

# Chapter 1

## Introduction

Communities everywhere face different hazards and have different resources and interests to handle these situations. Planning is one of the best ways to recognize the hazards and to produce a program of activities that will best mitigate the impact of hazards on the community. [Mitigation](#) includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies.

This mitigation plan, required for Federal mitigation funds, is being developed to recognize the needs for Chippewa County and provide a basis for obtaining pre-disaster mitigation funds.

This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural hazards. The plan focuses on the major hazards that face Chippewa County, fills the Federal mitigation planning requirements, and provides the County and its municipalities with a blueprint for reducing the impacts of these natural hazards on people and property.

### Planning Approach

The Eastern U.P. Regional Planning and Development along with Chippewa County Office of Emergency Services have undertaken the project of developing a hazard analysis of Chippewa County, including the past history of disasters, assessing the hazard risks and vulnerabilities of the County and developing goals and objectives to mitigate these disasters.

The Chippewa County Board of Commissioners passed a resolution to have the Eastern Upper Peninsula Regional Planning and Development Commission undertake this Hazard Mitigation Plan. Upon meeting with the Director of Office of Emergency Services a list of contact people was developed which is included as Appendix A.

During the planning process a survey was sent out to the list of contacts requesting information on any known hazards, past history and concerns. The survey was sent to the contact list as well as to clerks, supervisors, and managers of the local municipalities within the County. Included with the survey was a map of the county in which potential hazardous areas could be delineated. Survey responses are included as Appendix B.

Other information was gathered from several sources including the Michigan State Police – Emergency Management Division, National Weather Service, USDA Resource Development, Federal Emergency Management Agency, Michigan DNR and DEQ, US Coast Guard, US Army Corps of Engineers, Lake Superior State University, Bay Mills Community College, Bay Mills Indian Community and Sault Ste. Marie, Tribe of Chippewa Indians.

Several departments within the County were contacted for information. These departments included the County Controller, Health Department, Building Department, Equalization Department and Road Commission. Information was gathered also through land use, comprehensive, or master plans, zoning ordinances, and regional plans from local municipalities within the County. (See Appendix C.)

The EUP Regional Planning staff contacted each municipality within the County and when possible met directly with township supervisors, clerks, public work departments, and emergency departments such as fire and ambulance services. Township Association meetings were attended as well as information disseminated at Regional Planning Commission Meetings. Significant contributions were made by the City of Sault Ste. Marie, Kinross Charter Township, Rudyard Township, Bruce Township, Dafter Township, Superior Township, and Whitefish Township.

### **Public Participation**

As well as contacting community leaders and citizens who have direct interests in the Plan, the planning process also included an announcement in the area's newspaper the Evening News with information on who to contact for more information on the Hazard Mitigation Plan, why it is important, and how to be involved in the planning process.

Towards the end of the planning process, the draft Plan was sent to all units of government and municipalities within the County and was available at those locations for public review. The Plan was also made available to the public at the Chippewa County Courthouse and Bayliss Public Library in the City of Sault Ste. Marie. The draft Plan was also sent to Central U.P. Planning and Development in Escanaba, Michigan and Northeast Council of Governments in Gaylord, Michigan as neighboring communities for their review. A public hearing was held on March 29, 2005 to review the draft Plan and receive comments. All comments received were recorded and incorporated into the Plan. (See Appendix D.)

### **Hazard Assessment**

A comprehensive hazard analysis was made by the Chippewa Co. Office of Emergency Services and EUP Regional Planning to determine:

- 1) what hazards threaten the community
- 2) how often they are likely to occur
- 3) how severe the situation is likely to get, and
- 4) the impact on the community.

During the development of this hazard analysis, all events which could pose a threat to Chippewa County were analyzed and rated according to the following aspects:

- 1) Likelihood of Occurrence = Low (1-3), Medium (4-6), High (7-10)
- 2) Casualty potential = Low (1-3), Medium (4-6), High (7-10)
- 3) Local capability = Low (1-3) (not very capable), Med (4-6) (somewhat capable), High (7-10) (very capable)
- 4) Population affected = Low (1-3) (less than 5% of population), Medium (4-6) (5% - 25% of population), High (7-10) (more than 25% of population)
- 5) Economic impact = Low (1-3) (less than \$5,000), Medium (4-6) (\$5,000 – \$25,000), High (greater than \$25,000)

The County's OES Board was designated as the hazard analysis committee and the information was then presented to them and reviewed. (See Appendix E.) Since some criteria were considered more important than others, each of these aspects was assigned a weight as determined by the hazard analysis committee to balance the total score. The following weight was assigned to each criteria: the likelihood of occurrence and casualty potential were weighted at 35%, local capability at 15%, population affected at 10% and economic impact at 5%.

