan and moderate below the pan.

Yalmer loamy sand (YaB) — This is a poorly drained sandy soil underlain by loamy material at 20 to 40 inches. It has a seasonally high loamy sand water table which fluctuates between the surface and (YaB) about three feet. Water movement through the soil is rapid in the sandy layers and moderate in the loamy layers.

Yalmer wet (YsA) — This is a somewhat poorly drained sandy soil underlain by loamy material at 20 to 40 inches. It has a seasonally high water table which fluctuates between one and five feet. It has a hardpan (fragipan) in the upper 4 to 12 inches of the loamy material. Water movement through the soil is rapid in the sandy layers, moderately slow in the pan and moderate in the remainder of the soil.

As discussed earlier, now that the soils are identified they can be grouped according to their suitability for different uses within the Township. Two major uses are identified for study. These are urban uses and resource production. Resource production refers to farming activities and forest activities. The urban uses were rated as to their suitability for residential development without public sewer, residential development with public sewer, and those areas not suitable for any urban development. Tables III-1 and III-2 indicate the suitability of each soil series for the uses explained above.

Table III-1
Soil Suitability for Urban Uses in
Chocolay Township

Suitable Uses	Soil Series Abbreviations
Suitable for all urban uses	CrA, DkB, KaB, KeB, RoB, RuB, SeB
Suitable for urban uses if public sewer available	AuA, BhB, BrA, DmB, DoA, DsB, KbA, KmA, MuB, OcB, SkA, WaA, YaB, YsA
Severe limitations for all urban uses	Ad, Bu, BwA, Ck, Cm, Da, Dt, Du, Ga Gw, InA, Kp, Kr, OnB, Op, Ts

Source: Soil Conservation Service

Table III-2

Soil Suitability for Resource Production Uses in
Chocolay Township

Suitable Uses	Soil Series Abbreviations
Suitable for farming and forests	AuA, BhB, BrA, CrA, DmB, KaB, KbA, KeB, KmA, MuB, OcB, OnB, RoB, Seb, SkA, WaA, YaB, YsA
Suitable for forests	DkB, DoA, Ga, RuB
Severe limitations for all resource production uses	Ad, Bu, BwA, Ck, Cm, Da, DsB, Dt, Da, Gw, ImA, Kp, Kr, Op, Ts

Source: Soil Conservation Service

These groupings have been applied to maps of Chocolay Township to show physically where the areas are located. At this time, wall size maps have the data which will later be transferred to report size maps. It should be emphasized that the soil suitability data is a general indicator of suitable or unsuitable areas of the Township. Whenever a specific parcel is in questions, detailed data for that piece of land should be obtained from the Soil Conservation Service.

The information is useful to the Township as an indicator of the best future development area for the Township. Such development decisions will include considerations of private development and related public improvements. Based on these soil ratings, the Township can encourage future growth in the appropriate locations through placing their public improvements accordingly and through the zoning ordinance.

Mineral Deposits

Over the years man has learned more and more about the formation of earth and the properties of the material around him. With this knowledge, new technologies to utilize the material found on earth have evolved. So, over time, the demand for various minerals has increased as the uses are expanded. Because of this demand for certain minerals and their limited supply, it is important to identify occurrences of minerals. Considering the potential for extracting these valuable minerals, development by man that would be in conflict with the extraction process should be discouraged if at all possible. It is for this reason that such deposits are investigated in Chocolay Township.

Valuable mineral deposits can be divided into two categories: 1) ferrous metals and 2) non-ferrous metals. The ferrous metals, particularly iron ore, are prominent in Marquette County. However, current mapping of the Marquette Iron Ore Range by Cleveland Cliffs Iron Ore Company shows the iron formation

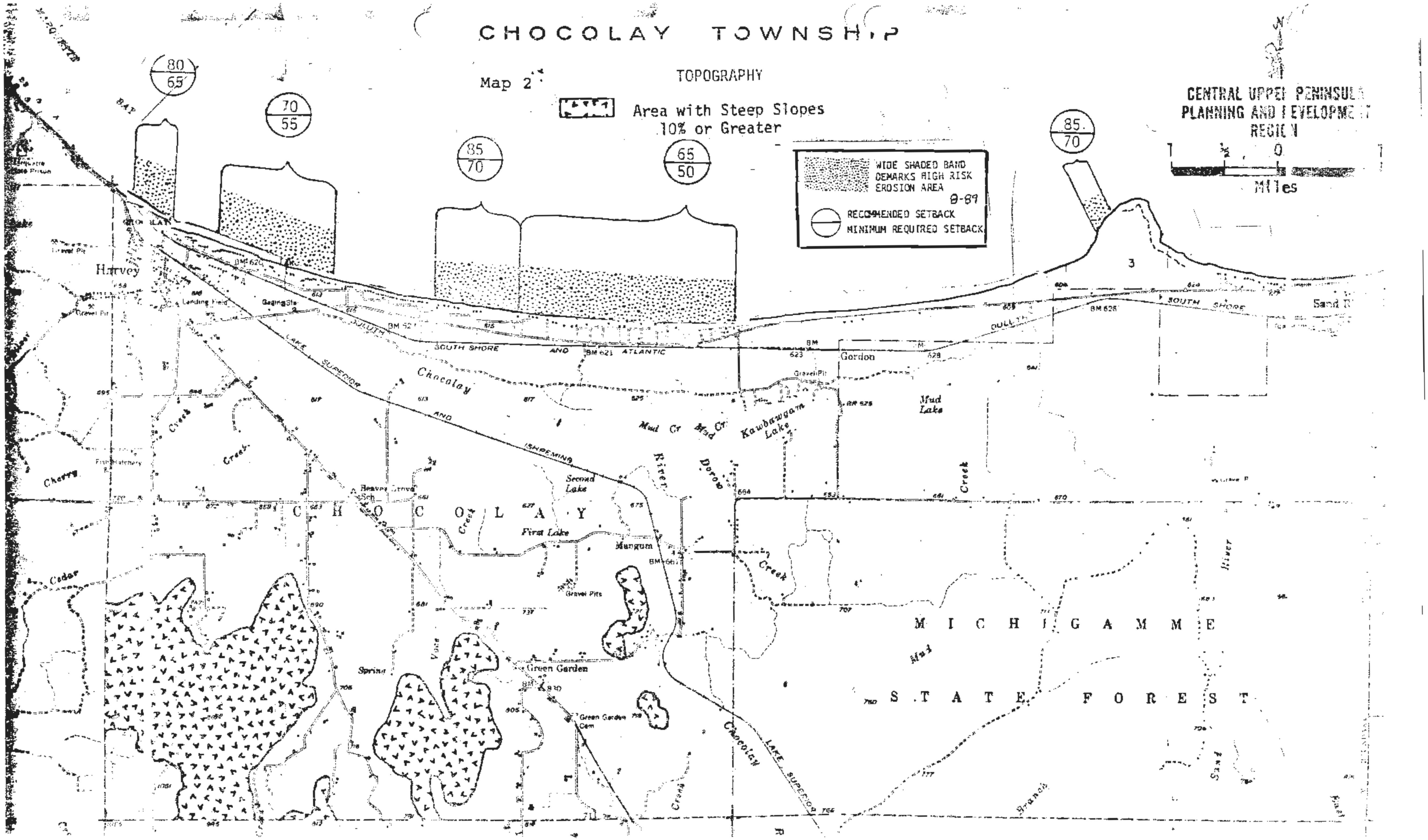
Non-ferrous metals include gold, silver, lead, zinc, copper, etc. There are also occurrences of these in Marquette County and gold has even been mined west of the City of Marquette. In relation to Chocolay Township, there have been some traces of copper, lead, and zinc found within the Township. These traces have appeared in test borings. The amounts found have been small and as yet are not considered large enough quantities to warrant any mining operations.

However, other low value mineral resources such as sand and gravel do exist throughout the Township. Extraction of these resources are dependent on local needs and location economies. Because the hauling costs can easily exceed the resource's market price, deposits must be located in close proximity to the user area. For this reason, these mineral resources should be preserved as Areas of Particular Concern.

Topography

When the earth was formed, it is obvious that the resulting surface did not end up flat. There are hills, ravines, mountains, flat plains, and a thousand other shapes to the earth. This changing surface can be said to have a changing topography. The vertical distance measured above mean sea level is elevation. These elevation changes in the landscape determine the size and slope of a watershed.

The importance of looking at topography in Chocolay Township centers on identifying the best suited areas of the Township for various uses. The steep topography (10% or greater slopes) is generally thought of as not desirable for most types of


CHOCOLAY TOWNSHIP
Map 2
TOPOGRAPHY
Area with Steep Slopes 10% or Greater
CENTRAL UPPER PENINSULA PLANNING AND DEVELOPMENT REGION
Miles
WIDE SHADED BAND DEMARKS HIGH RISK EROSION AREA
8-89
RECOMMENDED SETBACK
MINIMUM REQUIRED SETBACK
80
65
70
55
85
70
65
50
85
70
Harvey
Landing Field
Gordon
Chocolay
Kawbawgam Lake
Mud Lake
Mud Cr
Second Lake
First Lake
Mangum
Beaver Grove Sch
Fish Hatchery
Cherry
Cedar
Creek
River
Green Garden
Green Garden Cem
Gravel Pits
Spring
C H O C O L A Y
M I C H I G A M M E
S T A T E F O R E S T
SOUTH SHORE AND ATLANTIC
DULUTH SOUTH SHORE
LAKE SUPERIOR AND ISHPEMING
Sand
Branch

development. Map 2 on the previous page shows the areas in the Township that have a slope of 10% or greater. Construction costs are usually higher, chances of erosion occurring when this soil is disturbed is very high, and if public services are provided, the steep areas can cost more in providing service. For reasons such as these, steep areas are discouraged as prime development areas, especially when the flatter locations are available.

Other significant topographic characteristics are unique geologic formations. In Chocolay Township this would include the sand bluffs along Lake Superior and the protruding bedrock formations. These areas, in addition to the steep-sloped areas, are Areas of Particular Concern.

Water Features and Watersheds

These elements of natural features consider the bodies of water and their inter-connection through drainage basins. Streams, rivers, lakes, and wetlands all play a valuable role in Chocolay Township's natural features. Persons in Chocolay Township use the water for sources of domestic water. They use the same water for transporting and treating their human wastes. But these same waters are relied on for recreation by bathers, fishermen, boaters, nature lovers, and water-bound creatures. These uses alone put much strain to keep the water at a high quality, usable level in future years.

It is important that all persons in the Township realize that their small additions to the subsurface and surface water bodies is only a fraction of the impurities that enter the system. If each individual, municipality, business, or land user will do their share of protecting these water features from effluent, then no one will suffer the loss of these valuable natural features.

Superior is also a water feature associated with Chocolay Township. It is influenced by all of the above named water bodies because of their drainage.

These water areas and the other lesser streams and ponds are all very important to the life cycle of both humans and animals, and deserve to be Areas of Particular Concern.

This brings us to the watersheds within Chocolay Township. Based on the topography of Chocolay Township, the surface and subsurface waters flow together in watersheds or basins. Each stream has a watershed or area of land that drains toward a central corridor. Depending on the size of the watershed and amount of water collected within it, a body of water, usually a stream or river, will form to carry this water off. So all impurities or effluent released into one watershed eventually becomes consolidated in a stream or river serving the watershed. This is how each individual action affects all others downstream in the same watershed. The major watersheds are delineated on Map 3, the water features map.

Shoreland Features

Chocolay Township has approximately twelve miles of Lake Superior shoreline. This area of shoreland is looked at specifically because of legislation pertaining to the management of these areas. State consideration and finally legislation of the Great Lakes shoreline was prompted because of the high damage losses to shoreline development over the years. There is a great attraction to living along the shore as can well be understood. But with the lake level fluctuating over the decades, what often happens is development occurs close to the water during the years of low

WATER FEATURES

Map 3

Watersheds

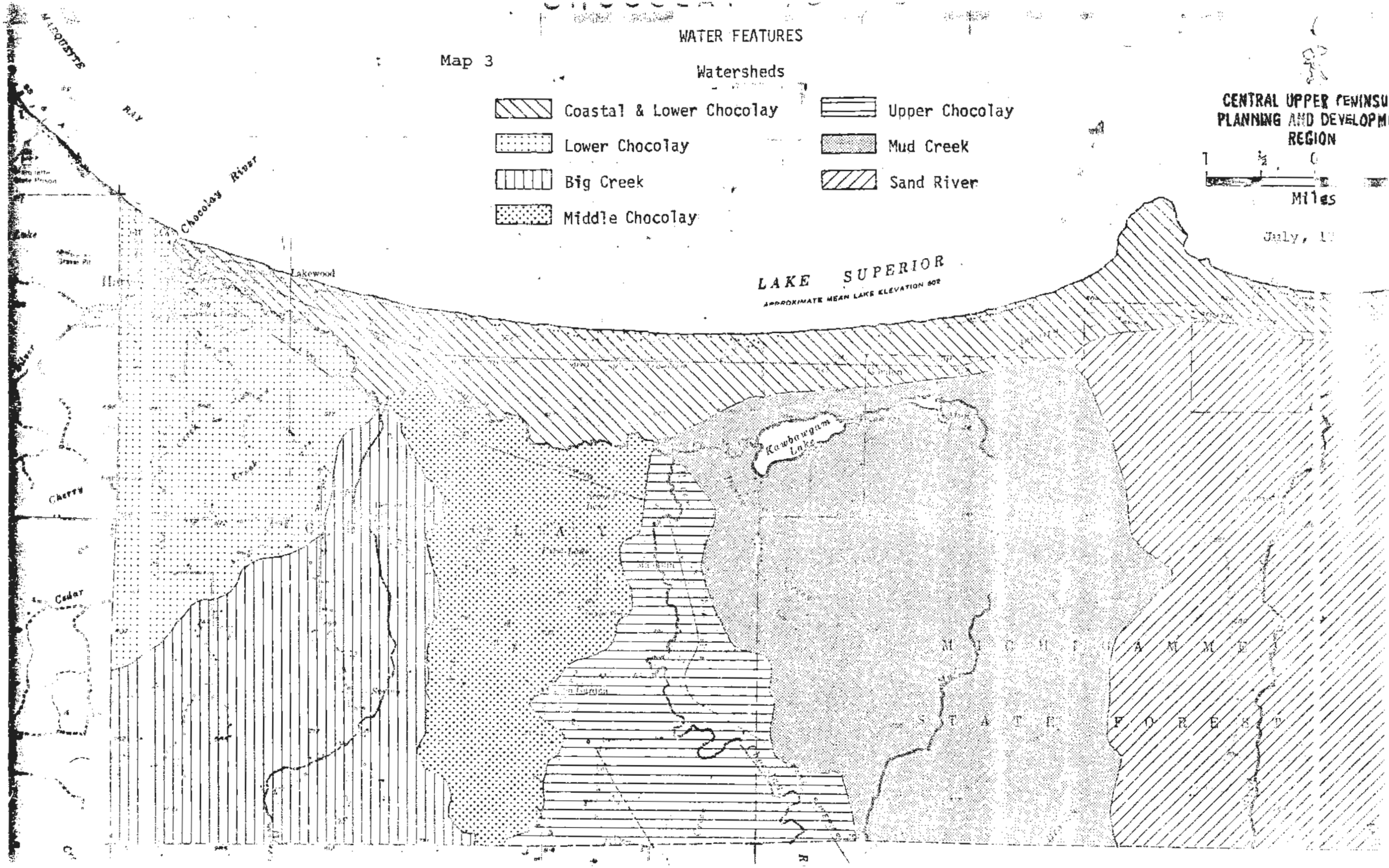
- Coastal & Lower Chocolay
- Lower Chocolay
- Big Creek
- Middle Chocolay
- Upper Chocolay
- Mud Creek
- Sand River

CENTRAL UPPER PENINSULA PLANNING AND DEVELOPMENT REGION

1 ½ 0

Miles

July, 1



water and then is endangered by high water in the years that follow. Much federal, state, and private money is invested each year in shoreland protection structures and reconstruction of damaged developments.

The intent of the Shorelands Protection and Management Act (P.A. 245 of 1970) is to prevent future damage to permanent residential, commercial, and industrial buildings that may be built in the future in high risk erosion areas of the Great Lakes shoreline. The aim is to prevent damage to buildings, including septic systems and tile fields, for a 30-year period after their construction by requiring a setback distance from the bluff.

It is not the State's intention to regulate all of the Great Lakes shoreline, only to encourage setbacks at locations determined to be high risk erosion areas. The Act only permits the State to regulate areas designated high risk erosion areas and only approximately ten percent of Michigan's Great Lakes shoreline fits this designation. It is also important to mention that the Act does not give authority to ban persons from using their property, it just allows a setback requirement.

The Act pertains to undeveloped, unplatted property in areas designated as having significant erosion. The Department of Natural Resources, by statute, must institute a permit procedure for approving building setbacks in all undeveloped, unplatted high risk erosion areas by July 1, 1975, if no local zoning is enacted by then. However, this permit procedure will be in effect only until a local zoning ordinance is developed and approved.

Chocolay Township has approximately 6.75 miles of shoreline that are designated as high risk erosion under the DNR guidelines. These high risk erosion areas are shown on Map 2 on page 34. Parts of this shoreline are developed and parts are not. This Act can only apply to those areas undeveloped by requiring future development to utilize the setback. Therefore, the Township should consider classifying these areas as Areas of Particular

Concern and utilizing a setback provision in the zoning ordinance.

Issues and Problems

As the previous discussion investigated each element of natural features within the Township, particular issues and problems have been identified. These will be listed to allow the Township to concentrate their effort in these significant areas of concern.

-The majority of soils in the Township are not suitable for urban types of development.

-A large percentage of the Township has soil suitable for forest production.

-Soil characteristics in the Township make septic tank operation only workable in very limited areas of Chocolay.

-Mineral deposits in the Township have only appeared in trace amounts and are not of commercial value.

-There is an area of steep slopes (10% or greater) in the southwest corner of Chocolay Township, and development should be discouraged in this area.

-Chocolay Township has 6.75 miles of designated high risk erosion areas.

-Areas of Particular Concern have been identified, and the Township is encouraged to take steps in preserving them.

CHAPTER FOUR

EXISTING LAND USE

The previous chapter, entitled "Natural Features" was an investigation of the land forms and water features occurring in Chocolay Township. This included all aspects of the township that were put here by nature and could be altered by human impact.

This chapter looks at development in the township to the present time. This is done by doing an inventory of the various land uses within the township. It shows the areas of the township that are developing and the types of uses present.

An important aspect of land use is identification of growth areas. This is done by looking at development trends over the years. In 1963, a land use study of the urban portion of the township, primarily the Harvey and Lakewood areas, was done. In 1974, another land use study was conducted by the Chocolay Township Planning Commission in conjunction with the Central Upper Peninsula Planning and Development Region (CUPPAD). These land use studies provided a comparison of development trends over the years. In the major developed areas of the township, the 1974 land use study was an important element in developing the Township Zoning Ordinance.

The most current land use/land cover inventory, completed in 1983, is a product of the Marquette County Planning Commission who prepared a land use inventory for the county in conjunction with the Michigan Department of Natural Resources. The land use inventory category is all types of land use and natural surface features in the Township. This land use inventory went beyond the previous land use inventories in that it included the entire township in the inventory. A complete description and analysis of this study is given further on in this chapter.

