Jackson County, South Dakota: An Area Study

Jeffrey A. Faunce

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JACKSON COUNTY, SOUTH DAKOTA: AN AREA STUDY

By

JEFFREY A. FAUNCE

A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science, Major in
Geography, South Dakota
State University

1981
This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Advisor

Date

Head, Geography Dept.

Date
DEDICATION

The students and faculty of the Department of Geography, South Dakota State University, dedicate this work to the people of Jackson County, South Dakota, whose love for the land is a great inspiration to all.
ACKNOWLEDGEMENTS

The author wishes to express his sincere gratitude to Dr. Edward P. Hogan for the guidance and confidence he provided throughout this thesis.

He would also like to thank Dr. Charles Gritzner, Dr. Lee Opheim, and the rest of the Department of Geography for their valuable help.

Deserving of special thanks is Mr. Orville Gab for his timely assistance with the cartography for this paper.

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Finally, the author wishes to thank his wife, Lorrie, whose love and patience provided the inspiration for the completion of this thesis.

JAF
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CHAPTER I

INTRODUCTION

Region Versus Area

The term "Geography" has been burdened with countless definitions throughout the development of the discipline. Quite simply, geography is the study of spatial variations on the surface of the earth. Determining how the surface of the earth is divided, and how these divisions should be studied, involves an important concept in Geography.

A constant point of conversation for the evolving geographer is the difference between a region and an area. While some use the words interchangeably, others delve deeply into semantics. This problem of semantics was given some attention by James R. McDonald in his book *A Geography of Regions* in which he states,

... it seems likely that the value of the search for more precise terminology has been overrated, and that the debate has customarily generated more heat than light.

Nevertheless some discussion of the matter is merited.

First, it is necessary to define region in the manner in which it is used today. The historical geographer,
Terry Jordan, defines region as being "characterized by certain unifying traits that justify picking them out in time and space." To carry this definition one step further, a region can be defined as a homogenous unit determined by two or more criteria. An area differs from a region in that its structure is based on one set of criteria only. Because of the complexity involved with multiple criteria, boundaries of regions are often difficult to define. Areas, however, are limited by prescribed physical or cultural boundaries arbitrarily drawn. Often these boundaries take the form of political divisions. Therefore, most regions also have area. While the study of a region aids in understanding the interrelationships of the world as a whole, the study of an area increases knowledge of the study site only.

Jackson County, South Dakota, lies within the Great Plains region of the United States. Because this study will deal with only a small politically-bounded section of this region, it can be defined as an area study. This thesis, then, is a systematic-area geographical study of Jackson County, South Dakota.

History of the Regional Concept

The development of regional studies has, of necessity, occurred in conjunction with the acquisition of
man's knowledge of the earth. Without an accurate, comparable base of data, regionalization cannot take place; for it is that data that allows regional similarities to be discovered. Many early geographers such as the Greeks and Romans were primarily interested in the physical and biological environment, the development of mathematical and, thus, cartographic skills, and the impressions of voyagers visiting distant lands. Lacking complete information they often failed to recognize regional homogeneity.

Over time, man's knowledge of the earth increased. This provided geographers with the knowledge necessary to start regional conceptualization. Among the first to do so was Alexander von Humboldt (1769-1859) who used isotherm (lines connecting points of equal temperature) maps to illustrate climate. Von Humboldt's contemporary, Karl Ritter (1770-1859), developed a speciality in human geography which, when combined with von Humboldt's work, planted the seeds for a regional concept. Their emphasis on synthesis of information provided the basis for the regional methodology.

From this beginning, regional geography spread throughout Europe where it took hold in France. Here, Paul Vidal de la Blache (1845-1918) developed the regional concept into its modern form. Vidal, according to McDonald.
perceived the true nature of geography to be the simultaneous study of interrelationships and distributions and that this ideal can be best approached from the regional, ... viewpoint.

Vidal's concept of region has since been passed down to present day geographers with but a few alterations. Consequently, Vidal is referred to as the "father" of regional geography.

The Study Area

Jackson County is an extremely interesting part of our country. Throughout its history it has been the recipient of various negative descriptions. The Indians called the area "mako sica" meaning land bad. French fur traders were also unflattering in their tales referring to the area as "les mauvaises terres a' traverser" - bad lands to travel across. These names were all in reference to the White River Badlands; the dominant landform in the county. Today, however, the Jackson County area is not referred to in negative fashion. It is recognized worldwide as a place of scenic beauty.

Located in the southwest section of South Dakota (Figure 1) the land of "mako sica" roughly defines a square (42 miles x 49 miles). Its boundaries have changed over the years with the most drastic change occurring in 1978. Prior to that time, the land area
Figure 1 - Jackson County's Location in South Dakota

Source: South Dakota Highway Map
that is now Jackson County was comprised of two political units. North of the White River was Jackson County. South of the White was Washabaugh County which was occupied by the Pine Ridge Indian Reservation. This area was unique in that it was one of the only unorganized counties left in the United States. In 1978, as the result of an election, Jackson and Washabaugh counties were merged into one. (Figure 2) Since that time, the Oglala Sioux Tribe which resides on the Pine Ridge Indian Reservation, has filed suit to rescind that agreement. The outcome of the suit is pending at the time of this writing.6

The following study of Jackson County was undertaken using an outline that included a description of the physical environment (geologic history, terrain, climate, soils, vegetation, animal life, water), human occupancy, and the cultural environment (agriculture, mining, industry, recreation, power and utilities, transportation, cities and towns). It is done in the hope that it will be of some use to the residents of Jackson County, the South Dakota State University Department of Geography, and any other interested parties.
Figure 2 - Base Map of Jackson County

Source: Jackson County Highway Map
Endnotes


4 McDonald, Regions, pp. 13-14.

5 Ibid., p. 13.


7 Interview with Phil Hogen, Kadoka, South Dakota, 6 August 1981.
CHAPTER II

PHYSICAL ENVIRONMENT

Introduction

I have clinched and closed with the naked North
I have learned to defy and defend
Shoulder to shoulder we have fought it out
Yet the Wild must win in the end.

Robert Service
"The Heart of the Sourdough"

An important part of any systematic geographical study of an area is the physical environment. The physical environment provides the medium through which man attempts to shape his life. It exists independent of, and often in spite of his presence. The key elements of the physical environment as they will be discussed are geologic history, terrain, climate, soils, natural vegetation, animal life, and water.

Geologic History

A drive through Jackson County, and especially the White River Badlands, cannot help but stimulate curiosity in the area's geologic past. Few places on earth open themselves so freely to study as do the rolling hills, river breaks, and badland formations of this fascinating part of our country.
The geologic history of the county started during a period of time known as the Cretaceous Epoch of the Mesozoic Era. The Cretaceous spanned 65 million years beginning approximately 70 million years ago. (Figure 3)

The sequence of events that formed Jackson County began approximately 80-100 million years ago. South Dakota had been part of a region of low-lying swamps when the Arctic Ocean from the north and the Gulf of Mexico from the south made their advances upon the continent. A long arm of the Arctic met with flooding waters from the Gulf to inundate the land, forming a shallow, salty sea. The extent of this sea reached from present day Idaho on the west, to a gravelly shore near Duluth, Minnesota, on the east. Slowly, sediments were deposited upon the sea floor. Over time, the region underwent a series of gradual changes. The sea grew less and less deep while also becoming less concentrated with salt. A slight downwarp of the land aided the deposition of sediments. Many of the creatures that lived in the ancient sea, died and were entombed and preserved by the ever increasing debris. Today, many of those same animals emerge as fossils as the strata above is eroded away.

The earth, being a dynamic object, brought another change to ancient Jackson County. A gradual upheaval of the earth’s crust slowly forced the water of the sea back into their respective basins. As this occurred, the sea
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**Figure 3 - Geologic Timetable**

progressively evolved into a region of fresh water marshes and deltas and, finally, into a muddy plain. \(^4\) Left behind, in the ancient sea bed, was 1500 feet of marine sediment. \(^5\) The sediment dried and compacted into a layer of strata known as the Pierre Shale. This blue-gray shale underlies the entire region, forming the bedrock of Jackson County.