Based upon this criteria, the hazards that could affect Chippewa County were ranked as follows:

Hazard	Likelihood of Occurrence	Casualty Potential	Local Capability	Population Affected	Economic Impact	Total Score	Ranking
Public Health Emergencies	3.2	3.15	1.05	.9	.45	8.75	1
Infrastructure Failures	3.2	1.4	.75	.9	.45	6.65	2
Transportation/Haz. Materials Transportation Accidents	2.1	2.1	1.05	.7	.35	6.30	3
Severe Winter Weather Hazards	2.8	1.05	1.05	.9	.3	6.10	4
Fixed Site – Hazardous Material Incident	2.5	2.45	.45	.3	.3	5.95	5
Thunderstorms, Lightning, Hail	2.8	.7	.9	.6	.15	5.15	6
Wildfires	2.8	.7	.9	.4	.3	5.1	7
Extreme Temperatures	2.1	.7	.9	0.9	.35	4.95	8
Tornadoes	2.1	.7	.9	.7	.35	4.75	9
Flooding Riverine/Shoreline/Dam Failures	2.8	.35	.6	.6	.3	4.65	10
Pipeline Accidents	2.1	.7	.75	.5	.2	4.25	11
Civil Disturbances	1.1	1.75	.9	.1	.05	3.85	12
Structural Fires/Scrap Tire Fires	.7	1.4	1.05	.1	.3	3.55	13
Drought	1.1	.35	.75	.9	.25	3.3	14
Subsidence	.4	.35	.3	.1	.05	1.15	15

Chippewa County is susceptible to numerous potential natural and man-made hazards. Technological or man-made hazards rank the highest. The majority of the technological hazards are due to the natural hazards that affect the County, for example, power outages are often due to lines down from wind or ice damage or transportation accidents due to severe winter weather. This Plan concentrates more on the natural hazards that can affect the County. Chapter 2 discusses each hazard, what causes it and the likelihood of occurrence, the impact of the hazard on human development, potential losses and how vulnerable Chippewa County is to damage.

**Goals & Objectives:** Based upon the hazard analysis section goals were developed which were then reviewed, discussed and revised by the hazard analysis committee. The committee then developed three to four specific objectives to accomplish each goal that was set for the County. These goals and objectives are discussed in Chapter 3.

**Action Plan:** Once the goals and objectives were set for the County, the Committee brainstormed on how to achieve those goals and drafted an “action plan”. The Action Plan items were then evaluated for feasibility and cost benefits. The Committee then specified recommended projects, which agency/department is responsible for implementing them and a timeline for when they are to be done. Governmental officials were contacted for discussion of specific projects in their jurisdiction. The goals and mitigation actions are discussed in Chapters 4-7 following up with a cost/benefit analysis and an Action Plan with designation of responsible agencies in Chapters 8 and 9.

The action plan developed in this plan serves only to recommend mitigation measures. Implementation of these recommendations depends on the cooperation and support of the offices designated as responsible for each action item.

## **Historical Overview**

The area of Michigan now known as Chippewa County was once a center for British fur trading. It was one of the first areas east of the Mississippi to be settled by the white man. Hundreds of years before the white man's presence though, the Huron, Ottawa, Sioux, Sauk, Fox, and other Indian tribes visited this area. It was called Bowating (the Gathering Place).

Originally part of the Indiana Territory, Chippewa County became part of the Michilimackinac Region in 1818. In 1828 the Upper Peninsula was divided into two counties, Michilimackinac, which included parts of the Lower Peninsula, and Chippewa. By 1852 the Upper Peninsula was divided into five counties: Chippewa, Mackinac, Marquette, Houghton, and Ontonagon.

Because of its location at the rapids of the St. Mary's River separating Lakes Superior and Huron, the Sault Ste. Marie area had been, for many years prior to settlement by the French and British, the capital of the Chippewa nation. Fish and game in the area were plentiful and because of its location, the area provided easy accessibility to food for tribes and allies of the Chippewa Indians as far as 500 miles away. The area was often considered to be the most important Indian community in the entire Midwest.

Many flags have flown over the region, French, British, and American. When the French feared the English would lay claim to their fur trade, St. Lusson in 1671 took possession of all

the western country in behalf of his king, Louis XIV of France. Following the capture of Quebec, the British in 1762 seized the fort, which had been erected at Sault Ste. Marie in 1750. The Treaty of Paris in 1783 gave the newly formed United States all lands in the vicinity south of the Great Lakes but the British did not leave the Upper Peninsula for several years. They remained until after the War of 1812. Lewis Cass, then governor of the Territory of Michigan, came to the Sault in 1820 to raise the American flag and haul down the British. This action caused bitterness among the Indians, but there was no fighting. The French and Indian influence remains very much in evidence today, particularly in the names of cities (Sault Ste. Marie), lakes (Nicolet), waterfalls (Tahquamenon) and the county itself (Chippewa).

A Canadian fur company recognized the need for a lock and one was built in 1797. The locks were needed because the rapids of the St. Mary's river prevented ships from traveling from Lake Huron to Lake Superior. This small lock was destroyed in the War of 1812. The area was somewhat isolated until the 1850's when work began on the Soo Locks. With the completion of the first lock in 1855, Great Lakes shipping was born. Its opening marked the beginning of America's great steel making industry. The Army Corps of Engineers later took over operation of the canal and 1896-1943 saw the construction of the Poe, Davis, Sabin and MacArthur Locks. At only a mile long, the Sault Canal has become one of the greatest waterways in the world and plays a major part in the Country's economy with the flow of essential materials such as iron ore, copper, grain and coal.