Table IV-1
Classification System for
Chocolay Township Land Use
1974

11. RESIDENTIAL

MULTI FAMILY, LOW RISE
1123. Low Density, Apartment

SINGLE FAMILY/DUPLEX
1132. Medium Density
1133. Low Density
1134. Non-Farm Residence
1135. Mobile Home
1136. Seasonal Dwelling
1139. Duplex

STRIP RESIDENTIAL
1141. High Density, Shoreline
1142. Med. Density, Shoreline
1143. Low Density, Shoreline
1144. High Density, Roadside
1145. Med. Density, Roadside
1146. Low Density, Roadside

MOBILE HOME PARKS
1151. High Density
1153. Low Density

GROUP AND TRANSIENT QUARTERS
1167. Hotels, Tourist Courts Motels

12. COMMERCIAL, SERVICES, AND INSTITUTIONAL
1211. Commercial
1212. Services
1214. Education
1215. Religious
1216. Correctional
1218. Government Administration and Services
1271. Cultural, Indoor

13. INDUSTRIAL
1327. Petroleum Refining and Related Industries
1390. Warehouse

15. TRANSPORTATION, COMMUNICATION, AND UTILITIES

RAIL TRANSPORTATION
1529. Engineering Office

COMMUNICATION
1551. Telephone

UTILITIES
1564. Solid Waste Disposal

19. OTHER AND OTHER OUTDOOR RECREATION
1911. Aesthetic and Resting Areas
1912. Play, Games, and Athletics
1915. Water, Picnic, Camping and Nature Study Activities

20. AGRICULTURAL LAND
2100. Cropland, Rotation, and Permanent Pasture
2800. Inactive Agricultural Land
2911. Farmstead with Active Residence
2912. Farmstead without Active Residence

30. FOREST
Detailed Maps
Township Maps

Source: Department of Natural Resources, "Michigan Land Use Classification System," Working Paper of February, 1974.

The 1974 land use inventory classification system used in Chocolay Township was the Michigan Land Use Classification System, shown in Table IV-1. Under this system, lands in Chocolay Township were grouped into seven major classifications: 1) residential; 2) commercial, services, and institutional; 3) industrial; 4) transportation, communication, and utilities; 5) open and other; 6) agricultural; 7) forest. Within each of these areas, a more detailed breakdown was done. Table IV-1 on the previous page shows the system used and details what types of uses are contained in each classification.

In 1974, using the classification system shown in Table IV-1, the land in Chocolay Township was inventoried. This information was then displayed on two different scale maps. The first map shows all of the township at a scale of 1" = 2,000 feet, which is used for the rural land use analysis.

The rural land use map for the township for 1974 showed the open land cleared of trees in two categories: active farm land and inactive farm land. The active farm land was classified for those areas used for permanent pasture, potatoes, oats, and hay. Inactive farm land contained various weeds or grasses that perpetuate themselves, and sometimes contain seedlings of nearby trees that are slowly encroaching on the open area.

The other map, used for the urban portion of the township, is at a scale of 1" = 200 feet and covers an area from Lake Superior Shore from the Harvey/Lakewood area. Since major land use classification were more prominent in the Harvey/Lakewood area, specifically the Harvey area, the larger scale map provides a more detailed inventory.

In looking back at the residential pattern of growth in 1974, the rural area was definitely being built up at a fast pace. U.S. 41 from Beaver Grove to Harvey was almost a continuous residential strip, as was County Road 480 from Beaver Grove West. Cherry Creek Road was well on its way to being solid residential down to

the end of its paved length. The other township roads had less concentrated growth, but homes occurred at least every quarter mile throughout the west half of the township. Kawbawgam Lake had solid seasonal homes on its north shore with concentrated year-round homes on the parallel paved road just off the lake's north side. Future road right-of-ways had been cleared in the jack pines north of the lake, which could have brought many more homes to the Kawbawgam Lake area.

The Lake Superior shoreline on both sides of Shot Point consisted of continuous residential strips. There were intermixed seasonal and year-round homes. Shot Point had a number of lots available along the shore. Several seasonal dwellings had been built with one year-round home on the east shore.

Table IV-2 shows the land use classifications for the Harvey area and vicinity for 1963 and 1974. It shows the number of acres in each classification and the percentage of the total acreage in the study area that each classification represented.

Table IV-2
Land Use Quantities for Harvey and Vicinity[1]
1963 and 1974

	1963		1974	
Category	Acres	% of Area	Acres	% of Area
Residential	552	17.9	668	21.7
Commercial, Service & Institutional	19	0.6	31	1.0
Industrial	2	0.1	5	0.2
Transportation, Communication and Utilities	1	0.1	1	0.1
Open and Other	0	0.0	4	0.1
Active Agriculture	20	0.6	20	0.6
Inactive Agriculture	200	6.5	200	6.5
Roads and Railroads	203	6.6	217	7.0
Forest and Vacant	2,028	65.8	1,879	61.0
Water Bodies	55	1.8	55	1.8
Total Acreage in Study Area	3,080	100.0	3,080	100.0

[1] Study Area consists of Section 5,6,7,8,10,11, and 12 of Township 47 North, Range 24 West.
Source: 1963 NMU Land Use Study; 1974 CUPPAD Land Use Study

In looking at the changes from 1974, it is clear that the pattern of development along many roads was already in existence. Although very few home have been constructed along the highway from the intersection of U.S. 41 and M-28 to Beaver Grove, many of the subdivisions developed during the period of 1970 to 1980 were developed with access roads onto U.S. 41, such as Ewing Park, the Holiday Villa subdivision, and the rural development on Orchard Lane.

The same is true for County Road 480 for areas such as the Briarwood and Countryside Subdivisions which have access onto 480 and the developments themselves are located north of County Road 480. Cherry Creek Road is in a similar situation in that the developments of Woodvale One through Four were located with access to Cherry Creek Road and the developments themselves were located to the west of the road. Rural developments also occurred along the end of Cherry Creek Road, Little Lake Road, and Karen Road in the southwest part of the township.

As for Kawbawgam Lake, many of the seasonal dwellings on the north shore of the lake have been converted to year-round dwellings. As far as future development in the Kawbawgam area, due to the high iron content of the water and/or for other reasons, future plats were not developed in this area.

In 1974, the Lake Superior Shoreline on both sides of Shot Point consisted of continuous residential strips. This is true of the M-28 area in general. Some infill of existing vacant lots along M-28 and the Shot Point area have taken place from the period of 1975-1987. However, most of the development occurred south of M-28 on Timberlane with residential development of Candace Estates, Fernwood, and Ridgewood subdivisions occurring in this area.

Development slowed dramatically in the 1980s. While there were many plats submitted during the period of 1972 through 1979, there has been no platting of undeveloped land in the period 1980 through 1987.

The most current land use inventory was completed in 1983. In the period of 1980-1983, air photos were interpreted by the Marquette County Planning Commission staff to determine land use and land cover for the entire township. This inventory also divided land use/land cover into seven major classifications. These classifications are different, however, than the classifications used in the 1963 and 1974 inventories. While the 1983 land use/land cover inventory cannot be directly related to the 1963 and 1974 studies, the data is valuable in a review of existing land uses. Below are the classifications for the 1983 inventory:

1) Urban and Built-up
2) Agricultural
3) Open
4) Forest
5) Waters
6) Wetlands
7) Barren

Within each of these areas, a more detailed breakdown was done. Due to the complexity of the land use/land cover maps, it was not practical to include a large-scale map here. Detailed land use/land cover maps of the entire township for all the inventories are available through the Office of the Township Zoning Administrator. The 1983 inventory maps are scheduled to be updated every five years and will provide some valuable comparisons in the future.

As in the 1963 and 1974 inventories, total acreage was computed for each land use/land cover type. Table IV-3 lists the classifications along with their total acreage and percentages. As was stated above, the 1983 land use/land cover inventory cannot be directly related to the 1963 and 1974 studies because the classifications are different.

TABLE IV-3

Summary of Land Use/Cover Types for Chocolay Township

Land Use/Cover Description Area	Acres	% Total
10000 URBAN AND BUILT UP	2423.3	6.24
11200 Multi-Family Residential	2.2	.01
11300 Single-Family Residential	2190.1	5.64
11500 Mobile Home Park	14.8	.04
12000 Commercial, Services, Institutional	26.5	.07
12100 Primary/Central Business	10.2	.03
12400 Secondary/Neighborhood Business	63.2	.16
12600 Institutional	20.5	.05
13000 Industrial	7.8	.02
14000 Transport, Communication, Utilities	6.4	.02
14600 Utilities	13.2	.03
17100 Open Pit	2.7	.01
17140 Sand and Gravel	43.6	.11
19300 Outdoor Recreation	22.1	.06
20000 AGRICULTURAL LAND	2683.5	6.91
21000 Crop Land	2586.7	6.66
24000 Permanent Pasture	60.2	.16
29000 Other Agricultural Land	36.5	.09
30000 OPEN LAND	1896.2	4.88
40000 FOREST LAND	28146.3	72.48
41100 Northern Hardwood	16853.5	43.40
41300 Aspen/Birch	1855.7	4.78
41400 Lowland Hardwood	1624.9	4.18
42100 Pine	3237.8	8.34
42200 Other Upland Conifers	3274.4	8.43
42300 Lowland Conifers	1284.9	3.31
42900 Managed Xmas Tree Plantation	15.0	.04
50000 WATER	347.7	.90
51000 Streams & Waterways	13.8	.04
52000 Lakes	333.8	.90
60000 WETLANDS	3185.7	8.20
61100 Woodland Wetlands	108.1	.28
61200 Shrub/Scrub Wetlands	2643.5	6.81
62100 Aquatic Bed Wetland	18.6	.05
62200 Emergent Wetland	415.4	1.07
70000 BARREN	148.3	.38
72000 Beaches & Riverbanks	86.4	.22
73000 Sand Dunes	58.4	.15
74000 Bare Exposed Rocks	3.5	.01
TOTAL ACRES IN CHOCOLAY TOWNSHIP	38831.0	100.00

As can be seen from Table IV-3, land use/land cover is dominated by four categories: 1) Forest Land, 2) Wetlands, 3) Agricultural Land, and 4) Urban and Built Up. Upon analysis of the individual land use/land cover types, it is evident that 72% of the township land is forested. While much of this land is not available for development, due to State ownership, it is this land that provides Chocolay Township with its rural flavor. At 8.2%, Wetlands are the next largest percentage of land cover in Chocolay. In recent years, the preservation of wetlands as wildlife habitat has gained support. Even if a permit can be obtained from the Michigan Department of Natural Resources, prohibitive costs can render these wetlands virtually undevelopable.

Agricultural land comprises 6.9% of the total land area of Chocolay Township. The active farm ground is used for permanent pasture, potatoes, oats, and hay. The farming areas are scattered along the main roads of the township and vary in size from 30 acres to over 300 acres of contiguous farm land. This agricultural classification does not include lands which may have been classified as forest lands adjacent to existing farmlands.

The fourth largest land use is Urban and Built Up which amounts to 6.2% of the township's total acreage. This category is of particular significance since human impact is the most obvious on the environment. Chocolay Township appears very rural in nature with only 6.2% of its land urbanized. One might expect low development density, and an abundance of land available for development. In reality, however, the township is limited for certain types of development due to its natural restrictions.

In 1987, the following observations can be made with respect to commercial development within the township. The area from the rock cut to just south of the intersection of M-28 and U.S. 41 where the Ewing Plaza subdivision is located is the primary area for commercial development. North of the Harvey area, there has

been a conversion of homes to professional offices and retail sales while the area south of Harvey along U.S. 41 has remained undeveloped except for the Ewing Park Subdivision just south of the U.S. 41 - M-28 intersection.

In the greater Harvey area, some conversion of existing buildings to established businesses has taken place, such as the Sunshine Stop, which is a convenience store and gas station, Peterson's Pasties restaurant, as well as the renovation of a warehouse to kitchenette units adjacent to the Parkway Motel. Other developments include a day-care center and a medical clinic near Corning Avenue. These developments occurred near a large commercial zoning district in the Harvey area between the commercial and residential areas of Harvey. Elimination of single family homes provided the land for development.

Around the M-28 -U.S. 41 intersection area, expansion of commercial businesses has been experienced, such as an A&W restaurant, built in 1974; Jack's IGA, built in 1977; a four-unit professional building, built in 1986; and a video shop which rents video tapes, built in 1987. On the southeast corner of the intersection, a sixteen unit expansion to the Royal Motel, now the Marquette Motor Lodge, took place in 1987. Early in 1988, a plan was submitted by the Holiday Gas Station to develop a Holiday station store on the northeast corner of the intersection.

Some scattered commercial development such as the development of the Aurora Borealis restaurant in the Beaver Grove area in 1987, and a bank in this area around 1980 took place. Most recently a used car sales business opened in the southern part of Beaver Grove. Existing businesses in this area consist of two gas stations/convenience stores, and the Superior Truck repair garage.

At the Varvil Center on M-28 East, currently a pizza restaurant and a small office building are located there. The remainder of

the Varvil Center contains warehouses and storage type uses in existing buildings. Further along M-28, Timbercrest nursery and landscaping business replaced the existing Peninsula Sanitation operation in the early 1980s.

While knowing how much land is developed is important to the Township Board and citizens of Chocolay, they are much more concerned with how each specific land use interacts with other land uses. This concern for compatible land uses has guided Chocolay Township in the formation of a Planning Commission and a zoning ordinance.

In an effort to quantify the land available for certain zoning classifications and to plan for the future planning period, 1987 - 2000, a zoning district inventory was performed. The inventory was performed to determine the acreage of each existing zoning classification and to identify zoning districts or categories that may need expansion.

In an effort to measure the developable land remaining, it was necessary to first measure the individual zoning districts, then subtract land that is non-developable. Land is classified as non-developable if it is either already developed, or has some restriction to development. Examples of non-developable land due to natural restrictions could be land with rock outcrops, wetlands, water, and/or slope.

Table IV-4 shows each zoning district, the permitted principal uses, and the total acres in each classification. The total acres in each classification are not necessarily one contiguous district. For instance, the Commercial-Three (C-3) has a total of 94.00 acres that are actually several separate land areas.

TABLE IV-4
Zoning District Summary

ZONING DISTRICT	TOTAL ACRES
Residential-One (R-1) Single-family dwellings	3,716.34
Residential-Two (R-2) Single-family dwellings and mobile homes	113.56
Residential-Three (R-3) Mobile home dwellings in mobile home parks	209.91
Lake, Shore, & River (LS&R) Single-family dwellings	31.97
Rural Residential-One (RR-1) Single-family dwellings, churches, schools, parks	102.16
Rural Residential-Two (RR-2) Timber harvest, livestock, single-family with minimum lot size of 5 acres	6,108.01
Commercial-One and Commercial-Two (C-1 and C-2) Assorted businesses	169.00
Commercial-Three (C-3) Business and light industrial	93.00
Resource Production (RP) Timber, livestock, agricultural, dwellings on lots of 20 acres or more	14,350.59
Open Space (OS) Timber, produce, livestock, wildlife management, dwellings with 20 acre lot size are conditional uses	13,933.34
TOTAL ACREAGE/ALL ZONING DISTRICTS	38,827.88

A review of Table IV-4 shows that Resource Production and Open Space account for 71% of the zoned land in Chocolay Township. Many people feel that having this much land committed to this type of land use maintains the desired rural atmosphere of the township. It is this rural atmosphere that has attracted many of Chocolay Township's citizens.

The next largest zoning classification, Rural Residential-Two, accounts for 16% of zoned land in the township. The principal uses of this type of land are similar to Resource Production and Open Space, but with smaller minimum lot size requirements. The third largest zoning classification, Residential-One, which are single-family dwellings with smaller lot sizes, makes up 10% of the remaining zoned acreage. Combined, the other residential zones total less than 1% of Chocolay Township's total acreage.

It is obvious from this inventory that labeling Chocolay Township a "bedroom community" is not inaccurate. When all land currently zoned residential as its principle permitted use is totaled, it accounts for 98% of the township's land area. Based on projected needs for residential development, it may be that sufficient residentially zoned land is available to accommodate projected levels of growth. This does not mean that all land available is ideally situated, reasonably priced, or relatively easy to develop. This simply means that based on the assumption of moderate growth and in-migration, undeveloped land is available to meet this need to the year 2000.

The remaining 2% of the township's zoned land is dedicated to commercial land use. This is divided between three classifications, each permitting different types of businesses and light industry. It may be that commercial zoning districts are near capacity and this situation is currently being evaluated. If additions or expansions are made to these commercial zoning districts, public infrastructure availability and site suitability must be thoroughly reviewed as well as the type of desired development that can be attracted to these areas.

As the population of the township has grown in the last two decades, citizens have expressed a desire to expand the range of goods and services available to them within the township. Through three development surveys, citizens have specifically noted their desire for retail sales, services, and shopping centers.

In recent years, two motives for expanding the commercial activity in Chocolay Township have surfaced. The first motive is simply convenience. Residents would like the ability to shop locally instead of driving to adjacent commercial districts.

The second motive is not so simple. Some citizens may hold the belief that an increase in the township's tax base, due to expanded commercial activity, would translate into a reduced tax load for all residents. Several studies have indicated this reduction would not happen. Assuming that rapid commercial expansion did occur in Chocolay Township, increased public expenditures would be required in the areas of public works, police, fire protection, and staff. Many times the revenue created by this commercial development is offset by these increased public expenditures. However, an increased tax base may provide additional revenue thereby reducing future expected tax increases in providing services desired by the many new residential areas in the township which have developed from 1970-1987.

If the citizens of the township truly desire increased commercial opportunities, it would be beneficial to determine specific types of goods and services. If the motivation to increase commercial activity is the perceived tax benefit, the township must mount a highly specific and targeted economic effort that historically is not characteristic of the township due to a variety of reasons including competition for grants and a lack of public infrastructure.

Once the specific types of goods and services desired by the township residents have been determined, appropriate expansion or alteration of the commercial zoning districts' boundaries should be considered. In recognition of available land supply with access to major roads in the township, to minimize strip development and environmental degradation, plaza type development should be encouraged. This type of development offers several advantages: it minimizes locational risks to individual

businesses, increases attractiveness of marginal land, and minimizes environmental impact.

This chapter has investigated the existing land use and zoning districts of Chocolay Township. From the compilation of this data, a better picture of land use in the township can be formed. From this basic data, some issues and problems can be identified that will affect all other aspects of the township. These issues and problems include:

-Land use in the township has diversified greatly in the last two decades, increasing the friction between incompatible land uses.

-The amount of land that is Urban and Built Up amounts to 6.2% of the township's total acreage.

-The dependence of residential units on well water places citizens at increasing risks of groundwater contamination.

-Agricultural land amounts to 6.91% of the township's land area. Farm land preservation should be a priority.

-The existing residential zoning districts may have sufficient undeveloped acreage to accommodate projected growth to the year 2000.

-The existing commercial zoning districts may have reached their capacity. There are some pieces of property available but many have natural development restrictions, require renovation, or are not currently available.

-Alterations or expansion of existing commercial zoning boundaries may provide additional commercial development opportunities.

-Land use on Lake Superior shoreline will be dictated to a large degree by future lake level fluctuations.

-Multi-family development has not occurred within the township although lands were set aside for this use.

CHAPTER FIVE

CHOCOLAY TOWNSHIP COMMUNITY FACILITIES

INTRODUCTION

The gathering together of people in contiguous locations to live has established our complex communities. These communities are made up of many elements, such as homes, businesses, schools, roads, churches, and most importantly, people. Each of these community elements has needs which must be satisfied to provide a safe, sanitary, and viable community. These needs include fire and police protection, governmental administration, solid waste collection and disposal, and water, sewage, recreational, educational, health, library, cemetery facilities, and land use and development planning.

Through time, local units of government, such as Chocolay Township, have been expected to provide these services. Private enterprise has generally been unable to supply this need because of the lack of profits in constructing and operating these facilities/services, although some services, such as solid waste collection, are sometimes operated by a private business.

Because the responsibility for these services lies with the township government, this chapter is quite important in a comprehensive plan for Chocolay Township. Township officials need a firm understanding of the facilities presently available, how they operate and function, what other services may be needed, and the importance of each to the future of the Township. This chapter will try to do all of this so township officials will have some definite guidance in providing services. In this chapter, there will be a description of the existing situation, an identification of problems, and suggested actions in the form of goals, objectives, and policies.

