

CHAPTER 1

Introduction

Mercer County is a rural agricultural and coal mining area in the west central part of North Dakota. Mercer County is bordered by Lake Sakakawea to the north, the Missouri River to the east, Dunn County to the west and Oliver County and Morton County to the south. Mercer County has experienced rapid population growth during the 1970s and early 1980s due to the construction and operation of coal conversion facilities. The population of Mercer County was 6,175 in 1970 and 9,404 in 1980, a 52 percent increase. A special census in 1983 indicated that the county had a population of 13,933, an increase of 48 percent in three years. Such a population change has had a significant impact on community and county services and facilities.

The proper use of land and resources is crucial if:

- 1) the environment is to be preserved
- 2) the benefits from the county's natural resources are to be maximized
- 3) the existing lifestyles in the county are to be maintained.

The purpose of the Mercer County Land Use Policy Plan is to provide county officials with a document which:

- 1) identifies existing resources in the county
- 2) identifies how and where growth and development has occurred
- 3) identifies the mechanisms available for insuring that development occurs in a manner consistent with public attitudes.

This plan will update information of existing resources within the county including climate, topography, soils, mineral resources and water resources and will include a discussion of current economic and demographics conditions and projections for the future. The Mercer County Land Use Policy Plan will also categorize existing land uses within the county including urban, industrial, commercial, recreation, transportation, agriculture and utilities, and finally, will update county land use goals, policies and objectives. The comprehensive land use plan serves as a long-range policy guide for the development of the county as a whole. For the plan to be effective in promoting proper management and planning of future growth and development, two requirements must first be met: First, the goals and policies within the plan must represent the public's attitude toward the future use of resources within the county. Secondly, a

comprehensive land use plan needs to be consistent in thought with the county's zoning ordinance. A comprehensive plan is a statement by the public as to how growth and development within the county should occur in the future. The zoning ordinance is the mechanism available to the county commission to insure that growth does occur in a manner consistent with land use goals identified in the comprehensive plan.

CHAPTER II

General Characteristics

Mercer County is a rural agricultural and coal mining area located in west central North Dakota. The county covers an area of 1,042 square miles and had a 1980 population of 9,404 and a 1983 population of 13,933.

Agriculture, primarily the raising of small grains and cattle ranching has long been the county's mainstay. Over 82 percent of the land in the county is used for farming. Coal mining began in 1884 near Hazen and has increased in economic importance over the last two decades. In 1982, Mercer County produced approximately 3.5 million tons of coal or about 40 percent of the state's output and has increased with the opening of new coal conversion facilities. Agricultural employment has declined steadily over the last two decades. Figure 1 shows Mercer County's location within North Dakota. A fact sheet, Figure 2, is included to give a brief overview of the county and its resources.

Mercer County is rich in natural resources. The demand for highways, roads, coal development, recreation and urban expansion will take more agricultural land from production. The coal related industries, municipal use, recreation and agriculture will continue to increase the demand for water in the county.

Stanton is the county seat. Other incorporated cities in Mercer County are Beulah, Hazen, Zap, Golden Valley and Pick City.

Settlement

The earliest known inhabitants of Mercer County were the agricultural Indians— Mandan, Rees, and Grosventre. The Assinobines, Crows, Cheyenne and Sioux were frequent visitors to the area. Traces of Indian Villages and camps were evident throughout the county, particularly along the rivers and streams.

MERCER COUNTY, NORTH DAKOTA
FACT SHEET

Formed: 1882

County Seat: Stanton, North Dakota

County Government: Commission form (three elected at large)

Area: 1,042 square miles or 667,560 acres

Elevations: 1,600 to 2,500 feet above sea level, increasing from east to west

Incorporated Cities: Beulah, Golden Valley, Hazen, Pick City, Stanton and Zap

Population (1980): Beulah – 2,908, Golden Valley – 287, Hazen – 2,365, Pick City – 182, Stanton – 623, Zap – 511, Rural – 2,528, County Total – 9,404

Population Density (1980): 9.0 persons per square mile

Educational Facilities: 11 (Public elementary schools – 5, public high schools – 5, and 1 public vocational school)

Healthy and Medical Facilities: 1 hospital, 2 nursing homes, 3 Clinics and 2 ambulance services

Fire Protection: 5 volunteer departments

Police Protection: County Sheriff and 5 municipal departments

Economic Base: Agriculture (wheat and livestock), coal mining, Energy production

Major Employers: Agriculture, coal mining and energy production

Coal Production: 40% of state's lignite or 4 million tons per year from 3 companies. Coal mining in county began in 1884.

Electric Power Generation: Five coal fired plants with a combined capacity of 1,617 megawatts

The first documented visit of an explorer to Mercer County was Chevalier de la Verendrye, a French Canadian who visited the Mandans in 1738. In 1802, Charles Le Raye, another French Canadian explorer, visited the Mandan and Grosventre villages along the Knife River. In 1804, Lewis and Clark, on an expedition sent out by President Jefferson to explore the Louisiana Territory, visited the Indian Villages in the vicinity of what is now Stanton. There they met Sakakawea, who was chosen to guide the expedition to the Pacific Ocean.