Thus, fur trading was the basis of the economy of the first white settlers in the area. The fur trade flourished until the early 1800's when the supply of fur-bearing animals rapidly dwindled because of over extensive trapping and hunting. Lumbering took over as the areas' primary economic producer at this time, and it predominated until the early 1900's at which time the quality timber supply had been virtually depleted by wholesale cutting practices and a poor reforestation program. About this same time, large copper and iron ore deposits were discovered in the Western Upper Peninsula. These events opened up the area even more, and the growing demand for the natural resources of the Upper Peninsula increased the population and the economic activity especially at Sault Ste. Marie.

Commercial fishing was also a major industry from the early 1800's until the early 1940's. It was dealt a crushing blow in 1959 when the opening of the St. Lawrence Seaway brought an abundant supply of lamprey and alewives, two deadly enemies of fresh water fish. Within five years thereafter the supply of lake trout and whitefish, the two prime species of commercial fish, dwindled to the extent that commercial fishing was no longer profitable.

Agriculture was an important economic factor throughout the 19th Century, but declined rapidly after 1930. Over the period of 1930 to 1960, agricultural employment experienced a decline of 80 percent. The demand for field crops has decreased substantially over the years, although Chippewa County is still known throughout the country for its top quality hay.

Sault Ste. Marie became a major industrial center in the early 1900's despite the decline experienced by agriculture and the timber industry. By the early 1940's, the Sault had six major industries that accounted for a total employment of approximately 2,500 persons. However, all six either ceased operations or left the Sault between the years of 1955 and 1963 due primarily to the depletion of natural resources or technological obsolescence.

Several governmental projects developed at this time (late 1950's and early 1960's) which somewhat helped to relieve the economic depression of the area. These projects included a new lift bridge over the locks, river dredging, the International Bridge to Canada, the new Poe Lock (enlarging for 1000' boats), Interstate 75, other highways, and the construction of the Mackinac Bridge. These projects totaled hundreds of millions of dollars and added substantially to the infrastructure of the area. However, they also added to the area resident's dependence upon government employment in lieu of private, commercial and industrial development.

Concurrent with these physical improvements, two major changes that affected the economy of the area were occurring. One, after World War II, Fort Brady which had been strategically relocated to a site overlooking the locks in Sault Ste. Marie, was closed and the site was turned over the State of Michigan for educational purposes. In 1946, a two-year branch of the Michigan College of Mining and Technology opened which later developed into what is now Lake Superior State University. Secondly, in 1951, the 753rd Radar Site was established in Sault Ste. Marie, followed by the doubling in size of Kinross Air Force Base (later renamed Kincheloe Air Force Base) in 1958. A missile base was also established in Raco about 30 miles west of Sault Ste. Marie.

Records of the Air Force show that the airport at Kinross was first formally designated in June, 1941. Construction began in 1943, and the base was first known as Kinross Auxiliary Air Field. Its purpose was to serve as a refueling stop for aircraft headed for Alaska and as a base for defense of the Locks. However, no tactical units were assigned there during the war. In December 1965 the Department of Defense announced its decision to close Kincheloe by October, 1971. But a reversal of that 1971 decision proved to be only a six-year reprieve. The base was inactivated on September 30, 1977, and declared excess on November 15, 1977. As part of the closing process, the Air Force prepared a thick impact-study. (A copy is in the Bayliss Public Library in Sault Ste. Marie.)

The study cited a number of factors that would make up the economic impact of the closure of the base. To reduce the negative economic impact the closing of Kincheloe AFB would have on the County, local officials formed a task force to transform the area into civilian use. Within 12 years after the closing, four prisons and one work camp were installed at the base, along with 12 industrial companies and 15 retail businesses. In all, the local tax base had doubled, and the civilian payroll created by the new ventures had reached \$110 million.

Meanwhile, during the second half of the 1980's, legislation was passed to allow Native American tribes in Michigan the right to provide gaming casinos on reservation land. The Kewadin's rapid success provided the funds to expand the Sault Tribe of Chippewa Indian's business holdings from one to five casinos and take ownership of 15 non-gaming businesses. In 1998, these businesses employed nearly 2,500 people, making the Tribe one of northern Michigan's largest employers. The Bay Mills Indian Tribe have also grown and expanded in the area. A percentage of revenues from each of the Tribe's casino and non-gaming businesses are spent to better the community.

Chippewa County has been summer resident and tourist-oriented for many years. A substantial number of families come and reside in the region for two to three and one-half

months during the late spring, summer and early fall. A large number of tourists visit this area in all seasons, attracted by the woods, waters, and wildlife that offer a great variety of recreational activities and tourist attractions. Chippewa County's location at the eastern end of the Upper Peninsula, sandwiched between Michigan's Lower Peninsula and Ontario and its natural beauty, make it an ideal tourist mecca. Three of the main tourist attractions in the Upper Peninsula are located in Chippewa County: Soo Locks, International Bridge to Canada and Tahquamenon Falls (partly in Luce County).