Administrative Facilities

In the operation of township business, office space and public meeting space is needed. The larger the unit of government, the more personnel and facilities are necessary to carry out

business. In the case of Chocolay Township, a full-time staff uses the office complex 8:00 a.m. to 5:00 p.m. Monday through Friday. The facility used for this purpose is the Chocolay Township Municipal Complex, located on the corner of Silver Creek Road and U.S. 41 South in Harvey.

The Township had been using a building built in the 1880's for a township hall. However, the space was inadequate and the structure was seriously deteriorating. The Township built a new municipal complex in 1978, located next to the old Township Hall. The construction was paid for with grant and township funds. The old Township Hall was subsequently torn down in the early 1980s.

The new building consisted of completely remodeling an existing schoolhouse and adding a large addition. The newer part of the building consists of offices for all township departments, including the Supervisor's office, the Clerk's office, the Department of Public Works office, the Department of Land Use Management office, and a front office area utilized by the Treasurer's Department and the secretarial/receptionist support staff. In the old schoolhouse portion of the building, there is a meeting room that is used for board and commission meetings, community groups, and the general public. The Police Department has an office adjacent to the meeting room. Two storage areas are located off of the meeting room. The current staff is illustrated in Table V-1.

The building is of adequate size for existing and projected future office needs during the planning period. However, some additional storage space will be needed to house records of the township which are currently stored in the vault and in offices. If any additional professional staff are added, the existing office space would only be minimally adequate.

Table V-1
Chocolay Township Employees

No. of Employees	Department
3.5	Office staff (Executive Secretary, Secretary/Records Clerk, Deputy Clerk & 1/2 time Deputy Treasurer)
4.5	Department of Public Works (DPW Supervisor, General Maintenance Worker, Sanitation Foreman & Sanitation Worker & Temporary Maintenance Worker)
1.0	Department of Land Use Management (Assessor/Zoning Administrator)
4.0	Police Department (Police Chief, two police officers, and part-time secretary)
13.0	Total Employees

The meeting room is limited to groups of certain sizes, i.e. no more than forty people, and has no kitchen facilities. In addition, the meeting room is very poor acoustically.

In 1986, the township purchased a small parcel of land behind the Municipal Complex and constructed a 2,880 square foot storage building. This building has heated and cold storage that is used primarily by the public works and police departments. The building is sufficient in size to accommodate current and future needs. The cost of the storage building was approximately $75,000 and was built completely with township funds.

Funds are set aside annually in the Capital Improvements Fund for major building maintenance.

Community Center

For years community leaders in Chocolay Township have acknowledged the desirability and need for a community center. Achieving the result, however, has not taken place due to concerns related to site location, facility administration, and cost. Three major efforts in this regard are summarized here.

Efforts in Community Center Implementation

1. Feasibility of Chocolay Township Community Center by H. Richard Anderson for the Chocolay Area Business Association, February 15, 1984.

2. Grant application for a community center under Michigan Small Cities Public Works Implementation Grant, May 14, 1984.

3. Millage proposal for a community center on November 4, 1986, general election ballot.

Effort #1 - Feasibility Study, 1984

With regard to these three efforts, the feasibility study recommended a survey and public awareness of the needs of community groups and area agencies as a preliminary step to guide in the design of the facility. Site selection also spelled out four criteria. These included:

1. Accessibility to users.

2. Relationship to other existing or proposed community facilities.

3. Conformance to zoning codes.

4. Ratio of cost to site benefits.

In addition, eight sites were evaluated as possible community center sites and options were considered.

The third issue was the administration and/or leadership of a center. A variety of administrative structures were recommended to be considered by the Township Board.

The fourth issue discussed was financing. Financing included construction and operation. Financing options included 1) millage, 2) Community Development Block Grant, 3) Federal Revenue Sharing, and 4) operating revenue such as rental charges and/or lease income. The implementation plan was presented in Mr. Anderson's report to the Chocolay Area Business Association.

Analysis of Effort #1

While to some extent all of the recommendations have been considered, the first initial steps, such as clearly identifying existing needs as well as future possibilities, has not been well documented. In addition, site selection has not been definite. It is recommended that needs, desires, and costs be clearly identified in this effort prior to any other planning efforts.

Effort #2 - Small Cities Grant Application

This application was a result of efforts by the Township to provide an action plan. The application used typical community center sizes for a design concept; a building of 4,580 square feet was applied for with a total project cost of $400,000.

Site selection relied upon the Anderson study of site options which concluded that the most effective project was to build a community center on the existing Township Recreation Area I on Silver Creek Road. This site ranked high due to accessibility, relationship to existing facilities and sense of community

identity. The Township was unsuccessful in competing for this grant due to a lack of distressed (low income) residents.

Analysis of Effort #2

It will be difficult for the Township to successfully compete for these grants.

Effort #3 - Millage Proposal, 1986

This effort was a continuation of the two previous efforts in 1984. This effort identified a 10,000 square foot community center building, although a site was not identified publicly. The main area or multi-purpose area was a 72 x 76 area which was designed to seat 350 people. See detailed informational paper entitled, "Community Center Millage Proposal." Estimated costs were $696,000.

The millage proposal was for two mills for a period of twenty years for the purpose of constructing and operating a community center building. The election were that 174 "yes" votes were cast and 1,090 "no" votes were cast.

Analysis of Effort #3

It is difficult to assess the overwhelming defeat (87% voted no), except suffice it to say that property owners in the township were not prepared at that time to financially support the construction and operation of a community center at the price of two mills, which was about $40 to $50 a year in additional property taxes for twenty years.

Wastewater Facilities

Township Wastewater Collection Facilities: The township installed a sanitary sewer collection system servicing the greater village of Harvey area in 1975 utilizing a 50/50 matching Housing and Urban Development (HUD) grant. The cost sharing ended up being 40% state and federal and 60% local due to ineligible cost on some phases of the project. The local portion of the project was funded by special assessments and selling county bonds with final payment in 1993.

The system consists of gravity lines as well as four large pump stations and three small grinder stations. A large force main was installed to connect the collection system to the Marquette City Treatment Plant where the wastewater receives final treatment.

The extension of the sanitary sewer into the newly platted Ewing Plaza commercial subdivision was completed in 1976. The extension consisted of only gravity sewers that were connected to the township's existing system.

The system was extended in 1977 to the newly platted Ewing Park residential subdivision. Phase I of the plat consisted of 57 residential lots. The sewer consisted of gravity sewers and a large pump station that conveys the wastewater through a force main to the existing township system. Phase II of the plat, which consists of 150 lots, has not been developed.

An Environmental Protection Agency (EPA) Grant for Step One, Facilities Planning, and Step Two, Design, was completed by 1978 for a proposed expansion of the system further east in the Lakewood Lane area. A Step Three grant for the construction was offered to the township, but public opinion surveys of the proposed service area showed a lack of support for the extension project. The Chocolay Township Board then rejected the funding for the project.

No plans for expansion of the collection system are presently under consideration. Consideration of expansion over the planning period would be required should groundwater contamination be found and/or if large residential or commercial development outside of the currently serviced area require expansion to service the new development. On-site wastewater disposal systems are an approved method of disposal and there is no need for municipal wastewater collection systems. Collection systems require a major capital investment and are generally not undertaken without grants and a need where on-site disposal facilities do not function properly due to soil conditions or groundwater contamination.

Wastewater Treatment Plant: Marquette City, Marquette Township, and Chocolay Township received an 80% EPA Grant in 1979 to basically construct a new wastewater treatment plant, although some parts of the existing plant were renovated and reused. The plant was completed and dedicated in 1980. Chocolay Township has ownership of 14.7% and uses only 4% of the plant for existing use. The local portion of the project cost was funded by selling county bonds with final payment scheduled for the year 2008. The Township owns sufficient capacity in the plant to provide for wastewater collection during the planning period.

In 1985 and 1986, two capital projects were completed to update the plant's operation. A sludge storage facility was completed and HVAC improvements were made and have proven to be cost effective. The projects were funded by borrowing from the plant replacement fund with annual repayments.

In rural areas of the township and in outlying areas of Harvey, private septic systems are utilized. The County Health Department inspects all new systems to verify that soil conditions will allow the system to operate properly and not contaminate streams or wells in the vicinity.

Water Facilities

At present, all Township residents and businesses are served by private wells, each varying in quality and capacity. The Township provides no public system for distribution of water. In 1975, when the sewer was constructed, in anticipation of future needs, crossing pipes were placed under the U.S. 41 highway in Harvey so that the highway would not have to be disturbed when and if water lines are utilized in the future.

In 1980, cost estimates were obtained from engineering firms to do a feasibility study for a public water supply system. The Township Board reviewed the estimates but felt that there was not a problem with the quantity or quality of individual wells in the township to justify a study.

In May of 1981, the feasibility study idea was again presented to the Township Board through a recommendation by the Township Planning Commission and other support materials contained in the Comprehensive Plan. The Township Board again decided not to do an engineering study, but rather to have staff monitor potential need.

The feasibility and/or necessity of a public water system will depend primarily on three factors:

1. The available quality and quantity of groundwater sources.

2. How long the groundwater sources remain uncontaminated.

3. Alternatives such as deep wells and/or cleanup of any contaminated sources.

During the period 1986 to 1988, a few wells in the Harvey area tested positive for chemical contamination and were replaced with new, deeper wells. The Department of Natural Resources and the Marquette County Health Department are currently performing

studies to determine the extent and possible sources of contamination. Early test results have indicated no positive contamination. However, the completed study will not be available until the spring of 1989. The Township should continue to work with these public agencies to monitor this situation and the results of the completed study.

Generally, a public water system is developed for two reasons. The first reason is that development cannot occur without a public water system due to a lack of quality and quantity of a groundwater source. The second reason is when the groundwater is contaminated and the only alternative is a public water supply to maintain public health standards. Currently within the Township, it appears that there is no lack of quality and/or quantity of acceptable groundwater sources. In addition to this, with the exception of the recent concern in the Harvey area for which a study will be completed in the spring of 1989, no contamination problems have been identified. One positive aspect of a public water supply would be a constant and reliable supply of water for fire protection which would reduce fire insurance ratings and thereby reduce individual insurance premiums.

For the above reasons, as well as the fact that hookup to a public system is not required (unless for health reasons such as a contamination problem) and the tremendous cost to place such a system in the ground, as well as other costs such as filtration, treatment, maintenance, and operation, it is unlikely in the absence of a groundwater catastrophe that a public water system will be a reality within the planning period. The Township should, however, continue to monitor the need and the feasibility of a public water system.

Recreation Facilities

In the 1980s, the Township developed a Recreation Plan. This Plan is updated by the Planning Commission annually in order to

review, prioritize, and budget for recreation activities. In the past, the Township has relied heavily upon grants to fund recreational facilities, such as the Lawcon grant for Recreation Area I and the Michigan Natural Resources Trust Fund grant for Recreation Area II. The recent voter-approved Quality of Life Bond (Act 329 of 1988) will also provide funds for the construction, expansion, development and rehabilitation of state and local recreational facilities. For a complete description of recreation facilities in the township, please refer to the Recreation Plan, which is kept on file in the office of the Department of Land Use Management.

Fire Facilities

The township presently operates a 26 man volunteer department with a five man auxiliary. All 26 volunteers have portable pagers and are on-call 24 hours a day. The department is dispatched through the county-wide Central Dispatch system.

In 1981, a 20' x 50' addition was constructed onto the existing 36' x 50' foot firehall to house additional equipment and create a meeting room. The fire fighting equipment was substantially updated in 1985-87. Current equipment consists of a 1986 and 1973 pumper, 1987 tanker, and a 1968 grass fire unit. The two new units were purchased with special millage and capital improvement funds. With the equipment updated, the department should have adequate equipment for current and near future demand by township residents. The Township annually sets aside funds in the Capital Improvements Fund for equipment replacement.

The township has expanded its mutual aid agreements with surrounding communities, which now include West Branch-Skandia, Onota, and Sands townships, as well as Marquette City, K.I. Sawyer Air Force Base, and the Department of Natural Resources (DNR). These agreements allow equipment and manpower to assist in fire calls reciprocally with these units of government.

Since there is no municipal water in the township for fire fighting, all water must be transported by fire vehicles. Water must be drafted from creeks to refill fire vehicles and the department is currently applying for grants to install dry hydrants at drafting sites to improve water capabilities for current as well as future need. There are funds currently appropriated to install a large capacity well at the firehall to refill fire vehicles.

Police Department

The Township currently has police protection provided by three full-time officers and two reserve officers. The three full-time officers provide sixteen hours of coverage for each 24 hour period during the weekdays. During the weekends, shifts provide night coverage only. The department has two vehicles for use by the officers. One is a 1988 4-wheel drive and the other is a 1986 conventional patrol car. The vehicles are both equipped with communication radios that permit them to send and receive calls with Central Dispatch which is housed with the Michigan State Police. Their other equipment consists of the usual side arms and emergency equipment.

Besides their regular police duties, all patrol officers are responsible for animal control. When dogs are picked up, they are taken to a private kennel in the township. They remain there for 7 days and if not claimed by then, they are disposed of as strays.

Each of the Township officers is a sworn officer of the law with authority to arrest and enforce Township, State and Federal laws. The three full-time officers have had basic training in police work plus advance courses in specific areas of police work. The part-time officers have attended courses at Northern Michigan University in advance police techniques, as well as receiving on-going guidance from the Township's Police Chief. All are state certified by the Michigan Law Enforcement Training Council.

An office for the police department is part of the Township Municipal Complex. The department has the east section of the building that is used for administrative duties and interrogation of suspects. There is a part-time secretary in the department who works 24 hours per week. The annual operating cost of the police department is approximately $96,000, which includes equipment, salaries, vehicle maintenance etc.

The department has an annual bicycle registration day at which time township residents can register their bicycles to help prevent theft. There is also a Police Cadet Program consisting of township youth from ages 10-18 which meets on a monthly basis. Various programs are presented dealing with crime investigation and prevention.

Solid Waste Facilities

In 1985, the township purchased a side loading refuse collection vehicle and reduced the collection crew from three to two men. This reduced labor costs as well as increased efficiency. The 1980 rearloader vehicle is currently only used on Monday and Friday a.m. to empty dumpsters at commercial establishments. Commercial establishments and residential dwellings are provided once a week refuse collection. Funds are set aside annually in the Capital Improvements fund for scheduled vehicle replacements.

In the summer of 1987, the township contracted with the West Marquette County Sanitation Authority for use of its landfill for final disposal of refuse. The contract is effective until the landfill is closed. A new countywide landfill, located in section 5 and 6 of Sands Township, received a construction permit in June of 1988. It is scheduled to be operational by the fall of 1989. The Township has signed an Intergovernmental Agreement for the use of the facility for all of the refuse of the Township. The landfill is designed for current and future county waste. However, access will be limited to only licensed haulers. The landfill will be run by a Landfill Authority and the facility

will accept both Type II waste (regular household garbage) and Type III waste (leaves, brush, furniture, application, demolition materials, etc.) The Township has signed a contract with the City of Marquette for individuals to take their Type III materials to the Peninsula Sanitation transfer station, where the materials will be transferred to the county landfill. Source separation will be encouraged or mandatory for various materials.

PROBLEMS, ISSUES, AND NEEDS

Water Facilities

1. The Township should carefully analyze the quality and quantity of the existing groundwater sources and development patterns. This planning should include consideration of maintaining and protecting the high quality water source.

2. Development of a public water supply in the Township will probably not be a reality within the planning period (1988-2000).

3. The Township should investigate the future need of public water facilities in the Township.

Recreation

1. See the Recreation Plan.

Fire Facilities

1. The Township should continue to upgrade equipment to maintain a high quality fire department to meet the growing needs of the township.

2. The Township should continue to develop methods to fill the fire department vehicles with a supply of water to insure high

quality fire protection, and where possible, develop water supplies in an effort to reduce fire ratings.

3. The Township should continue to provide the necessary training for firemen to meet the increasing demand with the expansion of residential and commercial buildings.

Administrative Facilities

1. The Township has no community center. The Township meeting room is inadequate for many of the needs of the community. The Township should investigate the various needs and opportunities for development of a community center.

2. The Township vault is inadequate for storage of township documents. Records should be condensed or storage space expanded.

3. As the township develops, it is likely that increased personnel will be required to provide for the services desired by township residents and/or required by law to maintain efficiency in service delivery.

Community Center

1. The Township should continue to monitor the needs and desires of township residents for a community center, including a financial plan.

Police Department

1. Additional office space will be required to improve the efficiency of the department and improve the professional status of the department within the community.

2. Additional staff will require additional vehicles, thereby requiring additional capital improvement funding.

Solid Waste

1. Collection of Type III materials will require additional consideration due to the fact that currently no provision exists to provide for delivery of these wastes to the new landfill.

2. The Township should also investigate and monitor other waste disposal issues such as used oil and other household hazardous wastes.

3. The township should initiate its own programs or participate with other groups in a recycling program to obtain maximum use of resources and reduce the waste volume.

Wastewater Facilities

1. Expansion of this facility will depend on future occurrences in the township, such as a groundwater contamination problem requiring extension of a sewer line to service an area, or by an extension of the system to accommodate a specific development proposal outside the existing service area if development cannot occur without sewer system availability.

CHAPTER SIX

HOUSING

Housing is the single element common to all the residents of Chocolay Township. The types of housing present in the township is a reflection of the community, and to a significant degree, will determine what kind of township Chocolay will become.

This chapter attempts to identify what types of homes have been built, when they were built, where they are located, what condition and what types of problems have developed over the years with the housing in Chocolay Township. By investigating each of these aspects of housing, the Township Board can realize how their actions have been molding the housing situation of Chocolay. Therefore, as the Township considers revision of its zoning ordinance and any other land use controls, they can better recognize what influence they are placing on future residents in choosing housing types and locations.

Existing Situation

The study of housing will begin by investigating the supply of units, their condition, and age. Table VI-1 below shows the supply of housing in the Township. Note that this data is for 1980; the current housing supply will be estimated in the following discussion. The year-round housing units include occupied units and vacant available units. In 1980, Chocolay had 89% in the year-round category as compared to 1970, when only 76.5% of the housing units were in the year-round category. As more people make Chocolay their place of year-round residence, the Township approaches the same level of seasonal dwellings as Marquette City and Marquette County. The remaining 11% or 248 housing units in Chocolay are seasonal or vacant/not available. This is comparable with the 9.9% level of Marquette City and the county level of 10.1%. This emphasis on year-round housing has steadily added to the increased demand for public services.

Table VI-1

Housing Characteristics 1980

	NUMBER	PERCENTAGE
Total Units	2,256	100.0
Year-Round Units	2,016	89.0
Vacant	174	14.8
Vacant Available	56	2.0
For Sale	34	1.6
For Rent	49	2.4
Owner Occupied	1,507	66.7
Renter Occupied	335	14.8
Seasonal	240	11.0
Year Structure Built		
1970 to 1980	996	48.6
1960 to 1969	450	21.9
1950 to 1959	297	14.5
1940 to 1949	142	6.9
1939 or earlier	162	7.9

Source: U.S. Census

The supply of housing in Chocolay Township is in much better condition than Marquette County in general. By examining the age of housing in Chocolay Township, it becomes evident why such a higher percentage of its units are in fair or good condition. Over 70% of the existing housing in Chocolay Township has been built since 1960, and more specifically, nearly half of the Township's housing units are less than 15 years old.

As mentioned previously, Table VI-1 is based on 1980 data; since then there have been additions to the housing supply of Chocolay Township. In Table VI-2, an estimate will be calculated for the number of housing units in 1987, based on building permit records.