Mercer County was designated and named by a legislative act of 1883, before the Dakota Territory was reorganized into the states of North and South Dakota. The present boundaries were established in 1885.

The first settlement was a Swedish settlement near Fort Clark along the Missouri River. It was started by Goran Alderin in 1882. The largest group of settlers were the German immigrants from Russia. Most of these immigrants settled north of the Knife River. Ownership of land was obtained through the Homestead Act or the purchase of railroad land. The population of Mercer County was 254 in 1885, increased rapidly until 1910, and began to decrease in the Forties and during the late 1970s began to increase again.

Farming

The first white settlers in Mercer County were mostly farmers. Prior to that, the land was used by large cattle companies as open grazing land. Farming was promoted by the sale of railroad land and by the Homestead Act. Most of the farms were located north of the Knife River. Ranchers were established in the southwestern part of the county.

The number of farms in the county increased until the 1930s. The Depression and prolonged drought in the Thirties forced many land owners to abandon their farms.

The number of farms decreased from 1,204 in 1935 to 852 in 1954. By 1978 there were 579 farms and by 1982 the number of farms was down to 542, a decrease of 6.4 percent. There were 563,771 acres in farm use in 1982 an increase of 2.6 percent from 1978 when 549,231 acres were used for farming. The average size of farms has increased from 949 acres in 1978 to 1,040 acres in 1982, an increase of 9.6 percent. About 43 percent of the farm land is planted into small grains. The rest is mostly in native grass and is used as rangeland or hayland. Almost 40 percent of the cropland is used for the production of hard red spring wheat. The average yield of spring wheat is 24 bushels per acre. Crops that are used primarily as feed for livestock are oats, corn cut for silage and alfalfa. Other commonly grown cash crops are barley and flax. The gross income from the sale of livestock is about the same as that from the sale of cash grains.

Geology

An understanding of the geologic structure of the county helps in locating valuable minerals and fuels and plays a significant role in physical planning, disposal of wastes and the development of water resources. Mercer County is an area of glacially modified bedrock topography. Glacial deposits include unsorted drift in the form of ground moraine and hummocky moraine and sorted drift which is present in the valleys of diversion channels and the present streams. Post-glacial events have added alluvium to the diversion channels and present stream valleys in some areas wind action has produced sand dunes. The thickest glacial deposits are in the diversion channels which as much as 280 feet of fill has been found.

All of Mercer County is underlain with lignite coals. It is estimated that Mercer County has lignite reserves of 29,900 million tons. Coal beds of economic significance occur in the Tongue River and Sentinel Butte Formations of the Fort Union Group.

Lake Sakakawea receives water from Montana, Wyoming, North Dakota and South Dakota. Its normal maximum storage is 22,640 acre-feet. The pool elevation at this stage is 1,850 feet. The water of the lake is used for irrigation, hydropower, recreation, stock, and wildlife habitat. Livestock use of the lake is minor. The water is very low in dissolved solids and is suitable for domestic use. The city of Pick City currently uses the water of Lake Sakakawea for its municipal supply.

The Missouri River below the Garrison Dam is controlled primarily by the discharge from Lake Sakakawea but streamflow patterns are modified within Mercer County by the inflow of the Knife River. Release from the lake is determined by hydropower and downstream needs. These include flood control, irrigation, industrial uses, recreation, livestock and wildlife use. The quality of water is similar to that of Lake Sakakawea modified principally by the inflow of the Knife River.

The Knife River is essentially an unregulated stream stretching from the Killdeer Mountains to the Missouri River at Stanton. It drains approximately 2,500 square miles with a typical rate of flow of 179 cubic feet per second. This flow varies greatly during the year with high runoff normally resulting from snow melt in early spring. The low flows of the Knife River may approach pool stage. Water from the river is used for industrial uses, irrigation, stock water and recreation. Its high sodium concentration makes it marginal for irrigation during most of the year.

Beneath the entire area of Mercer County are consolidated rock formations containing water. Not all aquifers usable for domestic or stock supplies. The average wells yield less than 50

gallons of water per minute but exceptional wells will yield as much as 100 gallons per minute. Recharge of the consolidated aquifers is derived from precipitation, movement of water from adjacent strata or from the discharge of streams that cross their outcrops.

The Tongue River formation is composed of 350 to 900 feet of alternation sandstone, siltstone, claystone, limestone and coal beds. Coal normally comprises less than 10 percent of the formation and occurs at 11 separate layers.

The Sentinel Butte formation is made up of as much as 650 feet of sandstone, siltstone, claystone, and coal. Coal comprises as much as eight percent of the formation and occurs at 12 separate layers.

Since the melting of the ice the drainage system has been adjusting its gradient to the Missouri River base level. The topography of the area has been modified by the forces of wind and water, with the main effect being to remove materials from the area, although in some areas they have merely been redistributed.

Topography and Landforms

The present topography of Mercer County may be described as glacially modified bedrock topography. Mercer County is entirely within the glaciated section of the Missouri Plateau portion of the Great Plains Physiographic province except for that part contained in the Missouri River Trench.

Generally, thick glacial deposits cover the bedrock surface. Drainage in the area is very well integrated and very few ponds, small lakes and sloughs are present. The drainage area divides between the Missouri and Knife Rivers.