The retreat of the ancient sea brought yet another modification to the land. A new type of vegetative and climatic region began to evolve. For millions of years, the Jackson County area experienced periods of rain and sunshine that stimulated the growth of a new type of land cover. The precipitation and organic material from decaying vegetation allowed soil to form upon the Pierre Shale. Small rivers and streams cut into the Pierre and created a gently rolling topography. What was once a sea now became a swampy jungle of trees, ferns, and shrubs. \(^6\)

Further to the west, the same forces that had drained the inland sea were beginning to create new landforms. An enormous granitic dome of rock rose into what is now the Black Hills. Further west still, the Rocky Mountains started their gradual ascent. As these new landforms developed, a series of faults split the earth's crust across the breadth of central Jackson County. Two major faults defined the borders of a newly formed valley. The northernmost fault ran just north of the present day
White River while its southern partner paralleled it across the county until finally dipping south into Nebraska.

As the Black Hills rose, they sloughed off their mantle of sediment into the broad valley to the east. The prime mover of the burden from the Black Hills was the Red River. Its course took it through the valley formed by the faults; a region that is today known as the Badlands. This valley received nearly all the residue carried from the Black Hills into the Jackson County area.

Occurring at the same time as the development of the Black Hills and the Rocky Mountains was a change in the weather patterns. Until that time, rain had been distributed on the valleys east of the Black Hills. This pattern, however, was gradually altered. The result was a redistribution of moisture to the west, on the slopes of the ascending Hills. This increase in precipitation greatly aided the stripping away of sediments. What were once slow moving rivers and streams became thundering torrents of sediment-laden water. Not only was the mantle of erodable strata carried from the Hills, but swollen rivers also tore off chunks of harder material such as quartz, feldspar, and chert. The valley of the Red River, now inundated with the flood waters, received the largest quantity of residue from the western mountain.

For 3 to 4 million years, the Black Hills released
their burden upon the rivers and streams that drained them. Larger particles settled out faster than smaller ones and were, with some exceptions, distributed in close proximity to the Hills. As the valley began to fill, the gradients of the streams lessened, resulting in slower and slower currents. Because the current decreased, only the finest particles of residue made the journey from the west to Jackson County. Eventually, the sediments filled the valley and began to spill over onto the surrounding plain. This group of sediments is known as the Chadron Formation.

As a result of the tremendous forces the region had been subjected to the land cover once again changed. What had once been a sea and then a jungle evolved into a series of swamps surrounded by wooded hills and grass covered flatlands. The climate was again affected. The uplift that had formed the Rocky Mountains and the Black Hills had raised them to such heights that they cast a vast rainshadow over the western half of South Dakota. Precipitation amounts began to dwindle, though not in the fashion one might expect. The region trended through periods of high humidity and extreme aridity. Dry spells were followed by torrential rains. When the climate was dry, vegetative growth suffered. Fine silts and clays were spread horizontally upon the plain. During periods of heavy precipitation, however, swollen streams carried
larger particles and a larger volume of debris. Erratic beds of coarse textured sands were laid down. Colored sedimentary layers of pink and lavender were also deposited as the powerful waterways ripped iron oxide and manganese oxide from the granitic core of the Black Hills. Volcanic activity in the west spewed ash and igneous rock material into the atmosphere where favorable winds deposited it in ashen gray layers; some as much as 55 feet thick. Thus, the Chadron Formation was eventually buried beneath 500 feet of this sediment known as the Brule Formation. The Chadron and Brule are collectively referred to as the White River Group.

While the environment fluctuated between both wet and dry periods, the balance slowly tipped in favor of a drier climate. With the decrease in precipitation and the increase in aridity came a change in the vegetative cover. Trees and other organisms accustomed to larger amounts of water, were unable to survive. Grasses began to take over the plain. This elevated plain was fully 5500 feet above sea level (2000 feet above its present elevation) and covered the continent north to Alberta, Canada, east to the Mississippi Valley, and south to the high plains of Texas and New Mexico. The formation of the lofty grassland marked the last period of deposition in Jackson County.
Some sediments have accrued in the area since the Brule though not in significant amounts.

In the middle Miocene Epoch of the Tertiary Period, the processes of erosion began to take over. Streams and rivers cut through the uplifted strata. Through time, a topographic pattern began to emerge in the Jackson County area. North of the present day White River, erosion was slow due to the prominence of the Pierre Shale. This section, therefore, was the slowest to be changed and retained its rolling hill and ridge type terrain. The most conducive to erosion was that region which lay within the bounds of the old Red River Valley; today's Badlands. While the harder layers of residue, such as sandstone, tended to resist erosion, the softer, less consolidated layers were removed rapidly. Because of the heterogenous nature of these deposits, the region was eroded into that array of irregular shapes we know as badlands. The southern third of the county was changing at a rate that was a mix of the previous two. Its strata, while containing more silts and sands than the Pierre Shale, was considerably more stable than the badland sediments. Because of the finer particles, however, it was dissected faster than the northern hills.\textsuperscript{13}

Nature was not completely finished with the Jackson County area. Approximately one million years ago saw the beginning of the Ice Age. With cooler temperatures came
decreased precipitation. Although the area did not experience the direct effects of glaciation, it was transformed by the run-off of glacial meltwater as the glaciers receded. Rivers swelled into destructive watercourses. Their affect, however, was not one of deposition, but rather, one of erosion. Shallow waterways six miles wide flowed at speeds up to fifteen miles per hour. The erosive power of these rivers was enormous. All parts of the county were further dissected. Especially affected was the middle badlands region. This final assault left Jackson County the topographically diverse, beautiful, and fascinating area that it is today.

Upon the retreat of the glaciers, conditions returned to the warmer, more dessicated, type of environment that is evident at present. Erosion continues at the hands of much smaller rivers and streams. While the destructive rate is slower than in the preceding period, it is still extremely fast when viewed in the context of geologic time. Today's topography reflects the work of both ancient and modern rivers. With each passing rain, the streams grow heavy with their burden of sediments sculpted from the surrounding countryside. It is widely believed that it is the extremely violent forces of nature that create an area such as Jackson County. Gazing upon the rolling Pierre Hills section, the spires, buttes, tables, and hummocks of the Badlands, and the dissected plain of the southern third of the county
leads one to believe that it may be so. But, in truth, it is the subtle day in and day out persistence of wind and water and countless other factors that mold the topography of an area. The passing years will bring further change to the land. The future depends on the quirks and moods of nature herself and the dynamic character of the earth.

**Terrain**

The terrain in Jackson County is extremely diverse. One may encounter miles of gently rolling hills or a flat river bottom; buttes and spires on a dissected plain. All these landforms and more exist in Jackson County.

The western half of South Dakota is known physiographically as the Missouri Plateau. Within this region lie several subdivisions. Jackson County is comprised of two of the subdivisions known as the Pierre Hills and the Southern Plateau. (Figure 4)

Based on the observations made in the county by the author, the area can be further subdivided into five physiographic sections. (Figure 5) While not all divisions agree with the map in Figure 4, they possess a homogeneity of terrain that support their accuracy.

The northern third of Jackson County is made up of a rolling upland type topography. Underlain by the Pierre Shale it is a series of smooth hills and ridges.
Figure 4 - The Missouri Plateau

Source: Edward Patrick Hogan, *Geography of South Dakota*, State University, Brookings, South Dakota, 1976. (Mimeographed)
1 - Rolling Uplands
2 - Dissected Uplands
3 - Badlands
4 - Valleys
5 - Undulating with buttes

Figure 5 - Terrain of Jackson County
Three specific types of landforms appear in this section. The first is a smooth rounded hill. These are the most locally abundant hill type. Each exhibits a gradual symmetrical grade leading to a broad rounded top. It is these hills that give the land its rolling terrain. The second landform is a small yet steeper version of the rounded hill. Because equal vertical rise occurs over a shorter horizontal distance it takes up less land area. The steep hill also appears symmetrical, though unlike the rounded hill in that it reaches a more pronounced peak. The ridges of the rolling uplands are the third landform type. They resemble the flat topped buttes found further south except that they have a rounded top and are covered with native grasses. (Figures 6 and 7)

The southern two-thirds of Jackson County also contains many types of terrain. The land south of the Interstate from Kadoka and east is of the rolling upland type topography. This section is dissected by southerly flowing streams that gradually break up the land north of the White River. As these streams approach the White, the land becomes more and more dissected until a definite break in the land occurs known as the White River breaks. From the breaks, there is a steep drop in elevation to the floor of the White River Valley.

The extent of Jackson County west of Kadoka and
Figure 6 - Steep Hills

Figure 7 - Rounded Hills & Ridges
south of Interstate 90 is a gently rolling upland. This upland exists in a one to three mile wide strip south of the Interstate. South of this strip a landform known as "the wall" appears. The wall marks the northern boundary of the ancient Red River Valley and today's White River basin. Driving from the north, the wall is encountered as a sharp cliff separating the upland from the badland floor 200 feet below.\(^1\) (Figure 8) From its eastern terminus approximately 3 miles west of Kadoka, the wall winds its way west, southwest into the Badlands National Park. All land south of the wall up to and varying distances beyond the White River is badlands terrain. This is characterized by a complex mixture of landforms including buttes, rounded domes, and spires. (Figure 9) It is important to note that badlands occupy a river valley and are therefore not peaks that rise above the uplands.