Table VI-2
Current Housing Units

Number of Housing Units 1980	2,256
Number of Units Constructed in:	
1980	16
1981	14
1982	15
1983	16
1984	30
1985	20
1986	24
	2,391
Minus Demolition of Units Since 1980	- 11
TOTAL HOUSING UNITS - 1987	2,380

The housing units in Chocolay that are vacant and on the market have increased since 1980. After discussion with several real estate agents, it was determined that there were a variety of housing units on the market for sale, but the rental market is very tight. Most agents said they could rent many more houses in Chocolay Township if they were available. Their perception of the cause of the increased rental demand in Chocolay Township was due to economic uncertainty. Many potential home buyers have reservations of committing to the purchase of a home due to a pessimistic outlook of the area economy. This is a trend throughout Marquette County and Marquette City in particular. A shortage of rental units in Marquette City has driven rent prices up and potential renters out to Chocolay Township.

Next, it is important to look at the character of the housing being built in Chocolay Township. Table VI-3 provided comparative data on the type of structures, number of rooms per unit, persons per unit, and persons per room. The first of these factors shows a very high percentage of single-family structures in the township. It is also notable that nearly 10% of the units are mobile homes. This percentage of mobile homes is considerably higher than Marquette City and County.

Table VI-3

Occupied and Vacant Year-Round Housing 1980
Unit by Structure, Size, and Type

	NUMBER	PERCENTAGE
Type of Structure		
Single Unit	1,621	79.0
Two or More Units	222	11.0
Mobile Homes	204	10.0
Number of Rooms Per Unit		
One	22	1.0
Two	61	3.0
Three	113	5.0
Four	388	19.2
Five	569	28.2
Six	410	20.3
Seven	240	11.9
Eight or More	213	10.5
Median: 5.2		
Number of Persons Per Unit		
One	238	12.9
Two	518	28.1
Three	361	19.5
Four	441	23.9
Five	186	10.0
Six	64	3.4
Seven	29	1.0
Eight or More	5	0.0
Median: 3.0		
Persons Per Room		
1.00 or Less	1780	96.6
1.01 to 1.50	53	2.8
1.51 or More	9	0.6

Source: U.S. Census

A housing unit tabulated by the census means the space used for living by an individual or family. Therefore, a housing unit could be a single or a two-story single-family dwelling with ten rooms. This is why the next category, rooms per unit, is important. By correlating the number of rooms per unit with the number of persons per unit, an indication of crowded living

conditions can be obtained. At the bottom of Table VI-3, the figures under persons per room gives this indicator of crowded housing units. The Township's housing has over 96% of its units with less than one person per room. The general rule is that if there is more than one person per room, the unit is "crowded." Chocolay Township had only 3% of its housing units in this crowded condition during 1980.

Another indicator of housing quality in Chocolay Township is shown by the Plumbing Facility Table below. Housing units which have both hot and cold running water, flush toilet, and bathtub or shower inside the structure are considered to have all the plumbing facilities.

Table VI-4

Plumbing Facilities for Chocolay Township Housing Units - 1980

Year-Round Housing Units	NUMBER	PERCENTAGE
Complete Plumbing for Exclusive Use	1,977	98.5
Lacking Complete Plumbing for Exclusive Use		
-Complete Plumbing But Used by Another Household	2	0.0
-Some, But Not All, Plumbing Facilities	22	1.0
-No Plumbing Facilities	15	0.5
Occupied Housing Units		
Complete Plumbing for Exclusive Use	1,814	98.4
Lacking Complete Plumbing for Exclusive Use		
-Complete Plumbing But Used by Another Household	2	0.1
-Some, But Not All, Plumbing Facilities	16	0.8
-No plumbing facilities	10	0.5

Source: U.S. Census

The high percentage of year-round, relatively new housing stock and high median income of Township residents would lead one to believe the quality of housing to be high. The nearly 98% rate of houses with complete plumbing facilities substantiates this trend.

Future Needs

Present Township residents have one type of housing or another so why should this study look at the future needs for housing? There are several reasons for this which will have a substantial effect on the growth in the Township in the near future. First of all, the people in the Township may not be living in the type of housing they would choose if more variety and housing types were available. Secondly, the population projections for 1990 and 2000 indicate that growth in the Township will be continuing at a moderate rate. Growing families and in-migration will require different housing needs. This section of the study will approximate the different housing needs in Chocolay Township for 1990.

In 1980 there were 2,016 housing units in Chocolay Township. Building trends for 1980 to 1987 indicate that an average of 20 housing units per year are constructed. Based on the population projection constructed in Chapter One, the 1990 population will be 6,286. This will represent an increase of approximately 600 people over 1980. Assuming the Township average of 3.00 people per household, the housing requirements will demand 200 additional units by 1990. At an average of 20 additional units per year, and ten years between 1980 and 1990, usual construction activity should be able to accommodate this increased housing need.

Problems and Prospects

Previous material covers the important facts and figures of housing in Chocolay Township. This information provides a base for identifying areas of possible concern. The list that follows enumerates what are felt to be the significant characteristics of the Township's housing:

-The percentage of single-family units is very large.

-Low income or low cost housing is generally not available.

-The percentage of housing units in the multi-family category is very low.

-Housing units in the Township are fairly new.

-Overall condition of the housing is good to at least fair.

-There is a general shift from seasonal units to year round units.

-There is vacant land available for multi-family development in and around the Township sewer system.

-Mobile homes are limited to certain areas of the Township.

CHAPTER SEVEN

TRANSPORTATION

INTRODUCTION

In Chocolay Township, as in all communities today, the economy is heavily dependent on the transportation system. The economy section of this Plan outlined the large majority of residents that work outside the Township and drive to work. This in itself is making use of the local transportation system. Therefore, the growth of the area becomes largely dependent upon a safe, convenient, and economical transportation system to facilitate the easy movement of people, goods, and services within and outside the Township. This makes the local transportation system, including highways, railroads, airports, and harbors, key elements in the future of Chocolay Township.

This chapter will consider the existing transportation modes, investigate the classification of roads, inventory the Township roads, develop a classification system and standards, outline the decision-making process, discuss road conditions and improvements, identify potential for mass transit, and discuss an improvements program.

TRANSPORTATION MODES

Within the Township there are two principal transportation modes. These are highways and a railroad. However, other modes provide important transportation services to Township residents. These include air and water transportation. There is one railroad line active in the township; this is the Wisconsin Central Railroad. The Wisconsin Central track enters the township along the Lake Superior shoreline north of the Harvey area, and then continues east, paralleling M-28, into Alger County. This line is a cargo line and does not carry passengers.

Air transportation services are available at the Marquette County Airport. The facility has a 6,500 foot main runway with

an instrument landing system. The site also contains a new terminal building and air crash protection facility. Service is provided by regional carrier aircraft with airplanes of less than fifty seats. Two major services are provided by American Eagle and North West Air Link, which provide a three service hub from Chicago, Detroit and Minneapolis. Presently, the terminal expansion of a second floor is under consideration.

The area is also served by water transportation from the nearby harbor facilities in Marquette. Both recreational and commercial use is made of these local harbors. There are two deep-draft harbors within Marquette. The lower harbor is a coal unloading facility that supplies fuel for the local electric utility. Chocolay Township receives power from this utility. The second deep-draft harbor, the upper harbor, is used to ship iron ore from Marquette to the steel mills and for unloading coal for the Wisconsin Electric power plant. The upper harbor also receives large quantities of limestone used in the pellatizing of iron ore. The merchandise dock is available for receiving bulky items. Recreational use by local boaters is made of both the upper and lower harbors. Sport fishing and general pleasure boating are primary activities of the recreational boaters.

Bus transportation is another facility not based in the Township, but serves the community through the transfer of people and a limited amount of goods. The Greyhound line has one run daily to Calumet and two daily to Chicago with connections at Escanaba to and from the Detroit area. In addition, westbound pickup is also made at the Escanaba connection. There is also a local mass transit system (Marg-Tran) that will be discussed in detail in a later section.

The remaining transportation mode that everyone is familiar with is the road system. It is the primary transporter of goods, services, and people. Each of the roads within the Township has a specific traffic capacity, design standard, and design use. The road classification system will first be discussed and then the

Township roads will be inventoried as to how they fit into the system.

CLASSIFICATION OF ROADS

Roads have a two-fold purpose: The movement of traffic and the provision of access to adjoining property. All roads in the township serve these two purposes to some degree. Through the process of defining road functions and correlating these with land use policies, several benefits should be realized by the local or even state government responsible for their operation. By defining the function of roads and their service to the community, the appropriate land uses can be encouraged adjacent to these roads.

The design of a road depends principally on its functional classification and the traffic volume it is expected to carry at some future time (usually twenty years after completion). Such design factors as the number of lanes, width and surfacing of shoulders, width of structures, type of surface, and design speed all depend on traffic volume and functional classification, according to criteria set forth in the The Geometric Design by ASHTO. For example, for a rural road which has an Average Daily Traffic (ADT) below 750, which is typical of most county roads in the central region of the Upper Peninsula:

-If it is classified as a Regional or Local Arterial (see the explanation of these terms below), shoulders are eight feet wide, and pavement may be either asphalt or concrete; if it is classified as a Collector, shoulders are six feet wide, and pavement is asphalt.

-Sharper curves and steeper grades are permitted if it is classified as a Collector or Local Arterial than if it is classified as a Regional Arterial.

If it is classified as a local road, it is built to lower

standards than a collector, with lanes only ten feet wide, slower design speeds, sharper curves, steeper grades, and graveled shoulders.

Since land use patterns are largely determined by transportation facilities, functional classification is important because it permits coordination of land use policies with the transportation system. Once a functional classification adopted, zoning ordinances can be structured to ensure that specific land uses are guided to locations on the road network which are consistent with the existing or planned capacity of the network to accommodate the traffic generated. Access controls can be employed along arterial routes whose principal function is to carry traffic. This will ensure that traffic carrying capacities are not usurped by turning movements to and from uses located along these routes. Similarly, subdivision regulations can provide for the dedication of sufficient right-of-ways, and in some cases, the installation of improvements based on the design standards outlined above.

A functional classification system for Marquette County was proposed by the Marquette County Road Commission and reviewed by the Michigan Department of Transportation; this study was titled The 1986 National Functional Classification Update. This functional classification of existing roads in Marquette County was reviewed and revised by the County Road Commission to reflect such factors as County goals, travel patterns, population distribution, and land use. The classifications shown are Statewide Arterials, Regional Arterials, Local Arterials, Principal Collectors, and other roads. The roads included in each of these classifications in Chocolay Township are as follows:

1. Statewide Arterials - These arterials provide the highest level of traffic mobility available on the total highway system. U.S. 41 and M-28 are statewide arterials.

2.Regional Arterials - These interconnect and augment the

statewide arterial system. Recommended for classification as a regional arterial is County Road 480. Regional arterials interconnect and augment statewide arterial highways to form a continuous, high mobility network of highways which will efficiently serve major travel in all areas of the state. The primary function is to interconnect major populations in the economic activity centers not served by statewide arterial highways.

3. Local Arterials - These provide service for trips of moderate length at a somewhat lower level of traffic ability than the statewide and regional arterials. Recommended for classification as a local arterial is Cherry Creek Road from its intersection with U.S. 41 to its intersection with County Road 480. Streets in this classification provide service for trips of moderate length at a somewhat lower level of travel mobility than the major arterial or regional arterials. They distribute travel within geographic areas which are smaller than those identified with the higher system. Local arterials include those roads which serve a secondary arterial function on a local level placing more emphasis on land access and operate on a lower level of traffic mobility. They also provide service between smaller cities and connect cities with the higher arterial system. They should not, however, penetrate identifiable neighborhoods.

4. Principal Collectors - These function primarily as collector-distributor roads. Recommended for classification as a principal collector is County Road 545 (West Branch Road) from U.S. 41 South. These roads function primarily as collector-distributor roads for relatively large areas. They 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. 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 property. These streets may also serve secondary traffic generators such as schools, parks and areas with high population density.

5. Residential Streets, Local Access Roads, and Commercial/Industrial Streets - These provide access to adjacent properties. The remaining roads in the Township are in this grouping. These streets and roads carry practically no through traffic since traffic desires are mostly local in nature. The best route continuity in not important. The major functions of these streets and roads are to:

1. Provide access and service to the residential developments adjacent to them.

2. Provide access to homes, farms, and other uses, or to provide access to commercial and/or industrial establishments (these streets should be constructed to carry heavy vehicles if the conditions warrant).

For funding purposes, three systems of legal classification are used. The federal aid classification system, which includes primary, secondary, and urban roads, determines whether federal aid can be obtained for these routes.

The State legal classification system includes five systems: state trunklines, county primary roads, county local roads, city and village major streets, and city and village local streets.

The county road system includes primary and local roads. Their respective federal aid classification are the only ones which are of concern to the Township. Within the township, county roads 480, 545, and 551 are the only county primary roads and they are all on the federal secondary system. All other roads are county local roads.

TRANSPORTATION DECISION-MAKING

Most of the decisions concerning the roads in Chocolay Township are made on the county level by the County Road Commission. All

roads in the county except M-28, U.S. 41, and private roads are under the Road Commission's authority. (In many cases, private roads come under the jurisdiction of the County Road Commission, such as in a proposed plat. Private roads within plats require essentially the same road system, however, they have less requirements for base and surface.) M-28 and U.S. 41 are under the jurisdiction of the Michigan Department of Transportation and final decisions concerning these highways lies with them.

Federal and state governments have input on the county level decisions primarily through the funds they provide and the strings they attach in the form of regulations and guidelines. The Township has input on the Road Commission's decisions in any of the following three ways.

First, each year the Township Board decides its priorities for the roads in the Township: what roads need work, where, and when. The Township Board, in an advisory role, then meets with the Road Commission to present their priorities and to exchange other pertinent information. The Road Commission, to a large extent, follows the Township's desires fairly closely. Since the Township participates fifty percent (50%) in the funding of construction projects, the Township has a significant role in determining which roads are fixed, providing the County is willing to provide their fifty percent (50%) match. It should be noted here that all of the Township's road needs always outweigh the Road Commission's financial and physical abilities to meet those needs. Thus the degree to which the Township's priorities are acted on will depend in part on how much money the Township has to help provide funding for those priorities.

The second way the Township can affect Road Commission decisions is through the County Board of Commissioners who appoint the County Road Commissioners.

The third way is for Township officials or citizens to call the Road Commission directly to provide information or make a

complaint. This route of influence is probably the least appreciated by the Road Commission. When used, however, it may provide valuable information directly and immediately. Further, the number of calls can give a rough indication of the magnitude of a problem. In addition, the Township often receives road complaints, and it can provide valuable information to the Road Commission in managing these complaints.

PUBLIC ROAD CONDITIONS AND IMPROVEMENTS

The county system consists of 301 miles of county primary roads and about 977 miles of county local roads. The County plows about 67% or about 850 miles of roads.

Improvements to the county primary roads, both maintenance and construction, are scheduled by the Road Commission as their funds allow. As mentioned above, the County Road Commission bears the responsibility of construction and maintenance on both the primary and local road systems. The Township, however, must contribute 50% of the cost of construction on the local road system. The Road Commission must finance all maintenance costs on both the primary and local road system. In addition, the Road Commission is responsible for signs on the roads under their jurisdiction.

On local roads, the Township is often the determining factor of when the roads get worked on, mainly because Township funds are usually scarce. The Township's share of construction projects may be anywhere from $10,000 to $80,000 for one project. Because of the tight budget that the Township operates under, a payment schedule is usually worked out over several years. This payment system is interest free to the Township and is not a practice the Road Commission is required to do by statute. In the past, this arrangement has been very successful in improving county roads within the township. While the Township is not required to participate in this type of arrangement, the general budget

constraints necessitate this type of cooperative venture to handle priority projects as desired by the Township. Design standards should be adhered to.

Improvements to the Township road system falls into two categories: 1) upgrading existing roads, and 2) future roads. As far as the existing roads are concerned, their general routes and locations are established. But as the roads come under increased pressure by traffic volume, their level of construction should correspondingly increase. Some of the first streets in the area were much narrower than current design standards would allow and their base in not as sturdy as present design would provide. A gradual improvement of the existing roads should take place so that they also meet the design specifications in The Geometric Design by ASHTO.

Future roads should also meet these design specifications. Consideration should particularly be given to where these roads should be located. An improved road is one of the fastest attractions of development. But the development should be where it can be conveniently served by local services, such as the sewer and water, ease of maintenance, access to public facilities, schools, recreation facilities, and other goods and services. Therefore, determination of where development should occur should be a prerequisite to deciding where the new roads should be built. This questions will be answered in the Alternatives Chapter of the Plan and then it will be applied to the future road system needed in Chocolay Township.

The state highways and the county primary roads in the Township are in fair to good shape. For example, M-28 East was recently resurfaced in 1987. In addition to resurfacing, the shoulders were widened and a portion of the shoulder was paved, thereby improving this statewide arterial. U.S. 41 through Harvey is in good condition.

Relative to county primary roads, Cherry Creek Road in unusually

narrow with narrow shoulders. County Road 545 contains an extreme ninety degree corner and is a curvy road. County Road 480 contains residential strip development. This strip development and the large number of driveways accessing onto this road decreases the safety of this road system. Relative to local roads, there are some problems areas. These include:

1. The blacktop surfacing is breaking up in spots on Mangum Road.

2. The blacktop surface is breaking up on Silver Creek Road before the Silver Creek School.

3. There are some problems with drainage in the East Wright Place area of Harvey. The storm drainage system inadequacy results in the flooding of some streets. Some action was taken to correct this situation.

4. The sharp corner where Lakewood Lane turns to cross the Chocolay River is unusually hazardous, and is unsigned.

5. At some of the corners in Harvey, there is a problem of limited view.

6. There is a ninety degree curve on Kawbawgam Road that is unsigned.

7. The bridge on Kawbawgam Road past the current development is showing signs of wear.

PRIVATE ROAD CONDITIONS AND IMPROVEMENTS

Another significant problem is with private roads. Private roads are frequently laid out without any consideration of road design standards. The result is that roads are often located where geologic conditions are unsuitable, roads have insufficient or no roadbed preparation, and have inadequate drainage, inadequate

right-of-way, etc. Such roads are often costly to maintain.

Unless the road contains a 66 foot right-of-way and is brought up to county specifications, the county will not take over the road and provide maintenance. The result is generally after-the-fact hard feelings on the part of residents who feel they are denied services.

In the 1977 Zoning Ordinance, the Township provided requirements for private roads. These standards originally provided for approved private streets to have a minimum 66 foot right-of-way, an 18 foot width and be paved with gravel or similar material. Since then, however, the requirements have increased to insure that private roads are developed properly. Services such as public school buses and mail carriers will not travel on private roads and some township services such as refuse collection will not be provided to the property owners on a private road unless the road is properly maintained and passable. Improvements to private roads, as well as construction and maintenance, is totally the responsibility of the property owners.

Following is a list of the private roads in Chocolay Township:

Apple Trail, Bayou Street, Cedar Lane, Cheryl Court, Hidden Creek, Highland Drive, Hotel Place, part of Orchard Lane, part of Poplar Trail, Wanda Street, and Willow Road.

There are some problem areas on these private roads:

1. The existing bridge on Apple Trail is narrow and does not contain a guard rail.

2. The blacktop surface on Highland Drive has bumps and heaves due to an apparent insufficient road bed.

3. Poplar Trail contains only a 53 foot easement.

4. Willow Road right-of-way is unusually narrow, and where Willow Road crosses Silver Creek there are no guard rails.

MASS TRANSIT

In the previous Comprehensive Plan, there was considerable discussion about the potential for mass transit. At that time, residents had no alternative mode available to them other than the automobile. At that time, according to surveys residents of the Township had very similar work destinations. This meant that each day persons left Harvey for similar destinations in separate vehicles and then returned in the evening to Harvey, again in separate vehicles.

This indicated that this type of travel pattern could lend itself to a mass transit system. At that time, there was a bus system in the City of Marquette which ran between the three cities of Marquette, Ishpeming, and Negaunee. The system operated on a fixed route and a time schedule that permitted transfer from the Marquette intra-city bus to the inter-city bus. It was estimated that in the Harvey area, a potential new weekly ridership of 1,500 to 2,000 could be added.