Hydrology

Mercer County has three major sources of surface water and many different ground water sources. Ground water sources are aquifers within consolidated or unconsolidated rock formations. The three major surface water sources are Lake Sakakawea, the Missouri River and the Knife River with its Spring Creek tributary.

Unconsolidated rock material in Mercer County includes dune sand, weathered bedrock debris, glacial till or ground moraine, stream deposits and glacial melt-water deposits. The most reliable of these sources for water supply are the stream deposits and glacial melt-water deposits. Alluvial deposits along the larger streams such as the Knife River are dependable sources of water within the county. The most important glacial melt-water exists along old

stream beds. Major channels have been located along Goodman Creek, the Knife River and the Missouri River. Water in these channels may be either artesian or under confined conditions. Recharge to the deposits is from precipitation, infiltration from streams, runoff from adjacent upland areas, and leakages from adjacent aquifers. The Beulah trench is located approximately five miles northwest of Beulah. The topography is characterized by rolling hills and bordered on the east and south by wide, flat Pleistocene melt-water channels. Drainage is accomplished through a well developed dendritic system. The extreme northern end of the area drains northward via a buried channel into Lake Sakakawea. The remainder of the area drains southward into Spring Creek, a tributary of the Knife River.

Soils

Soil properties exert a strong influence on the manner in which man uses land. Soils are a non-renewable resource and development pressures such as energy production, expanding urbanization and increased recreational demands are making land more and more valuable. Therefore, the county land use policy plan needs not only to examine how the land and soil are currently used but also how they can best be used and managed. The use of the Soil Survey of Mercer County (USDA-SCS, 1978) along with on-site investigations is useful in determining the location of buildings, housing, industrial parks, recreational areas, roads, utility right-of-ways, sewage disposal areas, industrial waste disposal areas and sanitary landfills.

The soil survey is a detailed inventory and evaluation of the soil in Mercer County. It contains predictions of soil behavior for selected land uses by charting limitations and hazards of each soil type. The charts also describe types of improvements that would be needed to overcome the limitations and hazards. There are engineering tables for building sites, sanitary facilities, source of construction materials, roads, water management and recreation.

The USDA-SCS has also inventoried the soil as to what is prime farm land. The prime farm land in Mercer County is included in Figure 3 to help in determining the suitability of the location of a proposed land use.

PRIME FARMLAND

Prime farmland is land best suited for production of food, feed, forage, fiber, or oilseed crops and also available for these uses. The land could presently be used as cropland, pastureland, rangeland, forest land or other land but not urban built-up land or water. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods.

Prime Farmland Meets the Following Criteria

1. The soils have an adequate moisture supply to produce the commonly grown crops in 7 or more years out of 10.
2. A soil temperature regime high enough to produce the commonly grown crops.
3. A pH between 4.5 and 8.4 to a depth of 40 inches or in the rooting zone if the rooting zone is less than 40 inches.
4. No water table or a water table that can be maintained at a depth that allows the common crops to be grown.
5. Low amount of sodium or salts to a depth of 40 inches or in the rooting zone if the rooting zone is less than 40 inches.
6. Soils are not frequently flooded during the growing season. (Less than once in 2 years.)
7. Product of K (erodibility factor) x percent slopes is less than 2.0.
8. Permeability rate of at least 0.06 inches per year in the upper 20 inches.
9. Less than 10 percent rock fragments coarser than 3 inches in the surface layer.

ADDITIONAL FARMLANDS OF STATEWIDE IMPORTANCE

The criteria for additional farmlands of statewide importance has been developed in consultation with the Governor's office, federal and state agencies, and other interested groups and individuals.

Additional Farmland of Statewide Importance Meets the Following Criteria

1. The soils have aquic, udic, ustic, aridic, or torric moisture regimes and sufficient available water capacity within a depth of 40 inches, or in the root zone if the root zone is less than 40 inches deep to produce the commonly grown crops in 5 or more years out of 10.
2. The soils have a soil temperature regime that is frigid. These are soils that at a depth of 20 inches have a mean annual temperature higher than 32 degrees F.
3. The soils, except for Glossic Natriborolls, have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches

deep. The Glossic Natriborolls are considered Additional Farmlands or Statewide Importance even though they have a pH slightly above 9.0.

4. The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow food, feed, fiber, forage, and oilseed crops common to the area to be grown.
5. The soils can be managed so that, in fall horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches deep, during part of each year the conductivity of saturation extracts in less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15, except that the Glossic Natricborolls are considered Additional Farmlands of Statewide Importance.
6. The soils are not frequently flooded during the growing season (less often than once in 2 years).
7. The soils have a product of K (erodibility factor) x percent slope of less than 3.0 and a product of I (soil erodibility) x C (climate factor) not exceeding 60.
8. The soils have a permeability rate of at least 0.06 inches/hour in the upper 20 inches and the mean annual soil temperature at a depth of 20 inches is less than 59 degrees F.
9. Less than 10 percent of the surface layer (upper 6 inches) in these soils consists of rock fragments coarser than 3 inches.