## Setting

Chippewa is the second largest county in the Upper Peninsula and the only county to reach the northern, southern and eastern borders of the Upper Peninsula. To the south is Lake Huron, on the North border, Lake Superior, and the waters of the St. Mary's River on the east. Three of the state's largest islands are within the boundaries of Chippewa County, Drummond, Sugar, and Neebish Islands. (See Map 1 Location Map.)

The County seat is in the City of Sault Ste. Marie, the most populous community in the County. The County has 16 townships, 1 city, and 1 village. From Sault Ste. Marie the City of Marquette lies 165 miles to the west, Traverse City 160 miles to the south and Detroit 339 miles to the south. The County extends 84 miles from the western boundary to the most eastern point. (See Map 2 - Seats of Government/Map 3 - City Distance Maps)

List of Government Units

Government Unit	Phone Number	Office Location	Community
Chippewa County	(906) 635-6300	319 Court Street	Sault Ste. Marie
Bay Mills Township	(906) 437-5437	14740 W. Lakeshore Dr.	Brimley
Bruce Township	(906) 635-3058	3156 E.12 Mile Rd.	Dafter
Chippewa Township	(906) 274-5319	30014 W. M-28	Eckerman
Dafter Township	(906) 632-1579	2926 W. 10 Mile Rd.	Dafter
DeTour Township	(906) 297-5304	260 S. Superior St.	DeTour Village
DeTour Village	(906) 297-5471	260 S. Superior St.	DeTour Village
Drummond Is. Twp.	(906) 493-5321	29935 E. Pine St.	Drummond Is.
Hulbert Twp.	(906) 876-6353	37686 W. Fourth St.	Hulbert
Kinross Charter Twp.	(906) 495-5381	4884 W. Curtis St.	Kincheloe
Pickford Township	(906) 647-3361	155 E. Main St.	Pickford
Raber Township	(906) 297-3805	16315 E. M-48	Goetzville
Rudyard Township	(906) 478-5041	11403 W. Main St.	Rudyard
Sault Ste. Marie, City	(906) 635-5261	325 Court St.	Sault Ste. Marie
Soo Township	(906) 632-3406	637 W. 3-1/2 Mile Rd.	Sault Ste. Marie
Sugar Island Twp.	(906) 635-9786	6401 E. 1-1/2 Mile Rd.	Sugar Island
Superior Twp.	(906) 248-5213	7049 S. M-221	Brimley
Trout Lake Twp.	(906) 569-3291	21503 S. Beech St.	Trout Lake
Whitefish Township	(906) 492-3452	7052 N. M-123	Paradise

## Map 1 Location Map

## Map 2 - Seats of Government

### **Map 3 - City Distance Map**

## **Geography and Climate**

The entire 1,651 square miles that make up Chippewa County lie almost entirely on a low plain, ranging generally between 600 and 1,000 feet in elevation with the highest elevations found in the northern and western sections. (See Map 4 – Contours.)

The soils of Chippewa County are primarily sand and clay with mostly sand in the western sections and clay in the eastern sections. (See Map 5 - Soils Map.)

Chippewa County has approximately 421 miles of shoreline (including islands) on Lakes Superior and Huron and the St. Mary's River. Added to this are 38,912 acres of inland water comprising 3.7 percent of the total surface area. Within the inland water category are approximately 560 artificial and natural lakes and ponds and 800 miles of streams.

It is generally recognized that the Great Lakes have a significant impact on the local climate. Winters and summers are later than those in other northern inland areas due to the temperatures of the surrounding large bodies of water. The climate is not as harsh as those inland areas of the Midwest.

Weather changes are frequent because many pressure systems pass eastward through this section of the United States and Canada. Precipitation is well distributed throughout each year. Summer rains usually accompany a southeast surface wind; winter snows are most often associated with northwest winds.

## **Land Use Patterns**

Major land uses in Chippewa County include forestry, recreation, and agriculture.

Forestry constitutes the major land use in the County. Approximately 72 percent of the total land area is forested. Major forest types include white-red-jack pine, spruce-fir, maple-beech-birch, elm-ash-cottonwood and aspen-birch.

Agriculture is the next largest land use with an area totaling about 12 percent of the County although it is not a major economic factor for the County.

The remainder of the County is made up of wetlands at 8 percent, rangeland at 4 percent, urban and built up areas constituting about 3 percent, water and barren land completing the make-up of land use at 1 percent.

Recreation, is of course, one type of land use that must be considered in Chippewa County. It is well suited for outdoor recreation and tourism development throughout the year. (See Map 6 - Land Use Map.)

Map 4 – Contours

Map 5 - Soils Map

Map 6 - Land Use Map

## Population and Housing

The County has seen great fluctuations in population over the past three decades, much of this is attributed to the Kincheloe Air Force Base closure in the 1970's, this facility was replaced by several State Correctional Facilities, all of which are still fully operational and account for the majority of the labor force in Chippewa County.