Since then, a bus system functioning on a county-wide basis has become operative. This county-wide system, referred to as Marg-Tran, currently does not provide a fixed route within the Harvey area; however, there is a fixed route from Marquette to K.I. Sawyer, which passes through the Harvey area eight times a day, six days a week. In addition to this service, Marg-Tran also provides a Dial-A-Ride service, which provides door-to-door service to township residents seven days a week. It also has been recently proposed to provide a fixed route to the Chocolay Township Harvey area due to some of the new growth at the intersection of M-28 and U.S. 41. The fixed route is being considered for implementation in 1989.

CAPITAL IMPROVEMENTS PROGRAM

The Township enters into contracts with the County Road Commission for reconstruction and repaving on local roads on a 50-50 match basis. As discussed earlier, this type of arrangement has been beneficial to the Township as well as to the Road Commission in prioritizing which roads in the Township need reconstruction or repaving. This type of an effort should be continued. A road ranking system should be reviewed annually in order to allow the Planning Commission to recommend projects and to identify transportation needs.

In addition, the Township should pay additional attention to construction projects such as bridges, culverts, drainage, etc. that have previously not been considered a priority for funding.

ISSUES AND PROBLEMS

-Over the past fifteen years, a tremendous amount of new roads have been developed within the Township. Along with these additional traffic pressures and the aging of these existing roads, it is likely that an increasing amount of repaving projects will face the Township as a budget issue.

-Controlled development in outlying areas has relieved some of the requests for construction projects.

-Decisions as to which roads to improve are now based on an annual inspection process and annual ranking of roads by township staff and the Planning Commission which is then presented to the Township Board.

CHAPTER EIGHT

TOWNSHIP-OWNED LANDS

This chapter identifies the various parcels of land owned by Chocolay Township. The intent of this chapter is to provide an inventory of existing township-owned properties as well as provide a record of the purpose for which the lands were purchased, the date they were purchased, and to include various future development options on these properties. Many of these properties owned by the Township are recreational in nature and will be discussed in this chapter; however, a more detailed review of these lands can be found in the Township Recreation Plan.

Currently Chocolay Township owns ten parcels of land. Township-owned lands must receive proper planning and management to meet the ever increasing needs and demands of Township residents. Such planning and management is the Township's responsibility. Some of the responsibilities include:

1. The orderly development of township-owned lands.

2. Protection of land resources and special environments.

3. Ensuring compatibility of land use for township-owned lands and the surrounding area.

4. Consideration of future public expenditures needs for township-owned land.

Current Inventory of Township-Owned Lands

1. Township Municipal Complex: This site is located at the intersection of Silver Creek Road and U.S. 41 South. Access to the property is from Silver Creek Road. This site is the site of the original township hall building, built in 1864. The building was torn down in the early 1980s. The municipal complex consists

of a meeting room, a police office, and township administrative offices. In addition, the site contains a firehall, a storage building and a small pavilion. The storage building is on a parcel of property adjacent to the original property which was purchased in April of 1986. No plans for any additional buildings are proposed at this time.

2. Recreation Area I: This site is located near the Silver Creek Elementary School along Silver Creek Road. The Township originally purchased this property in November of 1958. A property survey was completed in 1983. In 1983, the Township acquired a twenty foot strip on the east side of the property from the Marquette Area Public Schools to eliminate an encroachment of the tennis courts on the school property. Current development on this 17.17 acre parcel of land consists of the following: one ball diamond, four tennis courts, Tot Lot, picnic tables, soccerfield, warming house and restrooms. The site was developed utilizing township personnel for supervision and labor, along with additional labor from the Michigan Youth Corps program, with funding from a Lawcon grant and township funds. Additional assistance was given to develop the soccerfield from Eileen Urbaniak of Jack's IGA to establish the Jack Urbaniak Memorial Soccerfield. No immediate plans for additional development are proposed over the planning period, with the exception of the trail system identified in the Township Recreation Plan.

3. Township Marina: The marina is located on Main Street in the north part of the Village of Harvey along the Chocolay River. The Township purchased this property in 1975. Current development of the site is a public boat launching facility and dock. In 1975, a picnic area with grill was developed with assistance from the Boy Scouts and Township funds. Further site identification is ongoing to install small docks.

4. Recreation Area II: This 15.11 acre site is located near Beaver Grove near the intersection of U.S. 41 South and County

Road 480. This area was purchased in 1988. A survey has been completed on the property. The site contains approximately 1,000 feet of frontage on County Road 480 and 500 feet of frontage on U.S. 41 South. The eastern boundary of the property is Big Creek. Recently, the Planning Commission approved a conditional use permit for recreation development on this site. The Township currently is developing infrastructure for the area - road access, parking lot, fencing, restrooms, etc. The Township has submitted a grant application through the Michigan Natural Resources Trust Fund to develop facilities. Current site plans include development of a soccerfield, ball diamond, tennis court, basketball court, picnic area, multi-use open space and possible BMX course. Development of this site over the next five years will be a priority for development on Township-owned lands.

5. Open Space Area located south of Beaver Grove: The Township purchased this property in November of 1979 through a Lawcon grant 50-50 match. This 12.33 acre parcel is currently vacant. The property has access to U.S. 41 just south of Beaver Grove. The parcel contains a sand blowout area. This, along with a muck area in the rear, make the site costly and difficult to develop into a recreation facility. Therefore the current intent is to hold this property as open space. The area could be developed into a passive recreation area.

6. A 66 foot strip lying between M-28 and Lakewood Lane, Section 10 and 11: This property was given to Chocolay Township for the purpose of creating a county road access from Lakewood Lane to M-28. Apparently at the time of obtaining this property, the Township did not convey the property to the Marquette County Road Commission. Currently, the Road Commission will only accept this property if it is brought up to county road specifications. The land is currently providing easement to one house located along the strip. No current plans for such development are planned at present.

7 and 8. Chocolay River frontage along Green Garden Road: These two sites are located in Section 25 of Township 47 North, Range 24 West and have frontage on the Chocolay River. The Township obtained these two sites as a gift from Philip and Elizabeth Spear in June of 1949. The deed notes that it was understood between the grantors and the grantee that the property should be used exclusively for providing a park, swimming, and other recreational facilities for children and other members of the public of Chocolay. If the property ceases to be used for recreational purposes, the property would revert to the grantor and their heirs. Current uses of one of the sites consist of a swimming area and fishing site and boat access site. The size is undetermined since it has not been surveyed, but it is estimated that one parcel is about 1/3 of an acre and the larger parcel is about 3/4 of an acre. The Township intends to develop low intensity uses at this site.

9 and 10. Kawbawgam Road site north of railroad tracks: The Township was given this site by the First National Bank and Trust Company of Marquette in July of 1987. The site contains two parcels of land, one along the east side of Kawbawgam Road and one along the west side of Kawbawgam Road. Currently no specific plans are proposed for the development of this site.

CHAPTER NINE

CHOCOLAY TOWNSHIP ALTERNATIVES

The key ingredient in any comprehensive plan must be the policy of value judgment decisions made by the local people. The planning process must contain a point at which broad decisions are made concerning the form of the future township. As many people as possible should participate in these decision. If the planning process is to have any function, the decisions made should directly affect the future community and all the people in it. If the plan is to be implemented, it will take the efforts of the whole community. For these reasons, as many residents of Chocolay Township as possible must participate in making the decisions presented in the chapter.

This chapter will first present the trends in Chocolay Township which were identified in earlier chapters. These trends represent what is happening now in the township and what may reasonably be expected to happen in the near future. Secondly, growth variables will be combined to form different concepts of the Township's future. Through this process, policy choices can be made for the future of the Township.

The following trends and problems were identified in earlier chapters.

Population

The Township's population is still growing, however, at a lesser rate than in the previous two decades. This population increase will be the result of both in-migration and natural increase.

Economy

Township residents, for the most part, work outside of the Township in the Marquette City area or the mining areas, with unemployment at a relatively low level. Recent commercial developments in the Township will improve the tax base and offer additional services and employment opportunities with the

Township.

Land Use

The Township's residential development has been largely concentrated in the northwestern corner of the Township encompassing Section 4-9, 17 and 18. Additional residential development has taken place along the fringes of these areas as well as along the M-28/Lakewood corridor, where in-fill and conversion of seasonal homes to year round homes has taken place. This residential land use pattern was essentially established prior to the 1974 Comprehensive Plan. The 1974 Plan, however, identified a need to establish patterns of development around existing development; this is what has taken place. This land use pattern should continue, which brings ease of service delivery and discourages loss of open space and rural setting.

Very little multi-family land has been developed; this is primarily the result of overbuilding in the Marquette area in the late 1970s and the declining demand for land in the Marquette area in the 1980s. The Township should continue to maintain areas adjacent to the Township sewer for development of multi-family housing.

Commercial land use has been developing in the Harvey area. Several new businesses have brought long-needed services to Township residents. The Township should carefully review and inventory what types of businesses are desirable and needed by the residents of the Township.

Community Facilities

The Township has and will continue to experience growing demands for more and improved services. It would appear that Township

sewer lines will not be expanded nor will a water system be developed within the period unless a development proposal initiates the expansion. Current township administration services provide an adequate degree of service like the last decade. Special needs in the future include expanded fire protection, community center needs, and continued recreation development. The opening of the new county sanitary landfill should address solid waste needs for at least the next twenty years. However, the costs of constructing the landfill as well as increased disposal costs will add to the cost of Township services.

Housing

A large percentage of the housing units in the Township were mobile homes (10%) or seasonal dwellings (11%), based on the 1980 census. These percentages will decrease as single-family residences continue to be built and seasonal dwellings are converted to year round homes. Based on this trend, approximately 85% of Township housing is now single-family, owner-occupied housing. Population projections to the year 2000 indicate that about 150 to 175 housing units will be needed by then.

Assumptions

It will be assumed that for the planning period:

1. The Township's population will continue to grow moderately.

2. There will be no annexations of Township land.

3. There will be no major highway or rail facilities built in the Township.

4. Demands and a need for continued and improved governmental services and facilities will increase as the population

increases.

5. Sanitary, zoning, and building codes will have to be administered to ensure that quality of life be maintained.

Should there be significant changes in the above assumptions or other important unforeseen changes concerning the Township's future, much of the following with regard to alternatives will need to be reconsidered in this new light. But for the time being, the above assumptions will be taken as given.

Policy Variables and Concepts

Below is a list of variables which were deemed to be subject to the influence of policy decisions. Under each variable is a set of alternatives. Some of these alternatives might be rather difficult to attain; however, they might be the alternative desired or the only one which appropriately fits with the other variables already chosen.

A. Employment
   1. Commuter orientation/outside employment
   2. Seek some local employment (retail and service establishments)
   3. Seek significant local employment (industry, large and small retail and service establishments)

B. Housing
   1. Single-family emphasis
   2. Multi-family emphasis
   3. Mixed orientation, single family and some multi-family housing

C. Transportation
   1. Private auto emphasis
   2. Mass transit emphasis
   3. Auto and limited mass transit emphasis

D. Open Space
   1. Continued reduction of open space
   2. Preservation of open space - stream and river valleys, lake shorelines, farm and forest lands, and lands unsuited to urban development.

The most logically correlated alternatives were grouped together to form the following developmental concepts. Concepts other than those presented could be arrived at by the same process. Some groupings, however, are more likely than others. For instance, a single-family housing emphasis would not be likely to fit well with a mass transit emphasis. Mass transit would fit better with a mixed housing emphasis and best with a multi-family emphasis.

CONCEPT I

Concept I combines alternatives A-1, B-1, C-1, and D-1. It provides for an emphasis on single-family housing, emphasis on the private auto for transportation, emphasis on commuting to Marquette for employment, and reduction of open space.

Implications

Economic: Of the various uses of land, single-family housing brings in low tax revenues for the public service required. These services are then more costly than they might be otherwise.

Social: Single-family housing tends to locate in areas which are the most desirable for open space - along streams, rivers, and lakes; on productive farmland; and in areas of special scenic quality. The result would be increasing loss of open space in

these areas especially. If development along major roads is too extensive, some restriction of traffic flow can be expected resulting in longer commuting times.

Environmental: Single-family housing tends to occupy substantial amounts of land compared to other housing types, thus reducing open space in general. Uncontrolled single family development tends to locate in typically fragile environments without regard to overall environmental protection, loss of rural setting, and open space.

Implementation

The major problem in implementing this concept may be an insufficient tax base to support the public services desired because spreading uncontrolled development is costly in terms of service delivery. To insure maximum service per residence at minimum cost, special care should be taken in locating and concentrating development. Otherwise it will be even more difficult to keep up with the demand for public services as the population grows.

Steps should be taken to preserve at least portions of the lands most valuable for open space. Care should also be taken such that development does not occur in unsuitable areas. Otherwise, health hazards, unrealistic demands for public services, and/or housing of questionable value may result.

CONCEPT II

Concept II combines alternatives A-3, B-2, C-2, and D-2. It represents a much more urban development emphasis. Industrial, retail, and service employers would be attracted. Here multi-family housing would receive a stronger emphasis than would be required in the other two concepts. Mass transit within the Township, as well as between it and Marquette, would become feasible. Open space preservation would be a high priority.

Implications

Economic: The industry, businesses, services, and multi-family housing units included in this concept would provide by far the largest tax base for the public services required. This concept would entail substantially more economic growth than the other concepts and proportionately less commuting.

Social: Following this concept would bring the greatest amount of population and the greatest variety of people to the Township. This would result from the greater number and variety of employment opportunities. Portions of the Township, being more urban in nature, would require a wider range and higher level of services.

Environmental: Of the three concepts, development by this one would place the greatest demands on the environment. Thus, the greatest precautions would be necessary to preserve the environment, especially the threat to groundwater. Extra care would be needed in insuring the matching of land uses with land suitabilities, which is often difficult when matched against intense development pressures.

The Township would have to place high value on the preservation of open space to insure a high quality of living environment. Parks and other public areas, such as trails and beaches, would have to be purchased before extensive development occurs. Active zoning would be needed to insure sufficient private open area, and development would be costly in terms of public facilities such as sewer and water needs as well as other governmental services.

Implementation

The greatest problem here would be the timing or staging of the population growth, the economic development, and the provision of

public services such that none of the three items is too far ahead or behind the other two. Planning, zoning, and other developmental tools would be critical in keeping these three aspects of the Township's growth going forward together in an organized fashion.

Concept III

Concept III combines alternatives A-2, B-3, C-3, and D-2. It is an intermediate of Concepts I and II. Here the Township would attempt to attract some retail and service establishments, thus providing somewhat more local employment, and providing needed convenience goods and services to the residents of the Township. Commuting to work in Marquette would still remain heavy. Some mass transit may be feasible for these commuters, but elsewhere, the private auto would continue as the primary means of transportation. Some multi-family housing would be promoted and various open space areas, agricultural lands, and rural settings would be preserved.

Implications

Economic: The Township tax base would be somewhat broadened while inclusion of some multi-family housing would provide an opportunity for a variety of housing types suited to various needs of Township residents. In addition, and most important, would be the increase of goods and services for Township residents.

Social: Population increase and diversity would be between the amounts in Concepts I and II. The provision of private services (i.e. retail stores, laundries, etc.) would also occur, but be moderate.

Environmental: Here there may be somewhat less pressure for extensive planning and zoning, although these would still be

necessary. Inclusion of multi-family housing might take some of the pressure off the land market for single-family housing development. Locating these multi-family housing units appropriately would be particularly important.

Open space requirements would be more than in Concept I, and less than in Concept II. The greatest needs for open space would be in retaining rural, agricultural, or forested areas but would also be important in other areas such as providing attractive multi-family development.

Implementation

With Concept III, some care will still need to be taken in locating and concentrating development such that necessary public services can be provided more economically. Appropriate timing of economic development, residential development, and provision of public services will also be necessary.

Goals

The three concepts presented here are not meant to be rigid options where one and only one option is chosen. Rather, they are meant to provide a broad framework with which the Township's future can be charted, knowing some of the consequences and problems with the directions that might be chosen.

The questions now is, "What direction should be chosen?" It is important that a direction is chosen. For instance, suppose the Township merely continued developing along single-family housing lines covering much of the land with low density development. Later, more urban, higher density development might begin to

occur here and there. Little open space would be left. Roads and other public services would very likely be inadequate for the higher density development. The result would be very expensive upgrading of public services where possible and quite possibly continued inadequate provision of services where upgrading was impossible.

It is important then that the Township consciously decide on an overall growth strategy. At that point, the Township Comprehensive Plan can be completed by deciding on specific goals, objectives, and policies.

Conclusion

Through discussion with citizens, the Planning Commission, and the Township Board, an initial step was taken in selecting an alternative which might best suit Chocolay Township now and in the future. They have selected a concept similar to Concept III.

Their intent was to provide for a controlled development of the Township as outlined in Concept III. They were not concerned with mass transit at this time, nor were they interested in large scale industrial developments.

They still felt the single-family home should continue to be the main thrust in housing; however, opportunity for multi-family housing should be maintained. They have also recognized that to meet the more diverse needs of their residents and to cover Township costs for providing necessary services, their economic base would have to be increased. This they felt could be accomplished by encouraging commercial services in the community.

Finally, they recognized that development would have to be controlled by the standard land use controls, that is, zoning, subdivision regulations, etc. Sprawling development would cost

the Township in services. Therefore, commercial and residential development should be limited to the recognized areas of growth; new areas should be opened as the Township's needs require with adequate regard for environmental areas, Areas of Particular Concern, open space, natural resources, and areas suitable for development as provided for in this Plan.

The implementation of this concept will be dependent on the enforcement and administration of land use controls and logical decision-making in determining the goals, policies, and objectives of the Township. Decisions will have to be based on the Township's needs versus its ability to afford or absorb the cost incurred. They decisions will not be easy, but they will have to be made.

CHAPTER TEN

GOALS, POLICIES, AND OBJECTIVES

Introduction

The bulk of the Comprehensive Plan is composed of statistics, maps, figures, projections, and hundreds of details ranging from specific land use criteria and local soil conditions to the locations of Areas of Particular Concern. This information, when digested properly, will provide a framework for understanding the Township's planning needs and a rational growth strategy. To implement the growth strategy, decisions must be made by Township leaders. This chapter will assist those decision-makers in determining what directions the Township could take by outlining specific goals, policies, and objectives for each of the functional decision areas.

To assist in a complete understanding of this chapter, three basic terms must be explained:

Goal: (Long term) The generalized end toward which all efforts are directed. It is normally stated in terms of fulfilling broad public needs or the alleviation of major problems. Goals tend to not be immediately attainable because they are generally unmeasurable and idealistic.

Policy: A statement of position or course of action which provides a means to attaining the stated goal. They are factual rather than value-laden, and can be measured by the impact it has on existing conditions. Since it is an adopted strategy, it must be periodically evaluated and revised. It must also be within the Township's authority and resource capabilities.

Objective: (Short term) A specific alternative towards which effort is directed, derived from goals. It is expressed in measurable terms and is quantifiable. It must therefore be

attainable and realistic considering the Township's resources. Objectives are targets to be achieved, relating what has to be completed to achieve the goal.

HOUSING

Goal

-To encourage the creation of a housing supply to meet projected demands, which provides each family with a choice of housing types which are decent, safe, and sanitary.

Policies

-Recognize through the administration of land use controls and other development policies that the provision of housing is a public as well as private responsibility.

-New housing should be located in environmentally sound areas.

-Encourage variety in the housing stock through revision and enforcement of the Zoning Ordinance, subdivision regulations, and other land use controls.

-Encourage energy-efficient housing types.

-Encourage improvement of housing and subdivision design.

-Encourage improvement of the numbering system to improve emergency vehicle accessibility.

Objectives

-Annually review changes which have occurred in the Township's housing stock (new construction, demolition, conversions, etc.) to determine the extent to which choices exist with respect to housing type and price range.