MERCER COUNTY, NORTH DAKOTA

Prime Farmlands

Map <u>Symbol</u>	<u>Name</u>
7	Straw silty clay loam
8	Grail silty clay loam, 1 to 3 percent slopes
8B	Grail Silty clay loam, 3 to 6 percent slopes
27	Mandan silt loam, 1 to 3 percent slopes
27B	Mandan silt loam, 3 to 6 percent slopes
28	Wilton silt loam, 1 to 3 percent slopes
44	Arnegard loam, 1 to 3 percent slopes
44B	Arnegard loam, 3 to 6 percent slopes
51	Straw silt loam
91	Straw loam, 0 to 3 percent slopes
91B	Straw loam, 3 to 6 percent slopes
93	Falkirk loam, 1 to 3 percent slopes
94	Makota silt loam
96	Grassna silt loam, 1 to 3 percent slopes
96A	Grassna silt loam, 3 to 6 percent slopes
102	Bowbells loam, 1 to 3 percent slopes
104	Magnux silty clay loam

Prime Farmlands Where Drained

Map <u>Symbol</u>	<u>Name</u>
2	Tonka silt loam
43	Colvin silt loam

Additional Farmlands of Statewide Importance

Map <u>Symbol</u>	<u>Name</u>
8C	Grail silty clay loam, 6 to 9 percent slopes
9B	Regent silty clay loam, 3 to 6 percent slopes
9C	Regent silty clay loam, 6 to 9 percent slopes
10	Savage silty clay loam, 1 to 3 percent slopes
14	Havrelon silty clay loam
15	Lawther silty clay, 1 to 3 percent slopes

Additional Farmlands of Statewide Importance (con't)

Map <u>Symbol</u>	<u>Name</u>
20	Lohler silty clay
21B	Lihen loamy fine sand, 1 to 6 percent slopes
22B	Krem loamy fine sand, 1 to 6 percent slopes
28B	Temvik-Williams silt loams, 3 to 6 percent slopes
28C	Temvik-Williams silt loams, 6 to 9 percent slopes
36	Williams loam, 1 to 3 percent slopes
36B	Williams loam, 3 to 6 percent slopes
36C	Williams loam, 6 to 9 percent slopes
40	Shambo loam, 1 to 3 percent slopes
40B	Shambo loam, 3 to 6 percent slopes
41B	Parshall loam, 1 to 6 percent slopes
44C	Arnegard loam, 6 to 9 percent slopes
47	Havrelon loam
54B	Lihen fine sandy loam, 1 to 6 percent slopes
55B	Vebar fine sandy loam, 3 to 6 percent slopes
56B	Lefor fine sandy loam, 1 to 6 percent slopes
57B	Flaxton fine sandy loam, 1 to 6 percent slopes
58B	Flaxton-Williams complex, 3 to 6 percent slopes
59B	Parshall fine sandy loam, 1 to 6 percent slopes
62B	Velva fine sandy loam, 1 to 6 percent slopes
71B	Searing loam, 1 to 6 percent slopes

73	Belfield silt loam, 1 to 3 percent slopes
77	Bowdle loam, 1 to 3 percent slopes
77B	Bowdle loam, 3 to 6 percent slopes
95	Flaxton-Williams loams, 1 to 3 percent slopes
97B	Sen silt loam, 3 to 6 percent slopes
97C	Sen silt loam, 6 to 9 percent slopes
100B	Amor loam, 3 to 6 percent slopes
100C	Amor loam, 6 to 9 percent slopes
108	Belfield-Straw silt loams, 1 to 3 percent slopes
109B	Bowbells-Zahl loams, 3 to 6 percent slopes
110B	Belfield silt loam, 3 to 6 percent slopes

VEGETATION

The natural vegetative cover of the region is an important natural resource. Vegetative cover provides valuable grazing land for cattle and is a source of forage for winter feed. In the semi-arid climate of Mercer County, it protects the soil from wind and water erosion.

There are eight basic types of groundcover in Mercer County. The county's 667,560 acres are about 46 percent covered by cropland consisting predominantly of wheat, oats, barley, rye and corn. Dryland farming, using crop rotation, summer fallowing, and some strip-cropping practices, occurs in the area. There is some irrigation along the major waterways and in a few spots from deep wells.

The following figure shows the major type of groundcover in acres and the percentage of the county they represent. Water surfaces are not taken into account.

Figure 4
Major Types of Groundcover

<u>Type</u>	<u>Acres</u>	<u>Percent</u>
Cropland	306,779	46.0
Grassland	306,878	46.0
Shrubland	8,189	1.2
Woodland	<u>45,714</u>	<u>6.8</u>
Totals	667,560	100.0

Source:

West Central North Dakota Regional Environmental Impact Study, 1978.

CLIMATE

Mercer County has a semi-arid continental climate. Moisture deficiency more than any other factor determines the production of crops and range grasses. Frost can occur locally every month of the year but rarely occurs during June, July or August. The average length of the growing season is about 115 days. Frost penetration averages about 4.5 feet.

Mercer County is usually warm in summer and has frequent spells of hot weather and occasional cool days. It is very cold in winter, when arctic air frequently surges over the county. Most precipitation falls during the warm period and precipitation is normally heaviest in late spring and early summer. Snowfall is normally not heavy and the snow is blown into drifts leaving much of the ground without snow cover.