<b>CHIPPEWA COUNTY POPULATION 1960 - 2000</b>							
<b>Chippewa County</b>			<b>% Dif/</b>		<b>% Dif/</b>		<b>MI % Growth</b>
	<b>1970</b>	<b>1980</b>	<b>1970*</b>	<b>1990</b>	<b>1980*</b>	<b>2000</b>	<b>1980-2000</b>
	32,412	29029	-10.4%	34604	19.2%	38,543	32.77%
*Figure shows percent difference from year indicated. Source: U.S. Bureau of the Census							

Overall the population has increased over 32% since the 1980 Census, this followed a sharp decrease in population from 1970 to 1980 over 10%. According to population projections, developed by the U.S. Bureau of the Census, by 2010, the County will rise to over 44,000 persons, an increase of 14.4%.

The age of the residents in Chippewa County continues to rise, as evidenced by the table below, 34% of the total population falls between the ages of 35-54 years old, and this represents an increase of 97.5% since the 1990 Census. The County continues to lose its younger population, as the age group of 20-34 year olds decreased by 13% in 2000. The median age in the County is 36.2, compared to 35.8 for the State of Michigan.

<b>CHIPPEWA COUNTY 2000 POPULATION BY AGE</b>			
	<b>2000</b>	<b>#</b>	<b>%</b>
Under 5		2,078	6.0%
5 to 9 yrs.		2,185	6.3%
10 to 14 yrs.		2,396	6.9%
15 to 19 yrs.		2,829	8.2%
20 to 24 yrs.		3,325	9.6%
25 to 34 yrs.		5,646	16.3%
35 to 44 yrs.		6,609	19.1%
45 to 54 yrs.		5,168	14.9%
55 to 59 yrs.		1,834	5.3%
60 to 64 yrs.		1,587	4.6%
65 to 74 yrs.		2,708	7.8%
75 to 84 yrs.		1,639	4.7%
85 +		539	1.6%
Total		38,543	
<i>Source: U.S. Bureau of the Census, Census 2000</i>			

<b>CHIPPEWA COUNTY MEDIAN AGE 1970-1990</b>			
1980	1990	2000	<b>MI: 2000</b>
28.1	32.1	36.2	35.8

The 2000 Census counted 11,605 households in the County. On average, there were 2.42 persons in each household, owner-occupied units housed 2.48 persons and renter-occupied units housed 2.23 persons. The average household size decreased by 5.4% from 1990, owner-occupied units decreased 5.0% and renter-occupied decreased 7.5%, however, the number of households in the County increased by 16.7% during the same period.

The 2000 Census counted 38,543 residents in Chippewa County, 32,577 lived in households, and 5,966 lived in group quarters. Of this group quarters population, 4,994 (15%) were institutionalized, 4,804 (12.5%) in correctional institutions, 108 (0.3%) in nursing homes, 82 (0.2%) in some other type of institution, of the non-institutionalized population, 972 (2.5%) were housed in college dormitories and 180 (0.5%) in some other type of non-institutionalized group quarters, compared to the State level of persons in group quarters (2.5%), the County's rate is significantly higher, this is due to the large volume of prisoners housed in State correctional facilities in Kincheloe. Of the 13,474 households, 66.5% were families, 51% married couples, and 33% non-family households. There were 3,402 households with individuals 65 and over, accounting for roughly 25% of the total.

The majority of the County's 19,430 housing units were 1-unit, detached structures (72.1%), and a much smaller number of denser living arrangements (2 units or above attached), that made up for roughly 14.8% of the total. There were a significantly higher number of units listed under the mobile home heading, with 12.1%. The age of the housing structures in the County is another statistic that should be considered when factoring in hazard risks, the vast majority of the structures within the County were constructed prior to 1960, with 2,394 falling into this category (52.8%). Extreme weather circumstances or other naturally occurring hazards could have a significant impact upon these aging structures.

The median value of owner-occupied housing units, according the 2000 Census, was \$77,300, considerably less than the State's median value of \$115,600 (-33%). The distribution of values compared to the State's can be found in the table below:

<b>Housing Characteristics - 2000</b>	<b>Chippewa County</b>		<b>DIFF%</b>	<b>Michigan</b>	
	Number	%		Number	%
<b>Specified owner-occupied units VALUE</b>	6,407	100.0%		2,269,175	100.0%
Less than \$50,000	1,376	21.5%	11.6%	224,603	9.9%
\$50,000 to \$99,999	3,183	49.7%	18.3%	711,648	31.4%
\$100,000 to \$149,999	1,134	17.7%	-8.9%	603,454	26.6%
\$150,000 to \$199,000	400	6.2%	-8.7%	339,716	15.0%
\$200,000 to \$299,999	230	3.6%	-7.5%	252,044	11.1%
\$300,000 to \$499,999	60	0.9%	-3.7%	104,079	4.6%