Another area of White River breaks occurs south of the badlands region. Beyond these is another stretch of uplands. These uplands are more steeply rolling than those of the north and are found over a smaller land area.

The badlands of the Pine Ridge Indian Reservation appear south of these uplands in a five to six mile wide strip that runs nearly the breadth of the county. These badlands are of a different character than those of the north and west. Spires and domes are much less prominent.
Figure 8 - The "Wall" on the Horizon

Figure 9 - Badlands Terrain
This is a land of flat topped buttes that range in size from a few feet to well over 100 feet. (Figure 10) This area is also different in that there is a great deal more vegetation present. Ponderosa pine and Rocky Mountain juniper pepper the slopes and flat tops of the region.

South of Wanblee is found another set of uplands. These are not unlike other uplands sections though they are more dissected. This area exhibits a rolling hill type terrain dotted with an occasional butte. These buttes, such as Eagle's Nest or Buzzard Butte, rise quickly above the plain, making them visible from great distances.

Throughout Jackson County the typical drainage pattern is dendritic. The manner in which the streams cut through the strata, however, differs. In the upland areas, watercourses cut the land into "V" shaped channels. This is typical in the youthful stages of plain dissection. The clay of the area is easily eroded, thereby allowing deep cuts in the upland hills. In the badlands and White River valley section, stream cutting takes on a box-like shape. (Figure 11) This is due to the sand and ash caprock that protects the underlying clay. Once the stream has cut through the harder layers, the clay walls are eroded vertically to the next layer of harder rock. 17

The beautiful and varied terrain of Jackson County cannot be seen from Interstate 90. One needs to drive the
Figure 10 - Pine Ridge Badland Topography

Figure 11 - Box Erosion in the Badlands
backroads, to get off the tourist-beaten path. These roads are more enjoyable as they follow the curves, dips, and hills of the Jackson County landscape. It is south on Highway 73, north on the Cottonwood road, southwest on old 40, or west and north on 44 where one can experience the real terrain of the area. The residents of the county will tell you that they are wonderful places to see. (Figure 12)

Climate

When South Dakotans described their state with the slogan, "The land of infinite variety," they may have been referring to its climate. The climate of Jackson County also is one of "infinite variety."

In 1918, Dr. Vladimir Koppen of the University of Graz in Austria devised a world-wide climate classification scheme based on precipitation and temperature. Jackson County lies within the region Koppen classified as Bsk or a semi-arid steppe climate. The Bsk classification typically includes a great annual temperature range characterized by hot summers and cold winters. It also often lies at the interior of continents at the mid-latitudinal positions. They are shut off by mountains from invasions of maritime air masses and are, therefore, dominated by continental tropical air masses in the summer and continental polar air masses in the winter. The result is an
Figure 12 - Scenic Route Through Jackson County

Source: South Dakota Highway Map
area of low precipitation. Other parts of the world that share similar climate conditions with Jackson County are Argentina, Turkey, and portions of the Soviet Union.20

Jackson County's steppe or semi-arid type climate is an area of low precipitation. This is due to its location on the North American continent. Because the county is situated a great distance from a large body of water, the number of maritime air masses that could reach its inland location and bring precipitation are few. This is further hampered by the extensive rainshadow of the Rocky Mountains that wrings moisture out of approaching systems. The dominant air masses that influence Jackson County are of the continental variety. Continental air masses are typically dry and yield little moisture.21 This fact is reflected in the average annual precipitation the area receives; 15-17 inches. Average amounts vary within different sections of the county but in general, values are less in the northwestern sections and increase as one moves southeast.22 Average statistics, however, should not be taken as the amount that is likely to fall in the area year after year. Precipitation comes in uneven cycles of wet and dry years. This is exemplified by the readings from the White River basin that recorded 9.7 inches in 1936 and 30.0 inches in 1915.23

The bulk of the moisture Jackson County receives
comes in the form of thunderstorms. 75% of the precipitation received in a year falls during the growing season (April-September). June is the wettest month, receiving 3 to 3.4 inches followed closely by May with 2.7 inches. 24

Precipitation received during the winter months comes in the form of snowfall. It is, however, generally light with an average amount being 24 inches per year. 25 The major asset of snowfall is the cover it provides for the fields and pastures. This is invaluable in reducing soil erosion and protecting fall seeded crops. 26 Snow cover is also important in the spring when the snowmelt provides much needed moisture and helps raise water levels of lakes, stock dams, and rivers.

Another important part of climate is temperature. Temperature ranges in Jackson County are great, both annually and diurnally. The area is characterized by hot summers and cold winters. Temperatures above 38°C are common summer occurrences while winter reading may dip to -29°C or below. 27 The annual average is 8.2°C in the northern sections of the county near Cottonwood and 9.2°C in the southern reaches in the Long Valley area. 28 The frigid winter temperatures are the result of the large high pressure air masses that dip into the state from the north and northwest. The hot summer readings are usually spawned by a flow of warm air from the south. The
irregularity and extremes of temperatures of Jackson County help to create an invigorating climate. Jackson County lies in the track of many cyclones and anti-cyclones, characteristic of a continental climate. As a result, the area receives several different types of storms. Precipitation and stormy weather are commonly associated with the passage of cold fronts and low pressure systems. Spring and summer "weather" includes thunderstorms, tornadoes, and hail.

As stated earlier, the thunderstorm with its associated rainfall is the primary source of precipitation for the county. An average of 40 to 45 of these storms rumble through the county in a typical year. Each storm varies in intensity thereby varying the moisture yield. Severe thunderstorms are not uncommon with torrential bursts of rain and winds reaching or exceeding 50 miles per hour. The associated lightning can become a problem, especially in the late summer when pastures are dry and susceptible to fire.

The most feared storm in this part of the country is the tornado. While their occurrence is not uncommon, these storms are not nearly as great a weather threat as they are in the "tornado belt" states of the central and southern plains. Tornado statistics from the years 1953-1976 indicate that South Dakota, as a whole, has averaged
2.94 tornadoes per 10,000 square mile area, resulting in 72 deaths. The average annual death rate from tornado related incidents is 3, although deaths more commonly occur in groups erratically spaced over the years. Though a small storm, the tornado can be incredibly destructive. Wind speeds have been clocked up to 250 miles per hour. Their destructiveness in the Jackson County area, however, is limited as the area's sparse population has created large open land areas. The greatest potential for damage is in Kadoka due to its concentration of people. 31

While the tornado has the greatest potential for destruction, the hail storm is probably responsible for more damage on a year to year basis. The agricultural emphasis of Jackson County makes the area especially susceptible. Hail storms occur in conjunction with thunderstorms and are a constant threat during the summer months. June is the most common month in which hail storms occur. Jackson County is fortunate in that it does not lie within a high density hail belt. Hail can be expected in the area an average of 2 to 3 times per year. 32 Eastern South Dakota is much more likely to receive the damaging effects of these storms than is the west river region.

Although summer storms are by far the most frequent, there are severe types of weather that occur during
the winter season. The blizzard is the representative storm of the winter months. A blizzard occurs when cold temperatures and high winds are present in conjunction with heavy snowfall. Blowing snow may radically reduce visibility. Wind blown drifts of snow often fill ditches and shelter belts while adjoining fields are blown bare. Although these storms are deadly, they do not occur with the frequency that is popularly believed. Especially susceptible to blizzards is the livestock of the county. Livestock warnings are issued when approaching weather is severe enough to be life threatening.

An especially important aspect of climate is its relationship to agricultural practices. In general, western South Dakota’s climate is limiting or marginal for the successful raising of most crop types. This is primarily due to the dry conditions.

The length of the growing season is also critical to the farmers and ranchers of Jackson County. On the average, the area has between 125 and 132 frost free days in a year. The last 0°C frost usually occurs sometime in mid-May while the first frost commonly falls in the third week of September.

Drought is not a stranger to western South Dakota. Crop returns in the region are very sensitive to rainfall. Below normal precipitation can sharply reduce yields.
dry spells have been known to do considerable damage in a few short days.\textsuperscript{35}

Flooding is not a major problem in Jackson County. As in any area, a particularly strong storm producing heavy rainfall for prolonged periods may spawn localized flash flooding. Recorded floods in Jackson County have been restricted to the White River section. Again, the widely spread population makes serious flood damage unlikely.\textsuperscript{36}

Other climatic factors to be considered are percent sunshine, wind, and humidity. Statewide, South Dakota receives an average of 62\% of the potentially available sunshine. This is due to the lack of rain-producing clouds that occur in the state. The air is virtually pollution free.