No one climate factor acts alone to create an area's climate. Temperature, atmospheric pressure, humidity, wind speed and direction, solar and terrestrial radiation, precipitation and snow cover all have important interrelationships.

The following information best portrays the climate of Mercer County.

Figure

Average January temperature	7.4 degrees F
Average July temperature	69.2 degrees F
Lowest recorded temperature	44.0 degrees F
Mean annual temperature	40.8 degrees F
Average annual number of days when temperature exceeds 90 degrees F	22
Length of growing season	134
Average annual precipitation	17.74
Average annual snowfall	36 inches
Average wind speed	15 miles per hour

Source: Statistical Abstract of North Dakota, 1983.

POPULATION

The population of Mercer County was 254 in 1885, increased rapidly until 1910, decreased between 1940 and 1970 and drastically increased between 1970-1983. It was 9,611 in 1940, 8,686 in 1950, 6,805 in 1960, 6,175 in 1970, 9,404 in 1980 and 13,933 in 1983. The latest increase can be attributed to construction of energy conversion facilities.

According to the 1980 Census, Mercer County had a population density of nine persons per square mile, compared to 5.9 in the 1970 Census. The state has a population density of 9.4 persons per square mile. In 1980 73 percent of the population lived in the incorporated towns and cities. Figure 6 shows the actual and projected distribution of population for 1960-1990. The projected population figure was developed by the Inter-Industry Technical Assistance Team (ITAT). According to the 1983 Special Census the county had grown to 13,933. ITAT projected the population of the county to fall to 11,677 in 1985 with the completion of the construction phase of coal conversion projects. ITAT projected the county population to slowly grow to 12,269 by 1990. The percentage of the population expected to reside outside cities and towns is predicted to remain the same. The number of households in Mercer County was 5,680 in 1983. The number of households is expected to stabilize to about 3,745 in 1990. The number of households located outside the incorporated areas in 1983 was 1,000. It is projected that there will be about 942 households located in the rural area by 1990.

Update: The 1990 Census count for Mercer County is 9,808.

CHAPTER III

Existing Land Use Information

Agricultural Land Uses

Historical and economic trends within Mercer County indicate that agricultural activities, such as farming and grazing, as the most predominant and productive uses of the county's land surface resource. The 1980 Census reports that 549,000 acres or 82.4 percent to the county's total acres were used for agricultural.

The amount of land used for agricultural purposes has been declining slightly in the past several years, as have the number of farmsteads. This decline can be explained by several factors including: 1) the increased mechanization of farming; 2) sporadic market conditions for cash crops and livestock; and 3) the increasingly greater amount of agricultural land use for urban, recreational, and industrial activities. Intensive energy production activities have also resulted in the displacement of tracts of land previously subject only to farming and grazing in the county.

Strip mining of lignite coal has a temporary negative effect on agricultural lands and productivity. This is of a temporary condition due to reclamation laws which require mined land to be restored to former conditions. The expansion of rural subdivisions and commercial land uses are permanent threats to agricultural lands since there uses almost always result in permanent land modification and neither are subject to reclamation due to the nature of the use. Although neither mining, subdivision, or commercial uses are compatible with agricultural activities, mining presents a lesser degree of interference.

Figure 8

Mercer County
Existing Land Uses

	<u>Acres</u>	
Total	710,400	
Land Area	667,560	
Water	43,840	
Wetlands	10,253	
Woodlands	40,088	
Residential (rural)	170 (subdivisions only)	
Commercial (rural)	110	
Industrial (rural)	22,106	
	(Active Mining	18,520)
Urban	2,974	
Agricultural (Croplands/Rangeland)	549,000	

Source: West Central North Dakota Regional Environmental Impact Study, 1978.

Figure 9

Agricultural Land use Trends – Mercer County

	<u>1982</u>	<u>1978</u>	<u>1974</u>	<u>1969</u>	<u>1964</u>
Total Farms	542	579	644	706	682
Average Acreage	1,040	949	944	899	946
Irrigated Land	41,648	2,903	1,299	1,025	1,036
Number Farms Irrigated	16	11			
Land in Farms	563,772	549,231	607,842	634,932	645,085
Pastureland/ Rangeland	255,855	256,021	47,259	33,816	7,831
Cropland	287,617	278,867	186,640	189,955	202,255
Lot in House Lots, Ponds, Roads, Etc.	335	289			

Source: U.S. Department of Agriculture, Census of Agriculture, 1964, 1969, 1974, 1979, and 1984 – Washington, D.C.

Urban Areas

The urban land use category comprises all of the various land use types, (i.e., commercial, industrial, recreational, and residential) which are found within the corporate limits of each of Mercer County's municipalities.

The urban classification comprises less than one percent of the total county land area and yet accommodates about 73 percent of the county's residents.

Rural Non-Farm Residential

Residential uses are associated with agriculture and which occur outside the limits of incorporated municipalities are considered to be rural residential land use. The growth in the number of these units within Mercer County is a relatively new phenomenon. This trend has been experienced within other sectors of the nation for quite some time and can usually be explained by several factors, including: 1) the increased cost of municipal services; 2) the aesthetic attractiveness of the rural setting; 3) the existence of less restrictive ordinances in the rural sector of the county; 4) the more reasonable cost of land for development in the rural areas; and 5) the increase availability of low interest loans and mortgage insurance in the rural areas of the county. Since 1975 about 140 rural non-farm residences have been permitted. Rural non-farm residential growth requires to county to provide a range of services such as police and fire protection, water and sewer service and road maintenance on a par with those provided to the residents of nearby cities.