-Maintain within the Zoning Ordinance acreage for multi-family and mobile home development.

-Consideration should be given to the need for housing assistance for the elderly, low income, and handicapped families and other segments of the Township population.

Explanation

The goal and the accompanying policies and objectives recognize that currently there exists little variety in housing types

within the Township. The predominant housing type is the single-family home. The second most prevalent is the mobile home. While the Township does not directly decide the precise mix of housing types, it does have an influence through the administration of zoning and other land use controls. Housing prices are also influenced by land use controls.

The strategy set forth above will help ensure that land use regulations do not present an obstacle to the construction of a variety of housing types and price ranges.

TRANSPORTATION

Goal

-To provide for the safe and efficient movement of people and goods with a balanced transportation network at minimal environmental and fiscal cost.

-To coordinate the improvement of the transportation network with the overall development of the Township.

Policies

-All road construction, whether public or private, should meet minimum design standards.

-Encourage alternative uses for abandoned rail and road facilities.

-Encourage the use of alternative forms of transportation, such as bicycles, car-pooling, etc.

-Discourage the proliferation of curbcuts and driveway intersections so that the maximization of capacity of major traffic corridors can be achieved.

Objectives

-Continually revise and strengthen the Township's Zoning Ordinance, subdivision regulations, and other land use controls to reflect the Township's transportation needs and design standards.

-In cooperation with the Marquette County Road Commission and the State, adopt and implement an annual Capital Improvements Program for road improvements.

Annually review road conditions throughout the Township and recommend a priority for road improvements.

-Identify and classify roadways within the Township as suggested

by the State Department of Transportation.

-Periodically review the potential for providing public transportation service in the Township.

-Seek methods of reducing the number and length of unused county road right-of-ways.

Explanation

Since the Township is inhabited by a large number of persons who commute to adjacent areas to work, shop, etc., the automobile is the most important transportation mode. For this reason, the goals, policies, and objectives strongly emphasize improvements to the road system and the coordination of these improvements with the overall development of the Township. This will ensure that future development, which will be influenced by the road network, will occur in areas which are consistent with the desires of the Township as expressed in the Comprehensive Plan.

ECONOMY

Goal

-To provide an environment within which a diverse and stable economic base may be developed.

Policies

-New economic development should be limited to that which will significantly increase local employment, tax revenues, and/or commercial services in relationship to the cost of providing services to the development.

-Balance the supply of public services provided by the Township with the demand and willingness to pay for those services.

-Wherever possible, services should be financed by users of the service through special assessment districts, user fees, etc.

-Encourage well designed, safe, convenient, and attractive commercial plaza type developments.

Objectives

-Annually review the area economy to identify emerging trends.

-Encourage expansion of retail-wholesale and service industries within the Township to meet the needs and services desired by Township residents and study the use of limited special tax incentives.

-Encourage conversion of noncommercial land use within existing

commercial zones.

-Encourage designed commercial areas which are safe, convenient, environmentally sound, and attractive.

Explanation

Taken together, the above statements express the realization that further economic development is important, but that the character of the Township should not be sacrificed for the sake of short term economic gains. Similarly, the relationship between the Township's ability to provide services and the people's demand for services, and willingness to pay for them, is acknowledged. Lastly, it is suggested that the Township make use of special assessment districts and user fees whenever possible.

NATURAL FEATURES

Goal

-Preserve and enhance Chocolay Township's natural environment by utilizing the natural resources in an orderly and prudent manner.

Policies

-Ensure that the use of land and the intensity of use is suitable to the natural environment.

-Encourage the preservation of prime agricultural and forest production areas from more intense types of land use.

-Avoid further development of land in designated "areas of particular concern."

-Encourage the preservation of high quality fish and wildlife habitat.

Objectives

-Annually review designated "areas of particular concern" and enact strict controls on development in those areas of high risk erosion, steep slopes, wetlands, and other "areas of particular concern."

-Encourage the state Department of Natural Resources and the Soil Conversation Service to further study the sedimentation problem in the Chocolay River and its tributaries, and to recommend solutions.

-Enforce the Shorelands Protection and Management Act by including its provisions in the Zoning Ordinance.

-Annually review the Zoning Ordinance, subdivision regulations, and other land use controlling ordinances.

Explanation

Several concerns are embodied in the above statements. First, there is the need and desire to give full consideration to the natural character and qualities of the land and water resources in making development decisions. The vehicles for accomplishing this include: the designation of "particular areas of concern," zoning and subdivision regulations, and the provision or non-provision of utilities and services. Secondly, there is the need to learn more about the nature of the problems associated with the Chocolay River in particular. Lastly, it is recognized that the Township is developing, and therefore development controls must be reviewed periodically to assure that they are producing the desired results.

COMMUNITY FACILITIES

Goal

-Provide public services as demanded by Township residents, and at the least possible cost.

Policies

-Continue to provide necessary administrative facilities for governmental and community use.

-Provide a sewage collection system in accordance with decisions based on environmental needs and public cost.

-Investigate the future need for public water facilities for the Township.

-Encourage the Township to pursue planning and financing for future, phased water facilities.

-Encourage conservation and maintenance of the existing quality of the water supply.

-Continue to provide solid waste collection with an economically equitable system.

-Provide adequate recreational facilities to meet Township needs.

-Provide adequate police and fire protection for the Township.

-Develop and implement a Capital Improvements program which meets the Township's needs.

-Provide other services to the Township in accordance with the ability and willingness of the people to pay for them.

-Annually update the Township's Recreation Plan.

Objectives

-Design plans for development of local park areas and public access to water areas.

-Obtain advice from the state Department of Natural Resources and the Army Corps of Engineers on the feasibility of keeping the Chocolay River mouth open.

-Encourage the state Department of Natural Resources and Soil Conservation Service to study the sedimentation problem in the Chocolay River and its tributaries, and to recommend solutions.

-Develop a mapping and numbering system of the Township to provide adequate fire protection and other emergency services.

-Install an elevated storage tank or other options for rapid filling of fire fighting equipment.

-Study and adopt special assessment districts to equalize public costs in critical service areas where deemed necessary.

-Annually review and prioritize a program of capital improvements.

CHAPTER ELEVEN

AREAS OF PARTICULAR CONCERN

Throughout this Plan, mention has been made of "areas of particular concern." The term itself is new; however, the concept is not. The idea has been around as long as people have recognized potential problem areas in their environment. Areas of Particular Concern are those geographic areas which have a high value because of their contribution towards a quality of human living and the enrichment of the human experience by virtue of their unique values, resources, problems, or conflicts. They incorporate these key concepts: a) they are limited in quantity either in total amount or within any given geographic area; b) they are irreplaceable; once destroyed or altered, the resources will not or cannot be replaced, and c) they are sensitive and fragile areas.

For areas identified as such, the underlying objective is to express some measure of concern, and to manage these areas so as to conserve resources, resolve conflicts and problems, and foster preferable land and water uses. It is inevitable that the expanding needs for development will impact Areas of Particular Concern, either directly or indirectly. However, to provide for the orderly and coherent development of those areas and surrounding lands, Areas of Particular Concern should not be planned separately from the development plans of the locality, region, or state. It is crucial that all jurisdictions identify areas of particular concern and then develop tools to protect, manage, and utilize these areas for benefit of future generations.

This chapter will attempt to provide a guide in that direction. This discussion on Areas of Particular Concern will include an identification of both the natural and cultural areas. It will consist of those areas previously mentioned in this Plan and other significant Areas of Particular Concern found within the Township. In identifying these areas, a set of criteria has been established and it too is included. There will be a discussion of general management techniques to monitor, control, and preserve

Areas of Particular Concern. The chapter will then conclude with suggestions for specifically managing Chocolay Township's proposed Areas of Particular Concern.

PROPOSED AREAS OF PARTICULAR CONCERN IN CHOCOLAY TOWNSHIP

The list below is an initial inventory of those areas deserving classification as an Area of Particular Concern. It is separated into natural areas and cultural areas. Natural areas are those that have been developed outside of man's action, even though they may or may not be under his control now. Cultural Areas of Particular Concern are man-made or developed artifacts of his culture. The categories are clear-cut and self-explanatory. The following listing is by no means conclusive.

Natural Areas of Particular Concern

1. Environmental (wetlands, wildlife, plant life areas, etc.)

   -Cherry Creek watershed
   -Waterfowl area on Lake LeVasseur
   -All wetlands within the Township as identified in the Comprehensive Plan or as determined by the DNR or Zoning Administrator

2. Wilderness and Natural/Scientific Area

   -Fish hatchery on Cherry Creek
   -Waterfowl area on Lake LeVasseur

3. Geologic Formations

   -Steep sloped areas as identified in the Comprehensive Plan
   -Protruding bedrock areas as identified in the Comprehensive Plan

4. Flood Areas

   -All flood areas identified in the Federal Emergency Management Agency (FEMA) Flood Rate, Flood Hazard Areas Map Map for Chocolay Township

5. Erosion Areas

   -High-risk erosion areas on Lake Superior shoreline as identified in the Comprehensive Plan

6. Shorelands

-High-risk erosion areas as designated on the Lake Superior shoreline
-Chocolay River mouth
-Coastal shores of Lake Superior (Harvey and Shot Point area)
-All Lake Superior waters and bottomlands

7. Lakes (inland)

-Lake Kawbawgam and Lake LeVasseur

8. Rivers and Streams

-All rivers and streams within the Township

9. Agricultural Lands

-All land currently under cultivation as identified on the Decision Map of the Comprehensive Plan

10. Prime Forestry Lands

-Forested areas on steep slope areas
-Forested area in northeastern part of Township along M-28

11. Mineral Resources

-Existing gravel and sand operations in the Township

Cultural Areas of Particular Concern

1. Aesthetic Areas

-As determined by Planning Commission and Township residents

2. Recreation Areas

-State forest lands
-Highway turnoff on M-28
-State roadside park on M-28
-Public access site on Lake LeVasseur
-Marina on Chocolay River

3. Historic Sites

-Those areas identified by the Marquette County Historical Society

4. Urban Areas

-Lakewood Lane area east of Harvey
-Shot Point residential area

CRITERIA FOR SELECTION OF AREAS OF PARTICULAR CONCERN

Below is the criteria used in selecting the above areas. This standard is recommended for identifying additional Areas of Particular Concern. All Areas of Particular Concern will meet at least one of the criteria outlined. However, if any areas does not reflect the intent of at least two or three of the criteria, unless otherwise stipulated, then careful consideration should be given to its listing as an Area of Particular Concern. This discussion will be in the same order as the areas were identified.

Natural Areas of Particular Concern - Criteria for Selection

Environmental Areas

1. Wetlands:

a. Waterlogged within at least a few inches of the surface during the growing season.

b. Contain up to 12 inches of water until approximately mid-summer, at which time it may dry up completely or remain waterlogged for the remainder of the season.

c. Covered with one to three feet of water during the growing seasons. Cattails and bulrushes are common.

d. Covered with open water of variable depth, usually under ten feet maximum, and has emergent vegetation restricted to a narrow border.

e. A shrub swamp in which the soil is normally waterlogged during the growing season or covered with as much as six inches of water.

f. A wooded swamp in which the soil is waterlogged to within at least a few inches of its surface during the growing season. In river bottoms, often covered with as much as one foot of water.

g. Bogs in which the soil is at least waterlogged and generally blanketed with a spongy covering of mosses, leatherleaf, and labrador tea.

2. Wetland or upland areas as designated by State DNR that provide physical and biological conditions conducive for the reproduction of animal species or for any life cycle phase of an animal species. This would include: nesting areas, migratory rest areas, feeding areas, spawning areas, areas of seasonal shelter, and mating areas.

3. Areas not necessarily associated with high productivity or high occupancy and use during the life cycle phase of an animal species, but of unusual or necessary botanical significance. These would include:

a. Areas supporting plant species and aggregations associated with dune communities. Stability of these communities is essential for the natural erosion control and climatic moderation that these areas provide for more landward habitats.

b. Areas supporting unusual plant species because of unique micro-environmental conditions.

c. Marsh and other wetland areas, acting as a "filter-control" zone.

d. Areas supporting disjunct plant species or aggregations of such species and any other latitudinally displaced plant species.

4. Areas necessary for the reproduction of any other phase of the life cycle of an endangered or threatened species. An adequate buffer area should be included around the identified habitat to guard against excessive encroachment or disruptions. Endangered or threatened species are those on any designated state, federal, or other authoritative listing.

5. Areas designated or proposed for designation as environmental areas under State authority.

Wilderness and Natural/Scientific Areas

1. Wilderness Areas

a. Wilderness areas are a sufficiently large enough tract of primitive, undeveloped, undisturbed and generally inaccessible land, so as to provide a certain sense of isolation and solitude. It should foster experiences and moods far removed from civilization and more closely attuned to that of the natural environment (The Wilderness and Natural Areas Act, P.A. 241 of 1972, contains statutory requirements for identification of wilderness areas).

2. Natural/Scientific Areas

a. Has retained or re-established its natural character, or has unusual flora and fauna or biotic, geologic, or other similar features of education or scientific value, but it need not be undisturbed.

b. Has been identified and verified through research and study by qualified observers.

c. Adaptive to development and use of facilities for conservation education and nature study, or much more intensive use than research natural areas.

d. A managed biological community or ecosystem which has been maintained at a chosen state of development, or is brought to a desired stage of development, by the use of cultural techniques or controls over a short or long period of time, or sporadically, which are known to favor the maintenance of, for the development of, the kind of biological community desired, or which may be designed to preserve or restore a desired plant or wildlife species.

Geologic Formations

1. Significant ridges and rolling hills; areas of steep topography with the ten percent or greater slope.

2. Significant gem stone, semi-precious stone areas, or fossil beds.

3. Perched sand dunes and other dunes of strongly developed relief.

4. Formations of historic or archaeologic value.

5. Sea stacks, sink holes, natural arches, tombolas, and spits.

6. Sandstone bluffs and ledges, limestone bluffs, shale bluffs, ordovician bluffs, and lava flow escarpments.

7. Prominent drumlins, eskers, kames, and other dramatic evidence of glacial action as detailed by the Geological Survey Division of the DNR.

8. Significant spring lakes and waterfalls.

9. Highest points.

Flood Hazard Areas

1. Michigan follows the Federal Emergency Management Agency in identifying a flood hazard area as being that area within the one hundred year flood plain. Flood hazard areas would consist of that land lying below an elevation which flood levels have a one percent chance of reaching or exceeding in any given year. A Flood Rate, Flood Hazard Areas Map was approved in 1987 identifying Flood Hazard Areas.

2. Informal indicators, such as known history of flooding may be used for determining flood hazard areas.

Erosion Areas

1. Areas which are designated as High Risk Erosion Areas by the Department of Natural Resources.

2. Areas that are visibly eroded.

3. Comparisons of past and present air photos of a site. Areas where bluffs have receded at least one foot per year are considered serious risks to future construction.

4. Areas likely to experience erosion will exhibit at least two or three of the following:

   Vegetation removed
   Bank slumping
   Turbidity of adjacent water or excessive wind action
   Damaged erosion control structure
   Damaged land structures
   Protective works present (shoreline)
   Unusual angle of repose (shoreline)

5. Areas where erosion is likely to take place:

   Beaches, shorelines, and sandy bluffs
   River banks
   Sandy soil conditions and other soil types listed by the Soil Conservation District as having erosion potential
   Agricultural land with loose top soil
   "Torn-up" developed or intensively used lands

Shorelands

1. Beaches and Sand Dune Areas

   Those geomorphic features composed primarily of sand, whether wind blown or of other origin which are:

a. Perched sand dunes or other dunes of strongly developed relief.

b. Exhibiting unusual flora or geologic qualities.

c. Experiencing intensive recreational use.

d. In a natural state and deserving of protection from consumptive uses (including residential development).

e. Threatened by mining activity.

f. In need of reclamation due to past removal of sand and/or vegetation.

2. Rivers and River Mouths

a. Those rivers to the extent that they are influenced by other natural features which are of prime spawning value, heaviest recreational use and boat traffic, or are part of a coastal management program.

3. Bays

a. Those areas which exhibit the following characteristics and are generally out of tune with sound management policies: high value as wildlife or fish habitat; heavy recreational use or a high degree of conflicting use; and low water quality.

4. Off-Shore Waters and Bottomlands

a. Water over-lying critical shoal areas or shallows that are important as fish spawning and habitat areas.

b. That part of the surface water within the euphotic zone (area of visible light penetration). This is the top layer of water and a zone of concentrated primary productivity (growth of phytoplankton). This depth varies from one area to another within a lake and from one lake to another.

c. Water near areas of high human occupancy or activity.

d. Water supporting a prime sports fishery or commercial fishery.

e. Bottomlands are distinguished from uplands by an Ordinary High Water Mark, which holds regardless of where the water level is at at any given time, which is either a) the level at which soil and vegetation change from a predominantly upland character to a predominantly bottomland character, or b) the officially established level in the case of an inland lake structurally regulated after proper legal procedures.

5. Coastal Lakes of the Great Lakes

a. Inland lakes directly connected with the Great Lakes by a channel or other natural or man-made waterway; particularly those navigable waterways.

b. Inland lakes with an established importance as spawning and habitat areas for fish species.

c. Inland lakes showing limnological similarities to the Great Lakes. Examples are those lakes supporting glacial relic species.

d. Inland lakes supporting marina and docking facilities for commercial shipping and recreational boating of a total or partial Great Lakes nature.

e. Inland lakes where changing Great Lakes' water levels have a substantial impact on the shoreland of the inland lake (i.e. increase erosion, flooding, etc.).

Lakes (Inland)

1. Wilderness Lakes

a. Undisturbed watershed with natural vegetation predominant.
b. Human habitation absent from shoreline.
c. One hundred percent of shoreline undeveloped.
d. Watershed development low or absent.
e. No industrial or agricultural development on watershed.
f. Inaccessible by improved road.
g. Provides unusual resources of educational or scientific value.

2. Wild Scenic Lakes

a. Undisturbed watershed with natural vegetation predominant.
b. Population density low on shoreline.
c. At least 75% of the shoreline undeveloped.
d. Development in watershed low.
e. No industrial development on watershed.
f. Limited agricultural development on watershed.
g. Limited accessibility.
h. Provides unusual resources of educational or scientific value.

3. Urban/Recreation Lakes

a. Water disturbed - natural vegetation less than 50%. Agricultural, municipal and/or industrial development on watershed.
b. Population density high in watershed and high on shoreline.
c. Less than 50% of the lake frontage available for development.

d. Experiencing some water quality problems or fluctuation.
e. Recreation not seriously impaired by water quality.
f. Lake's water quality sensitive to changes on shoreline and watershed.
g. Easily accessible to urban areas.

Rivers and Streams

Watercourses of particular concern can be identified in the three categories below. Backwaters in conjunction with these rivers shall be included, unless separately identified. The watercourses should be at least ten miles in length.

1. Wilderness Rivers

a. Exist in a wilderness environment.
b. Waters are free of any impoundment or unaffected by activities of man.
c. They are generally inaccessible.
d. The surrounding land is undeveloped.

2. Wild Scenic Rivers

a. Wild bordering lands and perhaps a wild appearing stream.
b. Essentially free-flowing.
c. Limited accessibility by trails and roads which may occasionally bridge the river.
d. Near-natural waters of high aesthetic quality.
e. Bordering lands may only be lightly developed.

3. County Scenic Rivers

a. Pleasant country-like surroundings.
b. May have undergone impounding in the past.
c. Readily accessible, with possibility of paralleling roads along river and numerous water access sites.
d. Waters of high aesthetic quality.
e. Bordering lands may be moderately developed.

Prime Agricultural Lands

1. All lands of a workable size and in Class I to Class III agricultural classification should be considered as prime agricultural land. The Farmland and Open Space Preservation Act, P.A. 116 of 1974, sets minimum criteria for workable size through a combination acreage, type of crop and annual monetary yield per acre.