<b>Housing Characteristics - 2000</b>	<b>Chippewa County</b>		<b>DIFF%</b>	<b>Michigan</b>	
<b>Specified owner-occupied units</b>					
<b>VALUE</b>	Number	%		Number	%
\$500,000 to \$999,999	22	0.3%	-0.9%	27,642	1.2%
\$1,000,000 or more	2	0.0%	-0.2%	5,989	0.3%
Median (dollars)	\$77,300			\$115,600	
<i>Source: U.S. Bureau of the Census, Census 2000, DP-4.</i>					

The most valuable of these properties were located in Soo Township, Whitefish Township, Drummond Island Township, and the City of Sault Ste. Marie. Within the County, there were 66 lacking complete plumbing facilities (0.5%), 71 that lacked complete kitchen facilities (0.5%) and 420 without telephone service (3.1%). All of the aforementioned percentages are comparable to the State's levels, excluding lack of telephone service, which was 2.6% for the entire State. This is due to the vast geography and natural features found in this area, some areas are not capable of hosting the necessary infrastructure needed to have telephone service. These areas are prone to isolation in emergency situations and will require special efforts to ensure their needs are met. This is increasingly important given the frequency and severity of winter weather situations throughout the region.

In the entire State of Michigan, 78.2% of all occupied housing units use utility gas as the primary heating source. In Chippewa County this percentage was only 49.4%. The other primary type of heating fuels used were: Bottled, Tank or LP Gas 20.5%, Electricity 11.0%, Fuel Oil, Kerosene 11.9%, Wood 6.0%, and other 0.1%. It could be said the because the county has less reliance on utility fuel, it is less prone to infrastructure failures than urban areas, the nature of these heating sources requires education and awareness of both maintenance and handling, in order to reduce the risks of structural or other fires.

In 2000, there were 4,776 housing units (24.5% of the county's total) listed as "seasonal, recreational or occasional use", which shows a substantial seasonal flow of people into and out of the county, depending on the time of year (season). Throughout the County, the percentage of seasonal homes continued to be high, with the lowest percentages found in the City of Sault Ste. Marie (1.4%), Dafter Township (4.4%), and Kinross Charter Township (5.9%). The highest percentages were found in Whitefish Township (69.9%), Drummond Island Township (64.7%), and Chippewa Township (61.4%), five other townships had seasonal housing percentages above 40%. The influx of population is believed to be highest during the summer months, and can be directly correlated with the holidays (Memorial Day, Independence Day and Labor Day). However, in areas such as Trout Lake, Superior Township, Hulbert, Whitefish and Chippewa, seasonal increases are also being found during the winter months, as snowmobiling has increased exponentially in popularity in recent years. Another seasonal increase can be found during the late fall when hunting season formally begins statewide.

Assuming that there are 2.42 persons per seasonal, recreational or occasional household in Chippewa County when utilized, and that the vacancy rate of these units at the peak of their occupancy is equivalent to the rental vacancy rate of 9.4%, the second table illustrates the resulting population estimates for each minor civil division, and for the county as a whole.

<b>Housing Units for Seasonal, Recreation or Occasional Use</b>	<b>Number</b>	<b>%</b>
Bay Mills	468	47.0
Bruce	191	19.4
Chippewa	167	61.2
Dafter	24	4.4
DeTour	311	46.9
DeTour Vill	88	28.7
Drummond	955	64.7
Hulbert	125	55.8
Kinross	90	5.9
Pickford	138	17.8
Raber	249	41.4
Rudyard	141	21.0
Sault Ste. Marie	86	1.4
Soo	174	13.4
Sugar Island	345	52.9
Superior	209	27.5
Trout Lake	255	53.2
Whitefish	760	69.9
<b>TOTAL</b>	4776	24.6
<i>Source: U.S. Bureau of the Census, Census 2000</i>		

Given the projected population estimates listed below, the County could expect to see an increase of nearly 5,000 people, especially during peak tourism times.

Close consideration should also be given to camps and campground facilities throughout the county, which also temporarily house large numbers of people throughout the peak times in the tourism season. These individuals are not accounted for in the Census figures because they do not reside in housing unit structures. Rather, persons and families would be staying in the County in tents or campers or other makeshift or portable shelters. The nature of many of these recreational shelters makes them more vulnerable to certain weather and hazard events.

<b>Population Estimates</b>	<b>Perm. Pop</b>	<b>Seasonal Housing Units</b>	<b>Seasonal Pop. Inc.</b>	<b>Estimated Peak Pop.</b>	<b>% DIFF</b>
Bay Mills	1214	468	1009	2223	83.1%
Bruce	1940	191	412	2352	21.2%
Chippewa	238	167	360	598	151.3%
Dafter	1304	24	52	1356	4.0%

<b>Population Estimates cont.</b>	<b>Perm. Pop</b>	<b>Seasonal Housing Units</b>	<b>Seasonal Pop. Inc.</b>	<b>Estimated Peak Pop.</b>	<b>% DIFF</b>
DeTour Vill	421	311	671	1092	159.3%
DeTour Twp.	473	88	190	663	40.1%
Drummond	992	955	2059	3051	207.6%
Hulbert	211	125	270	481	127.7%
Kinross	5922	90	194	6116	3.3%
Pickford	1584	138	298	1882	18.8%
Raber	670	249	537	1207	80.1%
Rudyard	1315	141	304	1619	23.1%
Sault Ste. Marie	16542	86	185	16727	1.1%
Soo	2652	174	375	3027	14.1%
Sugar Island	683	345	744	1427	108.9%
Superior	1329	209	451	1780	33.9%
Trout Lake	465	255	550	1015	118.2%
Whitefish	588	760	1639	2227	278.7%
<b>TOTAL</b>	38543	4776			