Wind is ever-present in Jackson County. The annual average is 11 miles per hour, though winds of 50 miles per hour and up may occur with frontal activity such as thunderstorms. Being located in the world belt of westerly winds dictates the direction of air flow in the area. During the winter months, the wind blows primarily from the northwest. The summer's hot dry conditions are the result of a southwesterly air flow.

Relative humidity in Jackson County varies from sunup to sundown. Readings of 85\% are common in the early morning hours of summer, while 40\% is the typical figure
for mid-afternoon. Winter is somewhat more humid with readings of 82% in the morning and 65% in the afternoon being characteristic.37

The combined characteristics of the Jackson County climate make life there interesting, exasperating, and richly rewarding. Which type of weather will occur from season to season has kept meteorologists, nationwide, guessing.

Soils

Soil plays an extremely important role in the lives of Jackson County residents for it is soil that is the basis of the agricultural economy. South Dakota relies more on agriculture for the majority of its per capita income than does any other state. Jackson County is equally dependent on soil for its livelihood.

To understand the types of soils and their distribution, it is necessary to have a knowledge of the background of the soil formation process. For soil to form it is vital that food be present. Food in the form of simple compounds is produced on freshly accumulated parent material (rock) through the process of weathering. Bacteria and fungi feed upon these compounds. Over time, the decay of millions of these bacteria build up organic material which can progressively support higher and higher forms of life. The present accumulation of soil is
the result of this continuing process.

Soil, however, does not consist solely of a homogenous unit of organic matter. It occurs in the form of a soil profile. The soil profile consists of 3 zones known as horizons. The first zone is the surface soil and is called the "A" horizon. The second zone, referred to as the "B" horizon, consists of the subsoil. The "C" horizon is made up of the parent material. The A, B, and upper C horizons all occur within 5 feet of the surface in South Dakota.

The kind of soil that develops as a result of the soil formation process is dependent on 5 factors: 1) climate, 2) vegetation or organisms, 3) parent material, 4) relief, and 5) time. Of these 5 factors, climate and vegetation are considered the most important as they determine the soil series. The parent material determines the soil's texture and mineralogical composition. The claim that parent material exhibits less of an influence on the type of soil developed is shown through the fact that a characteristic soil will develop throughout a certain climatic and vegetative zone unless parent material differences are significant. Relief is of little importance in soil formation. It does, however, strongly influence the type of drainage a soil will develop. Land in steep slope characteristically exhibits excessively
drained, thin soils while flat sections show poorly drained, thick soils. Time plays its most important role in the formation of the soil profile. 39

Three parent material types exist within Jackson County. The first is the Pierre Shale. It occurs in the northern one-half of the county. (Figure 13) This is often referred to as the "gumbo region" due to the manner in which the shale weathers. The Pierre expands when wetted which disrupts the surface. The soil weathers into cracked or joint clay, thin flakes, and finally, dust particles. These fine dust particles are then removed by erosion due to precipitation or are carried away by the wind. 40

The second type of parent material, the White River beds, is found throughout the southern half of the county in all but a small section in the southeast corner. Much of the area consists of silts and clays which weather to form benches, plateaus, and buttes. The southern reaches of this classification, however, also contain some sandstone. These sections take on the appearance of a dissected upland.

The final type of parent material in Jackson County is the zone of the Oligocene-Arikaree sandstones and siltstones. This represents a northern extension of the Nebraska Sand Hills region. The terrain of this area
Figure 13 - Parent Materials of Jackson County

takes on the appearance of a dissected upland with an occasional butte dotting the landscape. \(^{41}\)

There are 7 soil subgroups in South Dakota. (Figure 14) Jackson County lies within zone 3 which is classified as the Aridic Ustolls. Aridic Ustolls have been developed in an environment that exhibits warm average annual temperatures \((6.7-8.4^\circ C)\) and low precipitation values \((14-17\) inches annually). With parent materials that include shales, sandstones, and siltstones, they are fed by the decaying organic material of the short and mid grasses. In regions where shale is the parent material, the terrain is primarily gently rolling while the sandstone and siltstone sections are characterized by an undulating to strongly sloping topography. Buttes and plateaus also occur in the sand and siltstone regions.

Aridic Ustolls are typically well-drained. They also support shorter stands of grass as the precipitation received is not utilized as effectively as in a cooler region. This is primarily due to the higher soil temperature of the warm plain. Shorter grasses leave behind less organic matter than do their taller relatives. In addition, the higher annual temperatures stimulate greater oxidation of the organic matter, which results in low organic matter contents in the soil of the region. \(^{42}\)
Figure 14 - Soil Zones of South Dakota

Not only is the organic matter content low in the Jackson County area, but nitrogen concentration is also below desirable levels. This low amount limits potential agricultural activities as it is insufficient to support intensive cropping or continuous high yields of tame grasses.  

The color of the soil also differs from other sections of the state. As one moves west and south in South Dakota the soils take on a lighter brown color than northern and eastern regions. In the east and north the soil tends to be a dark brown to black. The lighter color of the Jackson County region is caused by the varying climatic and vegetative conditions characteristic of the Aridic Ustolls.  

Erosion is the primary problem facing Jackson County agriculturalists in regard to the soils. Since much of the county is in slope, it is susceptible to the effects of wind and rain.  

In sections that are tilled, farmers and ranchers learn to protect their soil by maintaining a stubble or residue on the surface to hold the soil in place. Range-land erosion is slowed by good range management practices and being careful not to overgraze.  

Wind erosion is of primary concern during the winter months in years when there is no snow cover. The
lack of snow cover leaves the fields of seeded winter wheat more susceptible than usual to the effects of wind. This is often countered by leaving strips of residue in the tilled field. 45

Water erosion is especially severe in the Badlands. Rainfall swells the tributaries that drain the area until they become sediment-laden rivers. This quick washing of the land results in the loss of a great deal of soil. The maintenance of a year-round vegetative cover can help, though such a cover is hard to establish. 46

The soils are a limiting factor in Jackson County agriculture. Together with the climate, they greatly reduce the area on which a farmer can successfully raise crops. Row crops are virtually nonexistant. The people of the area have, however, learned to work with what they were given and have managed to successfully make agriculture a viable living in their county.

Natural Vegetation

Jackson County lies in that great expanse of land known as the North American Prairie. This prairie has its origin in Tertiary times when, due to the formation of the Rocky Mountains, an enormous rain shadow was cast over the Great Plains. As a result the climate changed from a humid environment to that of a steppe. The
accompanying decrease in precipitation caused woodland
tree growth to suffer. Gradually, the forests were re-
placed by grasses and other herbaceous plants which
combined to form the prairie.47

Characteristic of a prairie is the dominance of
grasses over other types of vegetation. South Dakota is
described as a mixed grass prairie. A mixed grass prairie
is a native grassland type in which exists a mixture of
tall (over 36 inches), mid (18 to 36 inches), and short
(less than 18 inches) grasses. Which type of grass is
locally dominant depends upon climate, soil conditions,
and the influence of man. From east to west in South
Dakota the mixed grass prairie is divided into five
classification zones. They are: 1) the tall grasses,
2) the mid and tall grasses, 3) the mid and short grasses,
4) the short and mid grasses, and 5) the conifers.
Jackson County lies within region 4, the short and mid
grasses. (Figure 15)

In a short and mid grass region, all three types
of grasses may exist, though under specific circumstances.
The short grasses tend to dominate the drier sections, such
as hilltops while mid grasses seek out the more moist
conditions found in valleys. Tall grasses exist only in
the most choice spots where precipitation and moisture
are adequate to sustain their growth. Hence, tall grass
Figure 15 - Vegetation Zones of South Dakota

stands are found in pockets such as sloughs, rivers, and draws. Because dry conditions make up a large percentage of the county, the short grasses are found in the greatest quantity. 48

As Jackson County depends on good range conditions for the grazing of livestock, it is important for forage to be available at all times of the year. This problem is solved by the existence of both cool and warm season grasses. Cool season grasses renew growth in the early spring, attaining maturity and maximum seed development from late March to early June. Then, during the hot weather months of July and August, they go into a state of semi-dormancy. When cooler conditions prevail, the cool season grasses resume growth, thus providing grazing material into the winter. Cool season grasses are invaluable in that they exist as forage through a long period of the year.