2. Agricultural land that produces specialty crops important to Michigan's economy, such as tart cherries, sweet cherries, dry beans, cucumbers, prunes, plums, grapes, asparagus,

pears, apples, sugar beets, etc.

3. High lying areas of relatively frost-free fruit sites (these are found primarily along the Great Lakes coastline).

4. High water table, acid soil areas for high bush blueberries.

5. Organic and muck soils which are important for specialty crops and vegetable production.

6. Isolated areas that because of their isolation are especially suited for the production of disease free crops.

Prime Forested Lands

1. A forested area, an area formerly having tree cover, or an area with superior soil characteristics to support timber production and not currently developed for non-forest use, of at least ten acres. Roadside, stream-side, and shelter-belt strips of timber must have a crown width of at least 120 feet; clearings of at least 120 feet in width. It must be at least in a medium class growing stock as identified by the Soil Conservation Service or the DNR, or the U.S. Forest Service.

2. Forested lands within other areas of particular concern; vital for the preservation of flora and fauna; or necessary for erosion control.

Mineral Resource Areas

1. An existing demand for the mineral on a local, state, and national level. Local and regional demands for mineral commodities should receive greatest consideration since local needs for minerals with low unit value, such as sand and gravel, can only be satisfied by deposits in close proximity to the Region. At greater distances, hauling costs may exceed the market price of the mineral.

2. Quality of the deposit. Quality will greatly influence the feasibility of extraction.

3. Quantity of the deposit. Quantity can be a crucial factor in decisions necessitating large capital investments.

4. Location of the deposits. Transportation costs and modes of transportation available are dependent on the location of the deposit. Equally important will be available water supply, surrounding land uses, and possible environmental and economic impact on those uses by mining contractors.

5. Accessibility of the deposit. Accessibility will influence the amount of surface overburden to be removed, possible threats to groundwater and the type and cost of equipment required to excavate the materials.

Cultural Areas of Particular Concern - Criteria for Selection

Aesthetic Areas

These areas should include a combination of natural, and in some cases, man-made structures of influence or dependence, arranged in such a way as to create a visual or contemplative mood of aesthetic quality.

1. Public Awareness

a. Is acknowledged as a valuable scenic resource by local officials.
b. Is of regional significance, is compatible with regional plans.
c. Is considered to be of state-wide significance.

2. Location of View

a. Is viewable from a state and/or federal highway or scenic turnout.
b. Is viewable from an established recreational trail or natural area.

3. Type of View

a. Areas of unique and unusual wind sculptured vegetation or blown out areas.

b. Areas of unique or surf modified shoreline, such as escarpments and sculptured cliffs.

c. High bluff areas that afford a wide visual panorama or distant views of the lake and surrounding land area. In particular, such areas on the slopes of bays or other areas of highly irregular shoreline.

d. Areas of picturesque landscapes in combination with certain man-made structures, which together create a quaint and romantic scene.

e. Areas of unusual surf action, waves breaking violently over off-shore rocks or against rock cliffs, creating unusual moods of spray and noise.

f. Areas not necessarily of unusual scenic value on a state-wide basis, but of unusual scenic value in an areas where many of these qualities have been already lost to other uses.

Recreational Areas

1. Sites of existing recreation facilities: This would include parks, recreational areas, state forests, state game areas, fishing piers, recreational harbors, and launching sites, bathing beaches, campgrounds, and so on.

2. Physical Suitability: The area should at least possess the rather obvious minimal characteristics generally expected by users. It should be accessible and meet with environmental restrictions.

a. A swimming area should have a gradually sloping sand bottom. Water should be suitable for total body contact, with no nearly sources of potentially dangerous accidental spills. There should be space for parking cars according to the amount of use expected.

b. An area for hunting, fishing, or wildlife observation should provide a habitat known by qualified biologists to be favorable to the species intended.

c. An area proposed to be retained for public appreciation of its unique or unusual scenic, geological or biological character should have either openly visible or scientifically demonstrable evidence of such unusual character.

Historic Sites

In the case of historic and archaeologic preservation, this requires, in many cases, varied degrees of expertise and direct familiarity with historic and prehistoric trends within the particular location. In addition, historic value will fluctuate in scope relative to the interests involved; some artifacts, sites, or structures are of extreme local significance, but of a much lesser importance to regional, state, or national interests. For these reasons, it is difficult to formulate a universal set of criteria for evaluating cultural value except in very general terms.

1. It is connected with a pivotal event resulting in significant contributions to the patterns of history or prehistory.

2. It is associated with an improvement phase of growth or decline of a locale, society, or movement.

3. It is associated with the lives of historically significant persons.

4. It is associated with important contributions to science, technology, politics, the arts or humanitarian causes.

5. It embodies distinctive characteristics of type, period, or method of construction.

6. It represents the work of a master.

7. It yields or may be likely to yield information important in prehistory or history.

8. It possesses a high artistic value or unusual and unique workmanship, or it is one of a kind.

9. It is at least 50 years old - this criterion could be overruled in cases of something of anticipated potential historic value.

10. It is a district or grouping of structures or other objects which individually are not unique, but which when taken together, represent a certain historic scene or way of life. In this case, piecemeal destruction of the individual parts of such a grouping would destroy the effect or mood created by the grouping, if it were left in its entirety.

11. It is currently registered as a historic site by any state, local, or national organization.

Urban Areas

1. Satisfying the Bureau of Census definition of an urbanized area.

2. Those urban areas experiencing highly competitive environmental uses, such an encroaching intensive development on known Areas of Particular Concern.

3. Those environmentally sensitive areas or "areas of particular concern" wholly within an urban setting, such as botanical gardens, zoos, marinas, parks, river fronts, shorelines, and beaches.

MANAGEMENT TECHNIQUES FOR AREAS OF PARTICULAR CONCERN

The salvation and preservation of Areas of Particular Concern involves a number of complex situations difficult to deal with because of local concerns, personal desires, and the intangible results of preserving these unique lands. This situation is particularly true in "hard" times, when preservation becomes second to satisfying material needs. Exacerbating the situation are the traditional societal attitudes and customs towards these "special" areas. The American ethic has held that land exists for developmental purposes; that our resources are plentiful; and that our environment is improving.

The fact is, as we are now aware, that our land is limited, it is valuable, and the ecological balance of nature is extremely fragile--and it is being tested. Perhaps our most crucial problem is created by not even recognizing the existence of these unique areas; and when they are identified, speculation and development pressure soon destroy their integrity.

Communities must both identify and protect Areas of Particular Concern. The means of protection can vary from federal and state regulation, to local control, to voluntary action. No one approach will satisfy each individual situation. Local attitudes, real and assumed property rights, development objectives, local priorities and many other factors will determine which management technique will best provide the protection for the resource and respect the welfare of the public. Generally, techniques for managing Areas of Particular Concern fall into six broad groups.

1. Registration

Registration generally involves the establishment of an official Registrar who is responsible for inventorying current and potential areas, establish criteria for identification, and administer a management program for the preservation of those Areas of Particular Concern. Sites would be inventories on both public and private lands, and designation would be accompanied by an agreement between the Registrar and owner, provided he does not alter the unique features of the area.

Legislation should be coupled with registration to guarantee the program's authority and provide funds for the area's management. A model of this kind of management tool is the Register of Historic Places which has been very successful on both the federal and state level. Several Michigan counties have also instituted a less rigorous registration program.

2. Public Acquisition

Public purchase is generally the simplest form of protection for Areas of Particular Concern, but of course, it is very costly, particularly at the local level. Private donation is another means of acquiring the property. A purchase and leaseback program is an acquisition tool, whereby the public body would hold title, but avoid the specific management responsibilities over the property and would have the opportunity to regain part or all of the purchase price. Deed restrictions could be written into the lease to provide the proper protection.

This method is best suited for those Areas of Particular Concern able to withstand moderate development and are not in a critical or threatened position. Similar to this is the Revolving Fund Technique where the public body, or private non-profit organization, will purchase and preserve Areas of Particular Concern with money from other Areas that were leased or sold with the appropriate deed or lease restrictions to guarantee their preservation. This technique has been successfully used in the preservation of historic sites.

3. Zoning Controls

Zoning is perhaps the most common management tool utilized at the local level to control development and protect potential Areas of Particular Concern. State-wide zoning in Michigan does not exist, but the State does recognize certain unique areas, and provides legislation and enforceable guidelines for their protection. This action, when accompanied with local zoning, can sufficiently implement the protection of those areas. Zoning is appropriate for local protection; however, too often Areas of Particular Concern transcend local boundaries and no effective legal tool exists for coordination with other local units; therefore, local jurisdictions must cooperatively work to solve regional problems.

4. Voluntary Action

Incentives for voluntary action through tax rebates and breaks, education of the public, and voluntary restriction on the resource use are the traditional methods of private preservation efforts. These methods have proven to be successful, but are subject to the whim of the private owner.

5. Controls over Development

Development controls, similar to zoning, is another popular local method of preservation and management. Subdivision controls and easements are the traditional tools. The use of easement, either purchased or donated, will provide public protection without public ownership. Similar to easement are covenants placed on this lands (owners would be compensated) restricting the types of particular practices allowed.

6. Legislative Action

Legislation can be passed at both the local and state level which can almost completely accomplish the objectives of a program to preserve Areas of Particular Concern, if the citizenry desires. Legislation will provide the legal guidelines for identification, management, and enforcement of Areas of Particular Concern, but as noted throughout, it must be coupled with other management techniques to ensure its proper implementation.

MANAGEMENT TECHNIQUES FOR CHOCOLAY TOWNSHIP'S PROPOSED AREAS OF PARTICULAR CONCERN

For those potential Areas of Particular Concern identified in Chocolay Township, a program of management and preservation must be explored. The kinds of management techniques employed are dependent on local decisions. To assist in this decision making, Chocolay must make a concerted effort to officially identify and

develop an inventory of Areas of Particular Concern on a regular basis. This inventory is intended to begin the process. The discussion on the Criteria For Areas of Particular Concern will provide a minimum basis for the identification process. Once identified, the Township must prioritize its listing, recognizing that each area represents a certain "value." Areas will vary in importance. Those given a higher priority will require more stringent protection. Those less important will have less rigorous regulations or be put off to a later point in the implementation process.

For the most part, the Township's management program will be limited to use of zoning and development controls as described previously. It is recommended that they participate with County, State, or Federal programs geared towards preserving these unique areas. They should continue to enforce the traditional protective ordinances, such as the county health codes, building permits, zoning permits, etc.

The following discussion will identify possible management programs for those Areas of Particular Concern in Chocolay Township. Parts of this discussion will be more detailed than others. That is because many of the Areas of Particular Concern identified were general in nature - rivers and streams, lakes, wetlands, etc. - while others are more specific - the waterfowl area, fish hatchery, etc. - requiring specific management techniques.

NATURAL AREAS OF PARTICULAR CONCERN

1. Environmental Areas

A. Cherry Creek Watershed and Lake LeVasseur Waterfowl Area

The Cherry Creek Watershed, which supports the State Fish Hatchery, and waterfowl area on Lake LeVasseur are both outside the jurisdiction of the Township. They are in State ownership and are presently under a management program. However, for zoning purposes, it is recommended that both areas remain zoned Open Space. The Township should take steps to safeguard the Cherry Creek watershed area by informing Sands Township, from where the majority of the watershed originates, of its program of Areas of Particular Concern and of the watershed's value as a regional resource.

B. Chocolay Township Wetlands

A management program for the Township wetlands should include enforcement of county health codes, state building codes, and Subdivision Control Act, P.A. 288 of 1967 as well as the Wetlands Protection Act of 1979. The Farmlands and Open Space Preservation Act, P.A. Act 116 of 1974, offers certain tax deferral options to property owners who enter into an open space agreement with the State or local unit for at least ten years. The Township should also endorse and enforce where appropriate those sections of the Inland Lakes and Streams Act, P.A. 364 of 1972, the Endangered Species Act, P.A. 203 of 1974, the Shorelands Protection and Management Act, P.A. 245 of 1970, and the Wetlands Protection Act of 1979, related to the preservation and utilization of wetlands. For zoning purposes, all wetlands should fall into the Open Space and Resource Production districts.

2. Wilderness and Natural/Scientific Areas

See the discussion under subsection "A" under Environmental Areas for the areas identified under this section, the State Fish Hatchery and the Lake LeVasseur Waterfowl Area.

3. Geologic Formations

A. Steep Sloped Areas: The steeped sloped areas of the Township are generally less desirable for most types of development because of the higher construction costs, high erosion possibilities when soils are disrupted, and the high cost of providing public services like road construction, snow plowing, sewage collection, etc. Therefore, intense types of development should be limited. The two larger areas in the southwestern portion of the township can support good timber production; this is encouraged to avoid erosion problems. The area should be zoned Open Space.

B. Protruding Bedrock Areas: Protruding bedrock can create development problems in construction of septic tank drain fields, public sewer lines, or construction on its rock bluffs. It is recommended that intense development be limited in those areas because of those problems; and if development occurs, it can be monitored by enforcing the health, building, and subdivision controls. Most of the bedrock areas on the eastern portion of the Township is on State-owned lands and should remain zoned for Open Space. The rock bluffs in the northwest corner of the Township should be closely monitored by the development controlling ordinances because the pressure for intense development exists.

4. Flood Areas

The Federal Insurance Administration has issued a final Flood Hazard Boundary Map identifying those lands lying within the

one hundred year floodplain. It is recommended that the Township comply with the State Building Code, Subdivision Control Act, and Floodway Encroachment Act, P.A. 167 of 1968, to provide for the orderly development within the floodplain areas and that they participate in the Federal Flood Insurance Program to provide proper protection for those areas affected by floods. Most major flood areas should remain zoned for Open Space or Resource Production.

5. Erosion Areas

Management efforts to curtail Lake Superior shoreline erosion stem from the Shorelands Protection and Management Act. The State has performed a study of the High Risk Erosion areas and has developed a management program of which Chocolay Township is a part. The DNR has established setbacks by calculating the known receding rate of the banks. Permits must be obtained from the DNR for construction on properties designated as high risk erosion areas. Those lands not developed should be zoned Open Space. Maps in the Natural Features chapter identify all High Risk Erosion areas in the Township.

6. Shorelands

A. High Risk Erosion Areas: Refer to the high risk erosion discussion above.

B. Chocolay River Mouth: The Chocolay River mouth is experiencing a sedimentation problem. If the Township decides that they need the mouth open for public use, they should contact the Army Corps of Engineers and Soil Conservation Service to determine what procedures would be necessary to keep it free flowing.

C. Coastal Lakes, Lake Superior Waters and Bottom Lands: Coastal lakes and rivers are covered by the Shorelands Protection and

Management Act. It is recommended that reasonable setbacks be established in the Zoning Ordinance to provide protection of water quality, aesthetic quality, and resource integrity.

7. Lakes (Inland)

Lake LeVasseur is wholly within the jurisdiction of the State and is discussed in Subsection "A" of Environmental Areas. Kawbawgam Lake is in private ownership and is experiencing rapid development along its shores. The areas surrounding the lake is within the proposed flood hazard area and wetland area, and should follow those recommendations, as discussed. For those areas developed, it is recommended that reasonable setbacks be established in the Zoning Ordinance to preserve their integrity. The Township should enforce all developmental controls, the Subdivision Controls, State Building Code, and Health Code, as well as the Inland Lakes and Streams Act.

8. Rivers and Streams

All streams and rivers should be afforded a minimum amount of protection from overuse and intense development. Those portions surrounded by wetlands or flood hazard areas should follow the recommendations for those areas. Reasonable setbacks should be established through the Zoning Ordinance. The Township should enforce developmental controls, as well as honoring the Inland Lakes and Streams Act, and the Local River Management Act, P.A. 253 of 1964.

9. Prime Agricultural Lands

Only agricultural lands under current cultivation have been identified as prime agricultural lands for Chocolay Township. It is recommended that the Township work closely with the Soil Conservation District to continually redefine Chocolay's

responsibility to agricultural production needs. Zoning agricultural land as Open Space or Resource Production can provide the necessary protection from unwanted development. The Farmlands and Open Space Act will also control development, as discussed earlier.

10. **Prime Forested Lands**

Chocolay Township has no major commercial timber production even though it is extensively forested. Much of the eastern portion of the Township is within the Escanaba River State Forest and therefore is outside the Township's jurisdiction. It is recommended that Chocolay work closely with the Soil Conservation Service and DNR to determine the potential productivity of the private forested lands. To preserve the quality and quantity of forested lands along roadway, rivers, streams, lakes and ponds, reasonable setbacks could be utilized. To preserve larger tracts of forested lands the Private Forest Reserve Act, P.A. 86 of 1917, could be instituted. If commercial land is involved, the Commercial Forest Act, P.A. 94 of 1925, would be involved. Lands intended to be preserved for its timber resources should be zoned Open Space (timber resource) or Resource Production.

11. **Mineral Resources**

Those gravel and sand operations existing are the only mineral resource areas in Chocolay. More valuable mineral resources only exist in trace amounts and are not economically feasible for extraction at this time. To ensure protection to those resource areas and provide maximum limits on how much extraction should occur, it is recommended that an industrial zoning classification be used on only those specified areas.

CULTURAL AREAS OF PARTICULAR CONCERN

1. Aesthetic Areas

Since the selection of aesthetic areas is a judgmental decision, it was determined that the Township leaders are in the best position to make that decision. To protect those areas the Township should utilize developmental controls and setback regulations as determined necessary. Each area will have to be dealt with individually to meet its particular needs and problems. Zoning should also be used with that in mind.

2. Recreation Areas

The state forested lands, highway turnouts, and Lake LeVasseur public access site are out of the jurisdiction of the Township. For zoning purposes, they should remain zoned Open Space.

The Township's marina falls under local ordinances and the Recreation and Playgrounds Act, P.A. 156 of 1917. Monies for improvements are possibly available from the DNR through the Land and Water Conservation Fund, the Michigan Natural Resources Trust Fund, the Quality of Life Bond (Recreation Bond Implementation Act 329 of 1988) and the State Waterways Commission. This site should remain zoned Residential-One.

3. Historic Areas

Current protection for all state and federal registered sites come from the Historic Division of Michigan's Department of State. All local preservation efforts (funding and enforcement) should go through their office or the Marquette County Historical Commission. Each area identified is unique unto itself so will require individual attention in its management.

4. Urban Areas

The Shot Point area development is within the Flood Hazard Area of Lake Superior. Since development exists, zoning and developmental control ordinance should be rigidly enforced to preserve the quality of the resources and protect existing and future development. Setbacks would be most useful here. Zoning in this area should be Lake Shore/Residential. Undeveloped areas and environmentally sensitive areas should be rezoned Open Space.

Although not an immediate problem, the Kawbawgam Lake area is a potential candidate. As an Area of Particular Concern, development is spreading in an area that is both wetlands and a Flood Hazard Area. Here too, zoning and developmental control ordinances should be rigidly enforced.

The Lakewood Lane area development consists of areas designated as High Risk Erosion Areas. Since development exists, the Residential-One single family zoning should be maintained.

CHAPTER TWELVE

DECISION MAP

To complement the framework provided by this Plan, a decision map has been prepared for Chocolay Township. The decision map portrays the areas that are suitable for intensive development; that have high resource production potential; that have both intensive development and high resource production potential; and that are not suitable for any of these purposes.

In the process of making this decision map, several criteria were considered: soil characteristics, topography, bedrock areas, wetlands, floodplains, and marshes or swamps. All of these are considered as the key factors in determining whether a particular area is suitable for a particular use or not.

The soil characteristics as interpreted by the Marquette County Soil Conservation District are used in grouping the soils suitable for intensive development or resource production. However, it should be noted that within the same soil association, there are several soil types, and each of these soil types have different soil characteristics. In grouping the soils, the characteristics of soil types which occupy a larger proportion of the soil association are considered. The soil characteristics may present problems for foundations, basements, septic tanks, establishing lawns, etc.