Rural Commercial

Presently, rural commercial land uses are few within Mercer County and largely confined to fringe areas around existing communities or along major transportation routes. Their evolution is based on the movement of local business districts to the outskirts of communities as well as the increased convenience and improved access to such areas. As with residential development outside the county's communities, cost of land and consequently the cost of development is initially somewhat lower in such locations.

Regardless of the need or the convenience of such commercial areas, however, if planned improperly, they can create traffic flow problems and generate adjacent land uses which are not desirable or suitable for a particular area. Commercial areas, as a rule generate adjacent residential land uses and vice versa.

Rural Industrial

Rural industrial land uses in Mercer County are largely confined to energy conversion facilities and lignite coal mines. At the present time the industrial land use acreage for the county is approximately 3,600 acres. The locations of these facilities and mines are contained in Figure 10.

The county has little responsibility for monitoring mining practices or reclamation procedure. Those duties lie primarily with state and federal agencies. However, the county does have the authority and the responsibility to protect its residents and their property from the nuisances and disruptions of mining activities or impacts generated from that activity. Appropriate conditions placed on mining or plant operation use permits can do much to remedy potentially adverse conditions.

Transportation

The transportation network within Mercer County is directed toward providing an effective and efficient means of transporting agricultural goods to market. The transportation system is made up the road system and the railroad.

Rail service is provided by the Burlington Northern which maintain 55 miles of track.

The following figure shows the round mileage breakdown for Mercer County by system and road surface.

Figure 11

Road Mileage Breakdown for Mercer County

	<u>Miles</u>		
State System	133	-	All bituminous surfaced
County System	323	-	54 miles of bituminous and 269 miles of gravel
Township System	471	-	All gravel
City Streets	59	-	42 miles of bituminous and 17 miles of gravel
Trails and Unimproved Roads	<u>381</u>		
Total County Mileage	1,367		

Source: North Dakota State Highway Department, 1985.

The network of transmission lines and pipelines which traverse the county can also be considered within the scope of transportation. There are approximately 181 miles of transmission lines, 56 miles of water pipeline, miles of gas pipelines and miles of oil pipeline. It is the responsibility of the county and a variety of state agencies to insure that the siting of such lines is done in a manner which will not adversely effect the environment, restrict or impede agricultural activity; or create or hardship for the citizens of the county.

Recreation

The following section identifies federal, state, county, local and private recreational lands and facilities available either partially or totally for the general public's recreational uses. Figure 13 shows that the U.S. Corps of Engineers owns the largest amount of land available for recreational use, while the other levels of government shows much less land holdings. Even with less land, the other governments provide a majority of the county recreational facilities.

Figure 13

Acreage and Ownership of Recreational Resource Areas
Federal State, Local and Private in Mercer County, ND, 1982

<u>Level and Agency</u>	<u>Acres</u>
Federal Agencies	79,256
U.S. Corps of Engineers	77,505
National Park Service	1,292
State Agencies	
ND Parks and Recreation Department	822
ND Game and Fish Department	5,340
State Lands Department	15,085
State Historical Society	49
Community	206
Private	85

Source: A REGIONAL RECREATION POLICY PLAN FOR OLIVER AND MERCER COUNTIES:
Recreation in a Coal Development Region, 1982.

The areawide recreation facilities and resource management areas are listed in Figure 14. Figure 15 shows the location of the more significant areawide resources. The significance of the Little Missouri River corridor is evident by the number of resource management areas found in its near vicinity. The Lake Sakakawea area, on the other land, has had more active recreational facilities developments. The popularity and significance of these two areas is apparent by the developments.

Figure 14

List of Areawide Recreation Facilities and Resources
Mercer County, North Dakota

		Map Location Number	Name
I. Areawide Recreational Facilities			
Federal	U.S. Army Corp of Engineers	1	Tailwaters Fishing Area
		2	Intake Picnic Area
		3	Corps Downstream Campgrounds
	National Park Service	4	Knife River Indian Village National Historic Site
State	ND Parks and Recreation Department	5	Lake Sakakawea State Park
County		7	Oliver Mercer (Isaak Walton) Sportsman Area
Municipal	Beulah	8	Beulah Bay Recreation Area
		10	Beulah Rodeo Grounds
	Hazen	11	Hazen Bay Recreation Area
		12	Hazen County Club & Horse Arena
		13	Beaver Bay Recreation Area
Private	Mercer County	14	Sakakawea Girl Scout Camp
		15	Lakeshore Trailer Court

II. Resource Management Areas

State	ND Game and Fish Department	25	Beaver Creek GMA
		26	North Beulah Mine GMA
		27	Hille GMA
	ND Historical Society	31	Knife River Flint Quarry
		32	Knife River Flint Quarry
		33	Knife River Flint Quarry

FIGURE 15

MAP OF AREAWIDE RECREATION FACILITIES AND RESOURCES

Mercer County, North Dakota

There are also several small dams that offer some fishing possibilities and areas for swimming, picnicking and other water related activities.