Warm season grasses fill the void left by cool season grasses in the hot months of mid-summer. They renew activity much later than do their cool season counterparts, and grow vigorously throughout the summer into the early fall. This makes them available to livestock while the cool season grasses are in their state of dormancy. Following seed production in late autumn, the warm season grasses discontinue growth, whereupon the cool season grasses resume their fall growth. 49
Although Jackson County has been characterized as a short and mid grass region, there are also innumerable varieties of these grasses, sedges, and forbs coexisting within the area. Buffalograss, blue grama, and western wheatgrass are the dominant grass types in western South Dakota. Jackson County has a high percentage of buffalograss and blue grama, though large areas of western wheatgrass, green needlegrass, threadleaf sedge, and needleleaf sedge also exist. The badlands have their peculiar type of vegetation, good rangeland has western wheatgrass and blue grama as dominants with sedges, needle and thread, red threeawn, and little and big bluestem also present. In the more sandy sections of the county big bluestem, little bluestem, sideoats grama, and needle and thread are found. Thus, each grass has its niche in the rangeland of the area.

The grasses of today's prairie rangeland are particularly suited to the plains region. Most are self-pollinating in that they rely on the wind rather than insects for propagation. Prairie grasses also have a dense network of roots that form the prairie sod. Grass grows from below as does a human hair. This enables the grass to withstand grazing. It also forms a tight turf that efficiently gathers rainfall and shelters it from the drying wind.

Though extremely well adapted, the grasses of the
Jackson County region can be depleted. At fault are prairie fires, drought, and overgrazing. Man has little control over fire and drought. Overgrazing, however, is a problem man has brought upon himself. Overgrazing may cause undesirable plant types to take over the more desirable types of forage. Through good range management techniques this problem can be eliminated.

As man moved into western South Dakota, he found limited moisture available to support his tillage agriculture. Consequently much of Jackson County has never seen the cutting edge of a plow. Man came to rely on the natural vegetation, the grass, for his agricultural livelihood. The natural vegetation that exists now, however, is different from that which occupied the area in the past. The livestock that man brought with him, chose to graze the more palatable vegetation, leaving less desirable varieties behind. These less desirable grasses began to occupy more and more of the rangeland. As a result, a new community of plants developed. Today's grassland community therefore, consists of the more hardy vegetation that has been passed over by the livestock. 52

While grasses are the dominant type of vegetation in Jackson County, others are present that are worth noting. Sedges have been often referred to as grass-like but can be distinguished from grass by their solid
triangular stems. Common sedges to Jackson County are
needleleaf and threadleaf sedge, prairie junegrass, needle
and thread, and green needlegrass. Green needlegrass is
the most important as forage, though most others are also
palatable when green.

Forbs occupy another niche in the grassland environ-
ment of Jackson County. They are a herbaceous plant that
is neither a grass nor a grass like plant. Some of the
forbs present are yucca (soapweed), ten-petaled blazing-
star, wild alfalfa, prickly pear, kochia, winterfat,
prairie cone-flower, gumbo lily, scarlet globemallow,
western salsify, and Missouri goldenrod.\(^5\) (Figure 16)
Poisonous plants of the area include, poison ivy, snow-on-
the-mountain, and locoweed.\(^4\) (Figure 17)

The green of the rangeland is not the only color
in Jackson County. A succession of flowers occupy the
area throughout the spring, summer, and fall. They can be
broken down into 4 categories; 1) early bloomers, 2)
July bloomers, 3) August bloomers, and 4) September
bloomers. Among the early bloomers are the pasque flower,
prairie lily, locoweed, buffalo bean, and wild flax. July
bloomers include wild alfalfa, prairie clover, false
mallow, and spurges. Asters, golden-rod and fleabane
peak in August while September is represented by flowering
Figure 16 - Yucca

Figure 17 - Snow-on-the-Mountain
sages. The colors of these flowering plants are domi-
nantly yellow. The next most prominent colors are white,
orange, and pale blue. Reds, deep blues, and violets rarely
occur.55

The final category of vegetation to be considered
is the forest and woodlands. As is typical of a grassland
environment, trees are not plentiful. The forests may
be subdivided into three categories for the purposes of
study. They are: 1) the elm-ash-cottonwood association,
2) the pine-juniper association, and 3) the woody shrubs.

The elm-ash-cottonwood association is by far the
most plentiful in Jackson County. (Figure 18) This group
can be found along major streams, upland draws, open
groves along stream beds, water impoundments, and some farm
shelter belts. The cottonwood is the dominant tree of
this association. Other trees found include, the edon
ash, burr oak, boxelder, hackberry, and willow.56

The pine-juniper association is found primarily
south of the White River in the Pine Ridge badlands region.
(Figure 19) Ponderosa pine is the representative of its
species while a hybrid of the Rocky Mountain juniper and
the eastern redcedar is the common juniper. These trees
are usually seen on north facing slopes of buttes and
drainage divides, and at high elevations where rock
Figure 18 - Elm-Ash-Cottonwood Association

Figure 19 - Ponderosa Pine and Juniper
outcroppings are present. Ponderosa pine occurs in scattered stands while the junipers grow in isolated clumps. 57

The woody shrubs is the last classification of forest type vegetation. They achieve prominence in the rugged badlands area found in the far western section of the county. Long tap roots allow these shrubs to cling to the loose, friable soil. Buffalo berry is common here. 58 Other shrubs occur in the gullies and upland draws of the rest of the county. Here, small clumps of the following shrubs may be found: wild plum, buffalo berry, wild rose, chokecherry, currant, serviceberry, and dogwood. 59

In most fields of study, in depth research reveals far more complex relationships than, on the surface, appear to exist. Such is the case in the study of the vegetation of Jackson County. What appears to the casual observer to be a land of barren rock formations and grasses is actually the cover to a fascinating and diverse community of plants. The grasses, sedges, forbs, and forests all combine to make up the natural vegetation of Jackson County, where they have achieved a balance beneficial to themselves and man.
Animal Life

Jackson County plays host to a fascinating array of wildlife. Countless species of animals have existed here throughout history.

An extremely interesting part of the area's wildlife is that of its fossil records. As the strata of the Badlands is slowly eroded away, fossil remains of ancient Oligocene epoch animals are uncovered. The most commonly found mammalian fossil is that of the oreodont. Possessing the skeleton of a pig and the cud-chewing characteristic of a cow, these once abundant animals became extinct 3 million years ago. Another fossil often revealed is that of the turtle. The Pierre Shale deposits disclose evidence of sea turtles that reached lengths of up to 12 feet. The largest of the known badlands fossils is the Titanotheres. This creature attained the size of a modern day rhinoceros. It is often found buried in groups. Consequently, such areas are referred to as titanotheres graveyards. Extinction befell the titanotheres approximately 32 million years ago. Perhaps the most famous animal of the Badlands fossil beds was the saber-toothed tiger. Its distinguishing characteristic was the pair of canine teeth set in its upper jaw. This impressive creature had the ability to open its mouth 90 degrees so that the teeth could be used to stab its
prey. Other interesting fossils of the Jackson County area include ancestors of the horse, pig, and camel.60

The wildlife of today is far different from those found in the fossil beds of the Oligocene. A unique group of mammals, reptiles, amphibians, and birds exist in the modern grass and badland environment. In fact, 34 different species of mammals, 7 species of reptiles and amphibians, and 120 species of birds have been documented.61

Among the mammals found in Jackson County are the pronghorn antelope, mule and whitetail deer, bison, black-tailed prairie dog, bobcat, badger, long-tailed weasel, and ground squirrel. Deer, locally the most abundant of the big game, play an important role in the hunting industry of the area. White tail outnumber mule deer almost two to one.62 They are most commonly found in small stands of timber along river bottoms and stream edges and on the bushy breaks and upland valleys of the county. Pronghorn antelope are another popular big game. They are most commonly found on the grasslands and brushy upland valleys.63

Bison are a popular animal with tourists. Most of the bison, however, are located west of Jackson County in the Badlands National Park.

Perhaps the most controversial animal of the grasslands is the black-tailed prairie dog. Loved by tourists for his lovable, humorous behavior, he can be a
menace to farmers and ranchers. The prairie dog lives in "towns" that consist of a community of underground tunnels. These towns are a threat to grazing livestock which may break a leg in the deep holes. In addition, prairie dogs feed upon grasses of the range which must also support cattle.