Source: U.S. Bureau of the Census, Census 2000

<b>Prison Population - 2001</b>	
Hiawatha Correctional Facility	951
Chippewa Correctional Facility	1181
Kinross Correctional Facility	1217
Straits Correctional Facility	959
Camp Koehler	240
<b>TOTAL</b>	<b>4548</b>
<i>Source: Michigan Dept. of Corrections Annual Report 2001</i>	
Other Group Quarters Population - 2000	
<b>Institutionalized Population</b>	
Nursing Homes	108
Hospitals/wards and hospices for chronically ill	82
Local Jails and other confinement	66
<b>Noninstitutionalized Population</b>	
College Dormitories	791
<i>Source: U.S. Bureau of the Census, Census 2000</i>	

Chippewa County is home to five state correctional facilities, located on the former grounds of the Kincheloe Air Force base. According to the 2001 Statistical Report published by the Michigan Department of Corrections, these facilities housed 4,548 inmates. Other major group quarters populations include 108 persons in nursing care facilities, primarily located in the City of Sault Ste. Marie, 82 persons in hospital and ward type facilities (War Memorial Hospital – Sault Ste. Marie), 66 persons in local jails (Chippewa County Jail – Sault Ste. Marie), and 791 persons in college dormitories (Lake Superior State University – Sault Ste. Marie). These groups could be especially vulnerable in the case of a severe weather event, such as a tornado, because they primarily reside in above ground quarters and would need advance notification in order to seek adequate shelter. In the case of the prisons, the primary hazard there would be civil unrest or some other large-scale social type disturbance.

It is also important to know the types of industries found within the county that employ this diverse workforce. In terms of total number of employees, Construction, Retail Trade, Arts/Entertainment, and Public Administration were the most important to workers in the county, followed closely by Manufacturing, Transportation, and Professional services. Industries that compared favorably with the State’s levels were Agriculture, Construction, Transportation, Education, Arts/Entertainment, and Pubic Administration, with the Public Administration industry employing a far greater number of persons locally than in the state (13.4% vs. 3.6%).

<b>Industry</b>	<b>Chippewa</b>	<b>%</b>	<b>Mich%</b>	<b>ratio</b>
Agriculture, forestry, fishing and hunting and mining	283	1.9%	1.1%	1.715
Construction	1,000	6.7%	6.0%	1.111
Manufacturing	770	5.1%	22.5%	0.228
Wholesale trade	284	1.9%	3.3%	0.574
Retail trade	1,759	11.7%	11.9%	0.985
Transportation, warehousing and utilities	616	4.1%	4.1%	1.001
Information	301	2.0%	2.1%	0.955
Finance, insurance, real estate and rental and leasing	538	3.6%	5.3%	0.677
Professional, scientific, management, administrative, and waste management services	698	4.7%	8.0%	0.582
Educational, health and social services	3588	23.9%	19.9%	1.202
Arts, entertainment, recreation, accommodation, and food services	2541	16.9%	7.6%	2.229
Other services (except Public Administration)	617	4.1%	4.6%	0.894
Public Administration	2007	13.4%	3.6%	3.716

## **Transportation Network**

Chippewa County is connected to the outside by four modes of transportation: highway, railway, air service and seaway.

### **Highways**

Chippewa County has 195 miles of State highways, 1,300 miles of County roads and 88 miles of city streets in Sault Ste. Marie. There are 9 main highways in the county: Interstate I-75, M-28, M-129, M-134, M-221, M-48, M-123, and M-80. County roads H-63 and H-40 are major county routes with many more miles of paved, gravel and graded county roads that provide access to other parts of the county. Automobile and truck traffic utilize almost all roads in the county.

Interstate I-75 travels north/south from the Mackinac Bridge to the International Bridge in Sault Ste. Marie. State highway M-129 also travels north/south connecting the City of Sault Ste. Marie to the Village of Pickford and the community of Cedarville in Mackinac County. Highway M-28 is a east/west route to Luce County and beyond. Highway M-48 connects with I-75 and M-129 and travels east/west connecting the communities of Rudyard, Pickford, Stalwart, Raber and Goetzville. Highway M-123 connects Trout Lake with communities north and west such as Paradise in Whitefish Township and Newberry in Luce County. A small portion of M-134 within the county travels eastward to the communities of DeTour Village and Drummond Island. Highway M-80 connects Kincheloe with I-75 to the west and M-129 to the east. Highway M-221 connects Brimley to Highway M-28. County road H-63, also known as Mackinac Trail, travels north/south from Sault Ste. Marie to St. Ignace in Mackinac County connecting the communities of Dafter, Kinross and Rudyard. County Road H-40 travels east/west connecting Rudyard with Trout Lake and communities west.