Federal

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers controls nearly 79,000 acres of land bordering Lake Sakakawea in Mercer County. The Corps acquired this land after the construction of the Garrison Dam in the last 1940s. Though not primarily a recreational agency, the U.S. Army Corps of Engineers has developed several recreational areas near the Garrison Dam and has been involved in the development of several other recreational areas through 25-year lease agreements and 50-50 cost sharing, which aid in recreational facilities development. Public and private agencies have leased large tracts of land east of the dam in Mercer County.

In Mercer County the Intake Picnic Area and the Tailrace Fishing Area, along with the Corps Downstream Campground located below the dam in Mercer County are managed by the Corps. Below the dam, located at the south end of the Tailrace is a good boat ramp. The combination of the concrete boat ramp, the area campgrounds and the excellent fishing opportunities near the dam, has made the Tailrace one of North Dakota's most popular fishing areas.

National Park Service

Knife River Indian Village National Historic Site: The Knife River Indian Village is located three miles north of Stanton in southwestern Mercer County. Federal protection was established in 1974 to protect the remains of the village's earth lodges, cache pits, fortifications and burial sites. It is among the best surviving examples of aboriginal villages in the Missouri River Valley of North Great Plains.

There are three significant archaeological sites at the Knife River Indian Village site: 1) the Big Hidatsa, which is the largest of the three; 2) the Sakakawea, which borders the Knife River; and 3) the Lower Hidatsa. A visitor's center is also located at the park.

A variety of passive recreational opportunities are available to visitors on a year round basis. These consist of guided tours of the village areas, an Audio-Visual Program, self-guiding history trail and museum exhibits on display at the visitor center. Other activities include fishing, canoeing in the spring and early summer, hiking and picnicking and cross country ski trails.

State

The North Dakota Parks and Recreation Department administers a state park within the county. North Dakota Game and Fish Department has acquired approximately 5,340 acres in Mercer County, and has developed the land into Wildlife Management Areas. The State Historical Society also administers and protects several areas which have either archaeological or historical value.

Lake Sakakawea State Park

The park is located in close proximity to the Garrison Dam on the southern shore of Lake Sakakawea, one-half mile north of Pick City. Lake Sakakawea State Park is situated approximately halfway between Minot and Bismarck, and is a regional facility. The park has become a major focal point for water-based recreational activities.

The Park consists of an 822 acre tract leased from the U.S. Corps of Engineers. The park facilities accommodate camping, picnicking, swimming, boating, water skiing and fishing for summer activities. During the winter months the park is used for cross-country skiing, snowshoeing, snowmobiling and ice fishing. One of the park's major features is the marina which has been developed to give boaters good launching access and boat storage at the Pick City/Riverdale area.

County

At the present time Mercer County does not own, operate or maintain any recreational facilities. This is a common situation for rural farming oriented counties. Usually the

communities provide recreational facilities for both its residents as well as the surrounding rural population.

Community

Beulah Bay Recreational Area

The Beulah Bay Recreational Area is a 103 acre tract leased from the U.S. Army Corps of Engineers. The Beulah City Park Board along with the Corps has developed this site and the park board manages and maintain the facilities. The park is located 18.5 miles north of the city of Beulah. State Highway 1806 passes within three miles of the site with access by a paved county road.

The park provides residents of Beulah, the county and the region with a variety of recreational activities. The facilities consist of boat ramp, parking areas, drinking water, vault toilets, tree plantings, picnic shelters and tables, grills, playground equipment and refuse containers.

Hazen Bay Recreational Area

Hazen Bay Recreational Area is a 138 acre tract leased from the U.S. Army Corps of Engineers. It is located 15 miles north of Hazen along Hazen Bay on Lake Sakakawea. The park district and the Corps have partially developed the site. State Highway 1806 passes within 2 miles of the site with access by a paved county road.

The park provides water oriented recreational activities for residents of Hazen, the county and those coming from outside the area for camping and fishing. Recreational opportunities include water-related activities, picnicking, camping and other outdoor activities. The area has a boat ramp, beach area, parking area, drinking water, vault toilets, tree plantings, picnic tables, grills and refuse containers.

Beaver Bay Recreation Area

Beaver Bay Recreation Area is a 163 acre tract of land leases from the U.S. Army Corp of Engineers. It is located twelve miles north of Zap. State Highway 1806 passes within one mile of the site with access by a paved county road.

The Park Boards of Zap and Golden Valley jointly manage this area under a cooperative agreement.

The Park provides residents of Zap, Golden Valley, the county and the region with a variety of recreational activities. The facilities consist of a boat ramp, parking area, vault toilets, tree plantings and refuse containers.

Private

Members of the private sector have developed or are currently developing several recreation areas in the county. They range in size and function. There is one privately owned summer trailer campground located along Lake Sakakawea. Cabins sites are for sale in the Beulah Bay Area.

COMMUNITY RECREATION ANALYSIS

Lake Sakakawea

Lake Sakakawea and its shoreline have proven to be a popular recreational area for people of the county as well as the surrounding area. Recreational facilities have been made available for the public to take advantage of this valuable recreational resource. The lake was developed with public funds and therefore any development along the lake must enhance the public accessibility to the lake.