Another controversial animal is the coyote. Its proponents claim that the coyote does more good than harm to area ranchers by feeding on mice, gophers, and rabbits. Its opponents argue that it is responsible for the destruction of livestock. Each year a bounty is set on coyotes for the purpose of controlling their population.

Jackson County has the distinction of playing host to an extremely rare animal, the black-footed ferret. This creature is weasel-like in appearance and feeds primarily on prairie dogs and other rodents. Because there has not been an official sighting for quite some time, it is listed on the federal governments list of endangered species.

Another contingent of mammals exist on a small scale in Jackson County. These are the mammals of the wooded valleys and stream edges. While not high in prestige, these animals provide one-third of the hunter days each year. Included in this group are the
racoon, porcupine, squirrel, and skunk. Fur bearing animals found in the area are the muskrat, mink, and beaver.

It is a common misunderstanding that reptiles and amphibians exist in Jackson County to the point where they are the dominant type of animal. In fact they rank only third behind mammals and birds, in regard to numbers present. Among the more common amphibians are the western painted turtle, snapping turtle, spadefoot toad, swamp tree frog, and tiger salamanders. Logically, their habitat is the wetter reaches of the county such as streams, stock dams, and reservoirs.

Reptiles are found throughout the county. They provide a combination of fascination and fear for tourists and residents alike. Much of the fear, however, is not justified as there is only one poisonous reptile found in the area: the prairie rattlesnake. Its habitat consists mostly of the grassy pastures and draws of Jackson County. Rattlesnakes are rarely encountered in the Badlands due to the lack of shade found on the barren slopes. Exposed to direct sunlight, the rattler will die in 20 minutes. Prairie rattlesnakes are extremely poisonous and, while no deaths have been attributed to their bite in 50 years, it is still mandatory to seek medical attention if bitten.

There are numerous other snakes found in the
county, though none are poisonous. The bull snake is especially common and is often mistaken for a rattler. Other snakes include the hognosed, blue racer, and red-barred garter snake.67

Bird life is the most abundant type of wildlife living in Jackson County. As stated earlier, over 120 species make their home here.

Upland game birds and waterfowl provide most of the hunting activity. The sharp-tailed grouse is locally the most abundant upland game bird. The grouse prefers the grassland type environment that is so common throughout the county. Next in numbers is the ring-necked pheasant. Habitat for the pheasant is much more limited, however, as it needs access to dense cover and fields of grain. Other species of upland game include the Hungarian partridge, ruffed and sage grouse, and the Merriam's turkey. These species exist in smaller numbers due to poor habitat.

Waterfowl is found in Jackson County, though not in great numbers. Most exist on the reservoirs and stock dams found scattered throughout the area. Mallards, blue-winged teal, and Canadian Geese are the typical specie of this category.68

Upland game and waterfowl, however, make up only a small percentage of the total bird life in Jackson
County. The balance consists of the non-game birds that one encounters daily. Birds of the grasslands have distinct characteristics that separate them from birds found in other regions. Most are ground nesting and have a tendency to sing on the wing. Songs are comparatively loud as most species do not appear in flocks. The loud song is needed to carry the bird's voice over greater distances. Common birds of the grasslands include the western meadowlark, lark bunting, mourning dove, eastern and western kingbird, horned lark, common grackle, and cliff swallow. Among the raptors found in the area are the golden eagle, turkey vulture, marsh hawk, red-tailed hawk, ferruginous hawk, Swainson's hawk, and American kestrel. Golden eagles and turkey vultures are common in the Badlands while the marsh and red-tailed hawk exist primarily in the uplands.

The fishery of Jackson County is poor. Most species present are of the non-game variety and are therefore not sought by fishermen. The primary water resource of the county, the White River, is too turbid to provide good fish food production and is consequently a poor fish producer. Predominant species of the White River are minnows and suckers, though it is possible to catch channel catfish, black bullheads, and sunfish during the spring. The major fishing spots are reservoirs and stock dams found throughout the county. Some have been
stocked with various panfish, bass, and trout. Stocking has, for the most part, been done on a private basis by the landowner.

In general, wildlife in Jackson County is abundant and accessible. The rough terrain, lack of roads and sparse human population, make it easier for man and the animal kingdom to coexist. The future does not look to bring many changes to this situation. Jackson County should continue to provide visitors and residents alike the enjoyment of wildlife into the foreseeable future.

**Water**

Jackson County lies within the boundary of two major drainage basin. (Figure 20) The Bad River basin occupies the northern third of the county while the White River basin is found over the southern two-thirds.

Jackson County contributes 558 square miles of drainage to the Bad River basin comprising 17.7% of the total river basin. The Bad River proper does not occur within the bounds of Jackson County. The northern section of the county, therefore, is lacking a major river among its surface water features. The primary natural water features located here are the tributaries that feed the Bad River. They are Cottonwood, South Fork, White Water, Little Buffalo, Franklin, Willow,
Figure 20 - Major Drainage Basins of Western South Dakota

Indian, and Brave Bull Creeks. (Figure 21) These tributaries are distributed evenly throughout the northern tier of the county. They occur in the typical dendritic drainage pattern, exhibiting water flow from uplands into the dissected stream channels which, in turn, feed the Bad River. Most of these streams are north to northeasterly trending. (Figure 22)

Jackson County also contributes 1312 square miles of drainage to the White River basin, thereby supplying 15.9 percent of the total basin area.72 The major surface water feature of the southern two-thirds of the county is the White River. (Figure 23)

The White River experiences its greatest flow in the spring, following the snowmelt, and in early summer when the majority of annual rainfall is received. As the summer progresses, the flow steadily falls, reaching its low point in mid-September.73 Rarely does the White River (at the Kadoka gaging station) register no flow. In terms of percentages, the White flows at least 0.1 cubic foot per second 94 percent of the time.74

Other naturally occurring surface water features in the southern two-thirds (the White River basin) of the county are the feeder streams. The major streams include: Dry, Potato, Bear-in-the-Lodge, Eagle's Nest, Corn, Long, Pass, Red Stone, Red Water, Lost Dog, Craven, and Cottonwood
Figure 21 - South Fork, Bad River
Figure 22 - Major Water Features of Jackson County

Source: South Dakota Highway Map
Figure 23 - The White River
Creeks. They also occur in the characteristic dendritic drainage pattern. The creeks feeding the White from the north tend to drain less land than do those south of the River.

Water quality in these basins has been rated on three characteristics: 1) physical, 2) chemical, and 3) biological. Physical rating is based on temperature, color, turbidity, and odor of the water. Chemical quality is concerned with and evaluates the chemical ions present. The biological water quality is described in terms of bacterial count or oxygen demand of the water. In general, water quality fluctuates throughout the year. In periods of high flow, quality is better. When flow is low, the concentration of degrading materials increases. Water quality also varies from place to place within the basins. The White River, for example, experiences a drastic decrease in water quality from mid Shannon County, downstream, through the Kadoka area. This is due to the high amount of sedimentation that enters the river as it and its tributaries drain the Badlands.

The tributaries of both the Bad and White Rivers received ratings on the basis of their physical, chemical, and biological quality. They were found to contain adequate quality for three functions: wildlife propagation,
stock watering, and irrigation. The White River, due to its more consistent flow, was rated adequate for warm water semi-permanent fish life propagation, limited contact recreation, wildlife propagation, stock watering, and irrigation. The White River is, therefore, considered adequate for most uses. The physical properties of the White are most adversely affected by the high concentration of sediments. In fact, the Jackson County drainage system is rated as the highest in the state for the concentration of suspended sediments found in its water courses. (Figure 24) It is these suspended particles of fine silts and clays that give the White its milky color. Because many of these particles stay in suspension throughout the course of the river's flow, they are carried to its mouth at the Lake Francis Case impoundment of the Missouri River. This gradually reduces the storage capacity of the reservoir. Sedimentation also has harmful effects upon the irrigation and municipal water supplies of Jackson County. Irrigators face potential equipment breakdown while municipalities endure expensive treatment processes when sediment concentrations are particularly high.

As there are no naturally occurring lakes in Jackson County, the remaining water features are stock dams and reservoirs. (Figures 25 & 26) The stock dams have
1 - 500 to 2,000
2 - 2,001 to 5,000
3 - 5,001 to 15,000
4 - 15,001 to 30,000

Concentrations in Milligrams Per Litre

Figure 24 - Suspended Sediment in Major Streams in South Dakota

Figure 25 - Stock Dam

Figure 26 - Kadoka Lake (Reservoir)
been, for the most part, privately built by the landowner with financial help from the federal government. They are built by constructing a dam across a small stream channel that drains the uplands. The dams fill in the spring as a result of the snowmelt and early summer rainshowers. They are used, primarily, for stock watering and, in some cases, as holding ponds for irrigation water.