### **Air Service**

Chippewa County International Airport, established in 1978 as part of the KAFB closure and owned by the Chippewa Co. Economic Development Corporation, is located in Kincheloe. The airport extends south into Pickford Township and currently operates a single runway 7,200' by 200'. A second runway of approximately 5,600' was also constructed. The airport provides flight services to more than 10,000 persons annually and, is classified as a primary air carrier. It is classified as a Class A airport, providing fueling facilities and attendants on a 24 hour daily schedule. The airport covers approximately 400 acres of land in Kinross Charter Township including an abandoned 40 acre paved fueling pad formerly used by the KAFB.

The City of Sault Ste. Marie operates a municipal airport within the City limits. The airport has a terminal and office but there are no scheduled services. The facility can accommodate small corporate jets and Turbo-Prop aircraft.

Drummond Island also has an airport with a paved runway that can accommodate small aircraft.

## **Seaways**

Water is an important means of transportation in and about Chippewa County. Great Lakes freighters carrying iron ore, oil and grain utilize Lakes Superior and Huron and the St. Mary's River, all which border the county. The Soo Locks at Sault Ste. Marie are important to the city and the county in terms of employment and tourist expenditures. Over 11,000 vessels pass through the Lock with a shipping season beginning in April and running as long as possible before ice sets in usually in December or January.

Car and passenger ferry service is available to Sugar Island from Sault Ste. Marie, Neebish Island from Barbeau and Drummond Island from DeTour Village.

Deep-water harbors in Chippewa County include the old Union Carbide Dock in Sault Ste. Marie and the Drummond Dolomite located on Drummond Island. There are several other small boat harbor facilities located in Sault Ste. Marie, DeTour Village, Whitefish Point. There are also several public boat launches located in the County all along the shoreline.

## **Railway**

There is no available railroad passenger service in Chippewa County. The Canadian National Railroad owns and operates the only railway service in the county. There are approximately 90 miles of track in Chippewa County, which carry forest and paper products, hay and steel products as well as hazardous waste. Most of the steel transported originates from Algoma Steel in Sault Ste. Marie, Ontario. The track connects the County to Central U.P. and Western U.P. and the State of Wisconsin to the west, and Canada to the north.

## **Bus Transit**

Within the City of Sault Ste. Marie taxi service and Dial-A-Ride bus service are available. The Eastern Upper Peninsula Transportation Authority has a bus service from DeTour Village through Pickford north to Sault Ste. Marie and back during the weekdays. The EUPTA also provides daily transportation from Sault Ste. Marie to Kincheloe and back with scheduled runs to coincide with the prison employee's schedules. (See Map 7 – Transportation Network Map.)

Map 7 – Transportation Network Map

## Critical Facilities

When dealing with natural disasters, some development is more important than others, and these are considered to be “critical facilities.” Critical facilities are buildings and infrastructure whose exposure or damage can affect the well being of a large group. For example, the impact of a flood or tornado on a hospital is greater than on a home or most businesses.

Generally, critical facilities fall into two categories:

1. Buildings or locations vital to public safety and the disaster response and recovery effort, such as police and fire stations and telephone exchanges, and
2. Buildings or locations that, if damaged, would create secondary disasters. Examples of such buildings or locations are hazardous materials facilities and nursing homes.

Critical facilities are not strictly defined by any agency. For this mitigation planning effort, seven categories of critical facilities were used:

1. Hazardous materials sites.
2. Health facilities: hospitals and nursing homes.
3. Emergency response facilities: police and fire stations, public works sites, etc.
4. Utilities: water and wastewater treatment plants, electrical substations, etc.
5. Schools.
6. Places of assembly, such as casinos, or campgrounds or festivals that host over 1,000 people
7. Transportation – Harbors, ferries, railroad, airports, bridges and dams.

The distribution of these facilities by municipality is shown in the table below and located on Maps 8 - 14 – Critical Facilities. A complete listing is shown in Appendix F.

Critical Facilities							
	Hazard Material Sites	Health Facilities	Emergency Facilities	Utilities	Schools	Assembly	Transportation
Bay Mills Township		1	3	1	2	2	
Bruce Township					1		4
Chippewa Township			1	1			3
Dafter Township			1	1			3

Critical Facilities							
	Hazard Material Sites	Health Facilities	Emergency Facilities	Utilities	Schools	Assembly	Transportation
DeTour Township				2			
DeTour Village		1	2	2	1		1
Drummond Island Township		2	1	1	1		3
Hulbert Township			1	1			2
Kinross Charter Township		2	3	8	4	4	2
Pickford Township	2	1	1	2	1		2
Raber Township			1	2			
Rudyard Township			1	2	3		2
City of Sault Ste. Marie	2	10	12	16	13	5	20
Soo Township			2	3	1		7
Sugar Island Township			1	1			2
Superior Township		1		4	1	1	3
Trout Lake Township	1		1	1			1
Whitefish Township	1	1	1	2	1	2	2

Map 8

Map 9

Map 10

Map 11

Map 12

Map 13

Map 14