The stretch of shoreline between the Garrison Dam and the east border of the Fort Berthold Indian Reservation has become popular for recreational activities for a variety of reasons. These include the shoreline's natural and environmental features, the reservoir's large expanse of water, access roads have been improved to the bays and probably the most important reason is the federal ownership of the shoreline. The combination of these factors have created considerable interest in this area for future water based recreational developments.

The shoreline is irregular with fluctuating water levels. The topography varies from steep, rugged, almost inaccessible areas to rolling prairie lands. Many bays, backwaters and coves leading to the large body of water offer peaceful, secluded, sheltered areas away from winds and wave action.

The vegetation in the area is made up of prairie grasses. The only tree cover is in gullies and ravines. Almost all wildlife found in North Dakota are represented in this resource area due to its wide variety of habitats.

Whitetail and mule deer are common. Aquatic and small land mammals are also found near the reservoir.

Access to Lake Sakakawea is via State Highways 1806 and 200 and several secondary roads. The improvement of 1806 to the west along the shoreline and the paving of access roads and the improvements to Beulah Bay and Hazen Bay have increased their recreational popularity over the past few years. Another access to the shoreline that is often overlooked is from the lake itself, thousands of boaters and people fishing travel along the shoreline during the summer and fall.

The potential of this area is virtually unlimited as far as recreation is concerned. Active water oriented type of activities are increasing in popularity each year. Two areas in particular, Beulah Bay and Hazen Bay, have seen considerable increases in visitation in the last few years. Although these areas were once undeveloped, today they offer excellent recreational facilities for area residents. This increase in popularity is partially due to the increased population areawide and also to facility improvements.

Those areas along the shoreline that have access roads, either improved or not, presently have some form of recreational development. Beaver Bay has not been developed. Fishing, picnicking and primitive camping are the main activities in the Beaver Bay area.

The communities of Beulah, Hazen and Stanton have taken advantage of the tree lined river corridor by developing community parks. These river bottom parks offer an ideal environment for picnicking, bicycling, walking and other activities.

Outside these communities, there are no recreation facilities near the Knife River. The greatest limitation of the Knife River for activities like canoeing, is the fluctuations in water level. It varies from being a mild slow moving river under three-fourths of the year to a raging uncontrolled river during the spring floods. Access and private ownership limit the type of development that will occur on the Knife River Flood Plain. Its recreational potential can be enhanced by the development of trails for cross country skiing, snowshoeing, hiking and snowmobiling.

The Knife River has been overshadowed by the Little Missouri to the east and Lake Sakakawea to the north. Because these two areas offer a large number of facilities for water bases activities this river corridor should remain in its natural state.

There is potential for recreational development along the Missouri River from Lake Sakakawea to Bismarck. The river corridor is part of the remaining 45 miles of Missouri River bottomland that has not been covered by reservoir water. About 25 miles of the Missouri River Corridor is in Mercer County. Along the corridor exists some culturally and historically significant examples of North Dakota's Indian heritage. The physical and natural environment of the river corridor are possibly the area's greatest resource because of the range and diversity of plants and wildlife. There are several different types of plant communities located in the river

corridor, willows and young cottonwoods on the sandbars that dot the river channel, the floodplain has a dense cover of cottonwoods and lush vegetation and woody draws extending into the virtually treeless prairie. The two most limiting factors for future development along the river corridor are the lack of improved access roads to the river corridor and private ownership of the land.

Considering the cultural and environmental features of this scenic river corridor, recreational development should not disturb these features. Passive recreation should be emphasized such as canoeing, boating, walking and bicycle trails could be emphasized.

Historic Mercer County

The first well documented human use of North Dakota was by Puleo-Indian cultures of 10,000-6,000 B.C. The two following periods, the Archive and Lute prehistoric, spanned the years from 6000 B.C. to the first European contact around 1800.

The following table shows the functional site types, and their number, that have been identified by archaeological investigation.

Figure 16

Earth Lodge villages	19	Mounds	6
Quarries	2	Kill sites	0
Stone circles	25	Campsites	28
Lithic scatters	3	Caches	0
Rock art arrangements	2	Eagle traps	1
Cairns, rock alignments	5	Burials	5

Source: North Dakota Historical Society files, and Regional
Environmental Assessment Program Archaeological Inventory

There were three major tribal groupings in the county area, the Mandan, Hidatsa, and Arikara Tribes. They all utilized the resources of the surrounding plains to supplement farm resources of river valleys.

The historical period of the county had three phases: Exploration and fur trading, Military and Indian removal, and the Homesteading and Settlement phase. Williams in 1977 dated these periods: Fur and Exploration (C.A. 1740-1860), Goldrush (C.A. 1860-1880), First Settlement Boom (C.A. 1880-1890), and the Second Settlement Boom (C.A. 1895-1920).

The majority of the identified historical sites occur in the area of Stanton where the Knife River joins the Missouri. Many of the early Indian and pioneer settlements were flooded by the construction of the Garrison Dam. This action adds to the archaeological and historical importance of the remaining sites and increase their tourist and academic value.