The northern section of the county has more dams per unit of area than does the land south of the White River. The average size of the stock ponds is 1.8 acres with a storage capacity of 8.75 acre feet. These values, of course, vary from spring to fall as water levels fluctuate.

Reservoirs are stock ponds on a larger scale. Most of these were constructed in the late 1930's by the Works Progress Administration. The only exception was the Freeman Dam, which was built by the Department of Game, Fish, and Parks in the mid 1950's. All reservoirs in Jackson County are located north of the White River. A list of the reservoirs in the county and their location is found in Table 1. Both stock ponds and reservoirs experience sedimentation problems as the surrounding countryside is eroded.

Ground water in the Jackson County area is both poor in quality and small in quantity. The Pierre Shale which underlies the region is not a good water producer.
### Table 1

**Public Lakes in Jackson County**

<table>
<thead>
<tr>
<th>Name of Lake</th>
<th>Approx. Surface Acres</th>
<th>Approx. Acre-Feet</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrews Lake</td>
<td>10</td>
<td>80</td>
<td>A</td>
</tr>
<tr>
<td>Belvidere R.R.</td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Bachin Lake</td>
<td>40</td>
<td>400</td>
<td>A</td>
</tr>
<tr>
<td>Kadoka Lake</td>
<td>150</td>
<td>1,200</td>
<td>A</td>
</tr>
<tr>
<td>Freeman Dam</td>
<td>50</td>
<td>360</td>
<td>A</td>
</tr>
</tbody>
</table>

Source: S.D. Department of Natural Resources, *Bad River Basin*, p. 147.
The northern tier of Jackson County is particularly short of ground water supplies. No shallow aquifers exist within the Bad River drainage basin of the county. Most of the water obtained for this region is through deep aquifers. The Fall River - Dakota Sandstone formation yields a good portion of the water supply.

The area south of the White River is somewhat more fortunate in that it possesses several more formations which yield water. Some water is available in the alluvium and terrace deposits that form the flat lands adjacent to streams, and rivers of the county. These are generally water bearing and yield adequate water supplies for domestic and livestock needs. In some locales there is enough to develop irrigation systems. 83

Another source of ground water is the Oglalla Group. The Oglalla contains two units known as the Ash Hollow Formation (which is not important in terms of water) and the Valentine Formation. The Valentine is generally water bearing and produces enough water for livestock and domestic needs and, in some cases, for irrigation. 84

The Arikaree Group covers much of the southern half of the White River basin. Like the Valentine, it is commonly used as a source of domestic and livestock watering. 85

The White River group of sediments overlies several
artesian aquifers that produce water. They are the Dakota-Sandstone, Fall River-Lakota, Minnelusa, and the Madison Group. The most important of these is the Dakota-Sandstone. In the northern part of the basin, it lies 1800 to 2000 feet below the surface. As one moves south, however, it appears nearer the surface. The Dakota yields enough water for domestic, livestock, and municipal supplies. The others exhibit problems in development due to great depths, high temperatures, poor water quality, and variable thickness. 86

In general, ground water is a problem in Jackson County. The northern sections are especially short of this valuable resource. They are often forced to tap reservoirs of poorer quality in order to have any water at all. Much of the ground water of the area is highly mineralized. 87 The southern sections are more fortunate as they are able to find good wells with good quality water. The badlands sections occasionally harbor good wells. When such a well is located, it is not uncommon for the landowner to pump water from this well to other sections of his land. Until such time that man can learn to tap, treat, and wisely use the less desirable ground water found throughout Jackson County, this valuable resource will continue to be in short supply. 88
Endnotes


5 Clark, The Badlands, p. 43.

6 Kirk, Badlands, p. 23.

7 Clark, The Badlands, p. 46.

8 Ibid., p. 47.

9 Ibid., p. 48.

10 Ibid., pp. 48-50.

11 O’Harra, Badlands Formations, p. 61.

12 Clark, The Badlands, p. 52.

13 O’Harra, Badland Formations, pp. 63-64.

14 Clark, The Badlands, p. 52.

15 Edward Patrick Hogan, Geography of South Dakota, South Dakota State University, Brookings, South Dakota, ( Mimeographed).


19 Ibid., p. 247.

20 Ibid., map appendix.
21 Ibid., p. 270.


26 U. S. Department of Commerce, Cottonwood.

27 Walter Spuhler, W.F. Lytle, and Dennis Moe, Climate of South Dakota, South Dakota State University Agricultural Experiment Station Bulletin No. 582, (Brookings, South Dakota: Agricultural Experiment Station, 1971), p. 3.


33 Hodge, *Climates*, p. 893.


35 Hodge, *Climates*, p. 893.


37 U. S. Department of Commerce, *Cottonwood*.


39 Ibid., pp. 9 - 12.


41 Westin and Malo, *Soils*, p. 11.

42 Ibid., p. 16.


45 Interview with Stan Uhlir, Kadoka, South Dakota, 5 August 1981.


49 Weaver, *Prairie*, pp. 9 - 10.

51 Clark, Badlands, p. 129.
52 Johnson and Nichols, Plants, pp. 4-5.
55 South Dakota Geological Survey, Geography, p. 86.
56 S.D. Department of Natural Resources, White River Basin, p. 64.
57 Ibid., pp. 63-64.
58 Visher, Biology, pp. 77-78.
59 S.D. Department of Natural Resources, White River Basin, p. 64.
61 Ibid., pp. 52-58.
62 S.D. Department of Natural Resources, White River Basin, p. 74.
63 S.D. Department of Natural Resources, Bad River Basin, p. 50.
65 S.D. Department of Natural Resources, White River Basin, p. 78.
67 Ibid., pp. 21-28.

68 S.D. Department of Natural Resources, White River Basin, pp. 75-77.

69 Visher, Biology, pp. 68-72.


71 S.D. Department of Natural Resources, Bad River Basin, p. 4.

72 S.D. Department of Natural Resources, White River Basin, p. 5.

73 Ibid., p. 100.

74 Ibid., p. 122.

75 S.D. Department of Natural Resource, Bad River Basin, p. 92.


77 S.D. Department of Natural Resources, White River Basin, pp. 141-142.

78 South Dakota State Planning Bureau, South Dakota Facts, p. 18.


80 Interview with Stan Uhlir, Kadoka, South Dakota, 5 August 1981.

81 S.D. Department of Natural Resources, Bad River Basin, pp. 85-86.

82 Ibid., pp. 87-88.

83 S.D. Department of Natural Resources, White River Basin, p. 131.

84 Ibid., p. 152.
85 Ibid., p. 132.
86 Ibid., p. 135.
87 Ibid., p. 96.
88 Ibid., p. 133.
CHAPTER III

HUMAN OCCUPANCE

Introduction

Over the years, Jackson County has been witness to various groups of people, each leaving their mark on the area. This succession of people and events represent an essential link between the present and the county's history.

Indian Occupance

As far as present scientists are able to detect, there has been human occupancy in the west river area of South Dakota for nearly 7000 years. Inhabitants at approximately 1000 BC were nomadic Indian tribes of the northern plains. Dominant among those tribes were the Caddoan, Athabascan, Shoshonean, and Kiowa.

Beginning roughly 1250 AD, a new group known as Mandans, began to migrate into west river South Dakota. The Mandans were an agricultural society. As agriculturists, they adopted more permanent home sites than did the nomadic tribes. Movements of the tribe, were, for the most part, restricted to the immediate area along the Missouri River. Because of increasing pressure from
people to the east and south, the Mandans migrated to North Dakota.

Another group of Indians which used the Missouri as a base was the Arikara. Descendants of the Ree from Nebraska, the Arikara gradually ventured into South Dakota. The Arikara were also agriculturalists. Women worked the field crops which included corn, pumpkin, beans, and various varieties of squash. Game was hunted only as a supplement. The Arikara were highly self-sufficient and possessed skills such as basketry and the dressing and decorating of animal skins. The Arikara's journeys into the Jackson County area, however, were limited to periodic trading fairs with the Kiowa, Comanche, and Pawnee held at the foot of the Black Hills.¹

The most important Indian group in the history of the area was the Teton Dakota. Originally from the Ohio Valley region, the Tetons were members of the "Seven Council Fires" which comprised the Dakota nation. Their migration route took them from the Ohio Valley to the Mille Lacs area in Minnesota. Upon being driven out of Minnesota by British-backed Chippewas and Crees, the Teton journeyed into the Missouri River area of South Dakota in 1760. Here, they divided into 7 major tribes: the Brules, Sans Arc, Miniconjou, Two Kettles, Sihasapa, Oglala, and Hunkpapa.² The first of these groups to cross
the Missouri River was the Oglala, in 1775. It is theorized that they made their crossing at Big Bend on their way to the Black Hills. The Oglala quickly spread into the Bad River country of western South Dakota. The Brule soon followed and settled in the territory south of the White River.³ (Figure 27)

Through the process of moving from a woodland environment to that of a plain, the Teton Dakota's culture changed. They became more nomadic as they followed buffalo herds across the prairie. Initially, they had to travel light as belongings had to be transported without the aid of horses. As they reached the western sections of South Dakota, however, the Dakota came in contact with the tribes of the southwest who had horses to trade. This greatly increased the mobility of the Teton and made them a more powerful force militarily.