As far as topography is concerned, the areas which have steep slopes of 10% or more pose several development problems. These problems include the severe erosion hazard and the increased cost of construction due to excavation, leveling, filling or construction of retaining walls, etc.

Bedrock areas are those areas where the glaciers did not leave behind any deposit materials. In such area, excavation for foundations, basements, laying water and sewer mains, and other subsurface activity becomes extremely difficult.

Wetlands, floodplains, and marshes and swamps should be generally

avoided to protect the property from damage.

Limitations should not be considered in isolation from one another; instead, they should be viewed in a comprehensive manner. This can be understood by the fact that in a given area, the soil characteristics may permit intensive development, while the same area may be a floodplain or have steep slopes or be in a bedrock area.

The limitations of soils, topography, bedrock areas, wetlands, floodplains, and marshes or swamps were superimposed on one another on the map in delineating the areas suitable for intensive development, high resource production potential, or both.

Although there are several areas that are suitable for intensive development in the township, it is important for decision-makers to know which of these areas are best suited for development given the available facilities, transportation system, relationship to the existing developed areas, land ownership, and the like. In order to give a proper perspective to decision-makers, the decision map is overlaid on a base map which shows the existing transportation systems, recreation facilities, existing and proposed developments, sand and gravel sites, etc.

In an area like Chocolay Township, land ownership is a significant factor in determining the best possible development pattern. This is due to the large areas which are publicly-owned or are owned by large corporations. These areas are generally not available for development. In some cases, this is advantageous. Such is the case for areas which are well-suited for forestry. On the other hand, public ownership of land places a tremendous burden on local government, which is dependent upon property tax revenues for its operation. In any case, it is important to be aware of ownership patterns when developing land use policies; therefore, state-owned lands are also overlaid on the decision map.

This composite map is a valuable tool for Township decision-makers in guiding future growth and development in a general sense. For making specific decisions about specific sites, the more detailed maps, figures, and data found in this Plan should be consulted.

CHAPTER THIRTEEN

FUTURE LAND USE ALLOCATION

Determining and recommending future land use allocation is the objective of this chapter. The Planning Commission has drawn upon the information in the preceding twelve chapters to make this recommendation as well as the existing Zoning Ordinance and zoning maps.

Highlighted throughout the Comprehensive Plan are the following items:

-Population: Projections for the planning period indicate a moderate 7% increase as compared to 10% for the previous decade.

-Economy: Past development surveys have indicated that residents would welcome more retail and service businesses in the township. Commercial development in the late 1980s may have accomplished this to some extent.

-Natural Features: The soil characteristics of the township make septic system operation only workable in limited areas. Development pressures on floodplains and wetlands require additional monitoring, education, and enforcement of existing rules and regulations.

All township residents and businesses currently utilize private wells. Feasibility studies should be conducted to determine potential need for a public water supply. Efforts should be made to preserve and maintain this high quality water supply.

-Existing Land Use: Land use has diversified in the last two decades increasing friction between land uses. Established land use patterns are evident. Development patterns should be carefully considered when considering zoning changes.

-Community Facilities: No immediate deficiencies in the township municipal complex and fire department site and buildings are identified. Future need for a community center should be

monitored.

Expansion of the sewer system around the M-28, U.S. 41 intersection will be costly, primarily because of a lack of grants as well as a possible need for pumping stations due to the topography of these areas.

Continued development of Recreation Area II in Beaver Grove should be a priority.

Collection and disposal of Type II and Type III wastes should be properly handled. With the recent construction of a new licensed facility in Sands Township, safe and convenient disposal over the next twenty years should be a reality. Type III wastes and household hazardous waste will require additional consideration.

-Housing: A large percentage of the housing in the township is in good condition, and an estimated 200 new housing units will be needed during the planning period.

-Transportation: No major roads or rail facilities are expected in the planning period. Road reconstruction and the associated costs will be a major issue in the planning period.

-Township-Owned Lands: The Township currently owns ten parcels of land. Projected needs over the planning period include continued development of Recreation Area II, and acquisition of a site for Recreation Area III in the M-28, Lakewood area. The Lion's Club Park under school ownership could fill this need.

Establishing a Land Use Plan

In reviewing all of this information, the Planning Commission made the following selection for the development alternative for the township. This recommendation is to provide for managed development of the township. Single family housing will be the main thrust of housing in the township; however, opportunities

for multi-family housing should be maintained. Commercial service areas, as desired by township residents, should be encouraged in well-designed commercial areas which are convenient, safe, and attractive. The township is not interested in large-scale, industrial developments.

In order to evaluate and establish a land use plan, the Planning Commission utilized the existing zoning map as a base. Future needs were reviewed and measured against the amount of land in the various zoning classifications. The following is a summary of the analysis and conclusions for the zoning districts that the Planning Commission felt needed review.

1. Residential-One (R-1): This is a district intended to establish and preserve quiet single family home neighborhoods. Typical lot sizes, as identified in the Zoning Ordinance, are 125 of lot width with 200 feet of lot depth. In reviewing existing ownership patterns in the township, five areas were identified as areas with expected future development potential. All of these areas are adjacent to areas previously developed into residential subdivisions over the last fifteen years. Infill of already developed areas is also expected to occur. All of the areas identified are currently zoned R-1.

These specific areas consist of approximately 600 acres of land. This allows for approximately 580 - 871 parcels. Recognizing that all of the 600 acres of land are not ideally suited to intensive residential development, the figures of 580 - 871 lots may be high. However, it appears that there are considerable amounts of land available for single family development in the R-1 zoning district.

2. Residential-Two (R-2): This district is intended to establish and preserve quiet single family neighborhoods for single family residences and mobile homes. Typical lot sizes are 125 feet of

frontage and 25,000 square feet of area. Two areas for R-2 are identified in the Zoning Ordinance: 1) The Brookfield area south Beaver Grove, and 2) The Willow Road area just south of Silver Creek. These areas include existing housing types permitted in the R-2 area. Recent expansion of the R-2 area along Willow Road provides additional lands in this classification.

3. Residential-Three (R-3): This zoning district is intended to establish and preserve neighborhoods for medium residential use free from other uses except those which are both compatible with and convenient to the residents of such a district. Permitted principal uses include single and two-family dwellings, and multiple-family dwellings. The minimum lot size is 125 feet of lot width and 25,000 square feet of lot area.

In reviewing the existing R-3 areas, the following four areas were identified:

A. An area consisting of approximately 18 acres north of Silver Creek Road and south of the Village of Harvey.

B. An area east of Baker Street of approximately 5 acres.

C. A large block of land lying south of the abandoned LS&I railroad north of M-28 running due north from the intersection of U.S. 41 and M-28 to the Village of Harvey. The total parcel contains approximately 65 acres of land. The land is in several ownerships and a large area of floodplain runs through the site along Silver Creek.

D. An area just south of Ewing Plaza Subdivision containing approximately 4.5 acres. Currently three duplexes are located in this area. The remaining land is undeveloped.

Only a few of these sites are currently serviced by sewer.

However, sewer may be available if needed. There are some additional areas that could be considered for multi-family development. These areas are located near the sewer.

Proper design and development controls such as Planned Unit Development options could provide additional multi-family opportunities. These options as well as the existing R-3 areas should be sufficient to accommodate the expected need.

4. Commercial-Two (C-2): The C-2 district is intended to establish and preserve general commercial areas consisting of shopping centers and areas where customers reach individual business establishments by automobile. The primary C-2 district is located in the vicinity of Harvey, from the rock cut to the M-28-U.S. 41 intersection.

Another area of spot C-2 zoning is in Beaver Grove, which currently has four spots zoned C-2. These areas primarily serve the neighborhoods around the Beaver Grove area and offer convenience stores, a gas station, a restaurant, and a recently developed art and craft shop. These developments serve the immediate neighborhood generally. These neighborhood commercial services are necessary and desirable.

Intensive commercial development should not be encouraged in this area. This is due to conflicts such as land use incompatibility of spot commercial zones, lack of planned services and infrastructure to accommodate development, and the recognition that intensive commercial areas are planned near the Harvey area where services, infrastructure, and land use conflicts are not as great. However, should a need for additional neighborhood commercial service area be shown, development around the intersection of U.S. 41 and County Road 480 should be encouraged to expand the existing commercial area.

There are currently 12 vacant sites zoned C-2 in the Harvey area.

There are an additional 26 sites zoned C-2 with nonconforming uses, in most part single-family dwellings. The recent rezoning of a parcel along M-28 has added two additional sites to this count. During the period 1977 - 1988, there were ten new businesses constructed in the Harvey area and four conversions from residential use to commercial use. Accordingly, there are approximately 40 sites available during the planning period, and this would appear sufficient for future development.

However, should the township decide to plan and expand the existing commercial areas, it would appear that the logical expansion would be located in the following areas:

A. An area lying on the east side of U.S. 41 east of Ewing Plaza. Identified in this area are the following parcels: 378-1, 378, 379, 380, and 381-1. In addition, some back acreage of parcel code 436 would adjoin the recently rezoned parcel along the south side of M-28.

B. An area north of M-28. By adding this area to the existing land area, several new frontage parcels can be created. If this expansion is considered, the Planning Commission has determined the following should be part of the planning implementation process:

The best concept for development would be a design similar to the Ewing Park subdivision with the Carmen Drive controlled access road. This can provide for an additional 10-15 sites, depending on their size. These sites would not all have frontage on U.S. 41 or M-28, but they would have access to U.S. 41/M-28 by internal roads similar as Carmen Drive. Not all commercial development requires highway frontage, and this would provide a safe, convenient expansion of commercial development.

With this change, a potential of 58 sites could be available for commercial development in the Harvey area, and 22 - 27 of these site would be vacant. While it is understood that many of these

58 sites may not be used during the planning period and in some cases, lots in the Village of Harvey may be combined to create one larger lot to accommodate new development, it would appear that this type of land development plan would provide for sufficient commercial development for the future.

In order to implement this type of development, a plan such as a Tax Increment Financing Plan will be necessary to ensure the plan is implemented. This increased development will require sewer extension, road development, utility provision, and may need a future water supply analysis. Extra consideration should be given to insure adequate roadway, setbacks, and landscaping to make this new development safe, convenient, and attractive.

5. Commercial-Three (C-3): The C-3 district is intended to establish and preserve a district for light industrial uses which are more compatible with light industrial than with other commercial areas. Currently there are four areas identified as C-3.

These four areas include:

A. Acreage along Cherry Creek Road near the U.S. 41 - M-28 intersection.

B. Acreage along M-28 2.5 miles east of the U.S. 41 - M-28 intersection.

C. Acreage along U.S. 41 (both sides) south of Beaver Grove.

D. A lot on U.S. 41 on top of Green Garden Hill.

All of these areas have room to accommodate future development. Expanding the size of these areas is somewhat limited due to either existing land use incompatibility and/or on-site limitations. Development of these areas should occur before new

areas or expansion of the district is considered.

The highly vulnerable groundwater in the township, which is the only source of drinking water, makes the advisability of additional development of C-3 areas questionable. C-3 lands and industrial land uses have the highest potential for groundwater contamination. A major problem groundwater problem in the many residential areas of the township could be a catastrophe of major environmental and financial proportion. In addition, possible new sites which might be considered may be located too far from the urban center to be practical for C-3 development. Expansion of existing areas is recommended prior to creation of new areas.

6. Rural Residential-Two (RR-2) and Resource Production (RP): These districts are intended to establish and preserve those areas which are suitable for low intensity development. The primary difference between the RR-2 and RP areas is lot size.

The RR-2 district was established around rural areas which contained rural development and/or had frontage on paved roads. The RP area was created in active agricultural areas, areas of high resource potential, and/or with development limitations. Large amounts of land are located in the RR-2 and RP districts.

Rural development options include many areas including Cherry Creek Road, County Road 480, Little Lake Road, Mangum Road, North and South Big Creek Road, U.S. 41, Green Garden Road, County Road 545, and Foster Creek Road. A current parcel count of building sites indicates over 50 vacant sites within the RR-2 district. This does not take into account the possible subdivision of land which would result in additional rural sites. This, as well as the existing housing located in these areas, appears sufficient for the rural type developments which have been desired by township residents.

The RP districts are generally on the fringes of the RR-2 areas.

They are designed to allow developments similar to the RR-2 district, but at a lower density. These areas appear to be properly zoned according to location and site characteristics, and there are no specific changes recommended for this district.

CHAPTER FOURTEEN

RECOMMENDATIONS

This chapter is designed to make specific recommendations to implement the Comprehensive Plan. These recommendations address policy objectives contained in this Plan, and they are specific in nature to address important current issues.

1. Economy

It is recommended that the Township investigate methods to finance and improve the development of the intersection of U.S. 41 and M-28 in Harvey. Alternatives include a Downtown Development Authority and/or a Tax Increment Financing District to obtain revenues to encourage well-designed, safe, and attractive commercial development in this area.

2. Natural Features

It is recommended that policies be developed to improve community understanding and to coordinate various governmental agencies to improve management of Areas of Particular Concern.

3. Community Facilities

It is recommended that a development survey be conducted which would include questions regarding public facilities needs such as recreation, community center, water, and sewer.

4. Zoning

It is recommended that all zoning recommendations in this Plan be reviewed, and that zoning changes be made where appropriate to implement this Plan.

APPENDIX A

CHOCOLAY TOWNSHIP TRANSPORTION PLANNING

Criteria and the Plan

The transporation goals, policies, and objectives expressed in the Comprehensive Plan should provide the basis for developing a set of criteria to prioritize future road improvement projects. Of course, the actual criteria design will necessitate considerable amplification of the goals, policies, and objectives to obtain enough detail for point assignment. This process relies heavily upon the judgment of the Planning Commission and their understanding of the Comprehensive Plan. The actual criteria to be used for this sample Capital Improvements Program grew out of policies and objectives of Chocolay Township as contained in the plan.

One of the plan's transportation goals is "to coordinate the improvement of the transportation network with the overall development of the Township." This recognizes the close relationship between road improvement and increased development and the need to use road improvement expenditures to influence development patterns. The plan further states that new development should primarily "occur in areas where it can conveniently be served by local services, such as the sewer system, schools, school bus, recreation facilities etc." It was felt that the utilization of zoning district boundaries would adequately represent future growth areas and areas where better roads should be encouraged (refer to zoning map). Points were allocated according to which district a project fell into. That is, a proposed road improvement in a R-1 zoning district would receive more points than one in a Rural Residential zoning district, since it would occur in a more developed, service-accessible district. The result of this criterion will be more road investment in areas where growth is encouraged.

One transportation policy of the plan states that, "all road construction, whether public or private, should meet minimum design standards." This is done to ensure that roads are able to accommodate traffic quickly and safely. Standards for each road upon which a project was proposed were established from the Road Design Manual of the County Road Association of Michigan. A proposed project was given four points if it brought a road into compliance with surface design standards, or two points for other design standards. The effect of this criterion will be to eventually bring all roads up to a specified standard, a design standard which varies by type of road. Because these standards are assigned to make road design and construction reflect road use, the end result will be wise expenditure of public road investment dollars.

The final criterion stems from the plan objective, "to annually review road conditions throughout the Township and recommend a priority for road improvements." Under the system developed, a project receives points in an inverse relationship to the condition of the road for which it is proposed. For example, a road judged to be in good condition will receive zero points, since any improvements needed certainly are not urgent. A project on a road in fair condition will receive two points, and one on a road in poor condition, since repairs are so vitally needed, will get four points.

Procedure

The procedure for establishing eligibility for consideration of ranking for road projects shall require an annual review of all existing public roads in the Township by the Supervisor of the Department of Public Works, Police Chief, and the Zoning Administrator. A listing of roads and associated problems and/or improvements needed shall then be forwarded to the Marquette County Road Commission. The Road Commission will then review the list and break projects into major and minor categories. Major improvements shall be those so designated as to require a 50/50

local match for the improvements.

Minor improvements are those which are maintenance projects which are part of normal maintenance conducted by the Road Commission. A project shall be listed as a maintenance project unless resurfacing or reconstruction is requested. This list is then analyzed and forwarded to the Township Planning Commission to rank the major projects into the point allocation system. This list is then forwarded to the Township Board to be used in formulating budget priorities.

Goals, Policies, and Objectives

Goals

To provide for the efficient movement of people and goods with a balanced transportation network, accommodating travel patterns safely and efficiently at minimal environmental and fiscal cost and with a maximum conservation of resources.

Sub-Goals

1. Maximization of energy conservation.
2. Utilization of transportation facilities and planning to implement and guide land use planning.
3. Avoid proliferation of curbcuts and driveway intersections, especially along M-28 and U.S. 41, which are statewide arterials.

Policies

1. All road construction, whether public or private, should meet specified minimum design standards. For roads located in the RP and OS zoning districts, the minimum design standard shall not include paving with a bituminous material.

2. Encourage the use of alternative forms of transportation such

as bicycles.

3. Encourage participation in regional, state, and county transporation planning.

4. Encourage improvement of transportation safety and convenience and maximize the mobility of road systems within the Township consistent with other portions of this plan.

5. Minimize traffic conflicts between abutting land uses and the principal roadway along statewide arterials and principal collectors by means of land use controls, such as zoning, and roadway/access point geometrics.

6. Discourage continuing ownership and maintenance of portions of county roads serving areas not suitable for development.

7. Encourage use of public transit, van or car pooling.

Objectives

Continually revise and strengthen the Township's Zoning Ordinance, subdivision regulations, and other land use controls to reflect the Township's transportation needs and design standards.

In cooperation with the Marquette County Road Commission and the State, adopt and implement an annual Capital Improvements Program for road improvements.

Annually review road conditions throughout the Township and recommend a priority for road improvements.

Identify and classify roadways within the Township and suggested by the Department of State Highways.

Periodically review the potential for providing public

transportation services in the Township.

Location	Points
1. Project occurs on a road located within an R-1, R-2, R-3, R-4, C-1, C-2, C-3 zoning district.	*4
2. Project occurs on a road located in an RR-1 zoning district.	*3
3. Project occurs on a road located in an RR-2 zoning district.	*2
4. Project occurs on a road located in an RP or an OS zoning district.	*1

*If project occurs on a road which is determined to serve as a collector/distributor, an additional two points shall be given.

If project occurs on a secondary residential street, an additional point shall be given. If project occurs on a dead end road, no additional points shall be given.

Road Conditions	Points
1. Project occurs on a road in good condition (can be traveled year round 80-100% of length at design speed).	0
2. Project occurs on road in fair condition (can be traveled year round, 50-80% of length at design speed).	2
3. Project occurs on a road in poor condition	4

(cannot be traveled year round and/or only 0-50% can be traveled at design speed).

Design Standards	Points
1. Project brings a road into compliance with standards in terms of surface design.	4
2. Project brings road into compliance in terms of resurfacing design.	3
3. Project brings a road into compliance with other design standards.	2

Density

1. Project occurs on a road with a density of 25 or more houses per mile.	4
2. Project occurs on a road with a density of 20 or more houses per mile.	3
3. Project occurs on a road with a density of 10 or more house per mile.	2
4. Project occurs on a road with a density of less than 10 houses per mile.	1
5. Project occurs on a road with less than 5 houses per mile.	0

Administrative Considerations

A Capital Improvements Program requires a significant commitment by the Planning Commission in terms of time and effort. Annually, the Planning Commission should review and update policies within the Comprehensive Plan, as needed. If policies are changed, then criteria (outgrowth of policies) must also be altered to properly reflect those changes.

Of course, the Planning Commission cannot hope to do all of this by itself. Strong staff support is needed, along with the assistance of various outside professionals. For example very detailed information will be needed from the Road Commission or township supervisor in order to evaluate road condition criteria.

Lastly, it can be mentioned that a Capital Improvements Program for the area of transportation is relatively more difficult than for recreation, for example. This is due to the fact that many of the proposed projects are very similar, and require very technical criteria.