The Teton prospered on their new homeland. Some estimates showed their population increasing 4 fold from 1800 to 1825. At first, they benefitted from the white traders in the area by gaining metal products, guns, and horses. In addition, they were in a position of power along the Missouri River from which they could control the fur trade.⁴ The Teton's enviable position was not to last, however, as persistent whites excitedly pushed westward across the continent.
Figure 27 - Historical Map of South Dakota
White Exploration

The first Europeans to reach the Jackson County area were Frenchmen. A Frenchman by the name of Sieur de La Verendrye explored the Missouri River region of North Dakota in 1733. Unable to lead further expeditions, he sent his two sons into the South Dakota section of the Missouri five years later. Their wanderings led them to the west river country via Fort Pierre and the Bad River.  

Following these explorations, French fur traders moved into the region. It was here that they encountered the "les mauvaises terres a' traverser."  

The year 1803 saw the transfer of the French claimed land holdings to the United States through the Louisiana Purchase. The new claimants organized many exploratory missions into the South Dakota area. Among those who ventured west were Meriwether Lewis and William Clark, John James Audobon, George Catlin, and John C. Fremont. Most confined their travels to eastern South Dakota and the Missouri River.

The first organized party to travel through Jackson County was led by Jedediah Smith in the fall of 1823. Smith and his men, on a mission to develop fur trade in the area, followed the White River from Fort Kiowa (Chamberlain) to the Wind River country of Wyoming. Upon encountering the Badlands and the Jackson County
area, Smith recorded but a few lines in his journal. He described the strange shapes of the Badlands and the milky white color of the White River.  

**Indian-White Relations**

At first, the Dakota prospered from the explorers travelling through their land. Soon, however, they became alarmed at the white man's numbers. The Oglala and Brule were especially affected as they had settled along the routes of westward expansion. Fearing bloodshed between the Indians and the whites, officials of the U.S. Government attempted to placate the Indians. Consequently, in 1851, an agreement was reached that allowed safe passage of whites through Indian country.  

This treaty was only partially successful, however, as incidents between the Dakota and westward moving Americans, continued. A major conflict developed when the Oglala leader, Red Cloud, claimed that whites were crossing his land without permission. Battles between the Indians and the Americans ensued until an agreement was reached in 1868. Under terms of the treaty, the Dakota were given large tracts of land that included the country west of the Missouri River in what was designated Dakota Territory. Various Indian agencies were set up in the area through which the United States decided to "civilize" the Indian. Civilization was to come to the Dakota
through the practice of agriculture. This drastic change in culture was to occur over a period of 4 short years.

The original reservation boundaries did not last long, however, as Americans grew increasingly desirous of the Black Hills region. Following an exploratory expedition by George Custer in 1874 and the discovery of gold that same year, whites rushed to the Black Hills despite the objections of both the Dakota and the U.S. Army. The government, seeing the value of the Black Hills, then tried to acquire the region from the Dakota. When this failed, the army pulled out of the west river area and advised all whites to arm themselves against the Indians.

The vascillating policies of the federal government towards the Dakota took another turn in the late 1870's when it was decided to attempt to subjugate them by military force. The fragmented forces of the Indian nations could not hold out against the force of the U.S. Army and were eventually retired to reservations. These reservations were continually reduced in size as whites settled more and more of the territory. Eventually the Teton found themselves on the reservation system that exists today. The Oglala moved to the Pine Ridge Reservation which comprises present day Shannon County and the southern half of Jackson County. The Brule moved to the Rosebud Agency located in Todd County. (Figure 28)
Figure 28 - Indian Land Cessions in South Dakota

Settlement

The first white settlers in the Jackson County area were probably cattle ranchers who came during the Black Hills gold rush of the 1870's. These people operated by buying cheap livestock in Texas and driving them to graze in the northern plains. They soon discovered that the short and mid grasses of western South Dakota could support their cattle the year round. This prompted a few of these ranchers to settle in the Jackson County area. Many big cattle outfits simply let their stock run on the open range though the land was, in reality, owned by the federal government. Because the government neglected to collect rent payments, this was called the "free range." 

The Homestead Act of 1862, which accomplished a great deal in settling the new frontier, failed to have much of an effect on the settling of Jackson County and vicinity. People still harbored fear of the Indians. There was also a series of droughts and grasshopper plagues that had given the area a bad reputation.

The weather changed for the better, however, and spawned interest in the country. In 1883, Jackson County was created by the Legislature of the Dakota Territory. It's bounds on the north, west, and east are roughly the same as the boundaries of today. The southern boundary
was designated as the White River. The land south of the White, designated as Washabaugh County, was strictly Indian territory.

From the time of its creation, the county underwent a series of changes in legal status. The period of 1883 to 1897 saw Jackson County attached to Pennington and Stanley Counties at different times for judicial and tax purposes. In 1897, Jackson County disappeared from the map altogether as it was absorbed by Stanley County. It remained off state maps until 1914. This period of obscurity, however, brought the greatest changes to the area.

After the turn of the century, the railroads started moving west. With the railroad came homesteaders. Encouraged by news of a series of wet years the region had experienced, these adventurers started to settle in Jackson County. The years 1906 and 1907 saw the formation of 4 towns along the rail line to compliment Interior, which had been founded in 1891. These 4 towns were Kadoka, Stamford, Belvidere, and Weta. Cottonwood, in the northwestern sector of the county, was also established in 1907.14

The influx of homesteaders brought about an end to the free range of the past. Fences went up and the earth was tilled as farmers set up their businesses. The look
of the land changed drastically during this period. What was once a land of open spaces and cattle became a diversified farming area in which livestock and crops occurred side by side.

These homesteaders came from all sections of the country. Predominant, however, were those who migrated north from the plains regions of the southern states such as Kansas, Nebraska, and Texas. These people were used to life on the prairie and were well adapted to the ranching and farming business.¹⁵

In 1914, Jackson County reappeared on the map. The voters of Stanley County decided to create a new Jackson County along the bounds of the old one. Several towns competed for the right to host the county seat. Kadoka won the contest by gathering 410 of the 610 votes cast.

The year 1918 saw change take place on the Pine Ridge reservation in Washabaugh County. It was this year that reservation lands were opened to leasing by whites. Much of the county was rented by cattlemen. The depression soon followed, however, which put many of these cattle outfits out of business. The Indians also had little money as they had sold their livestock to whites upon the leasing of their land. As a result, in 1922, the Bureau of Indian Affairs started selling land to whites.
The 1920's was a good period for farmers in the area as grain farming flourished. Towns such as Long Valley and Wanblee sprang up during this decade. The drought of the 1930's, however, brought a marked change to this picture of prosperity. Again, many farmers were forced out of business due to the lack of moisture. Those more financially solvent bought up large tracts of land while it was cheap. Most were purchased by large cattle outfits and wheat farmers. The 40's, 50's and 60's brought technological advances to the residents of Jackson County. Agricultural practices grew more efficient. The trend toward larger farms, started in the 30's, however, has continued to the present day.

The Jackson County of 1981 is different in many ways from its ancestor. The primary difference has been the merger of Jackson and Washabaugh Counties. Prior to the merger, Washabaugh, home of the Pine Ridge Reservation, had been one of only three unorganized counties in the state. In 1976, a question was put before the voters which asked if the two counties should merge. The response was positive and in 1978 new county officials were voted in. Kadoka remained the county seat and continues today, to house records for both areas.
Endnotes


3 Schell, History, p. 20.

4 Ibid., p. 23.

5 Ibid., pp. 27–29.

6 Ibid., pp. 61–64.


8 Jennewein, Panorama, p. 11.

9 Ibid., pp. 15–20.

10 Hauk, Landscape, pp. 335–337.

11 Ibid., p. 341.

12 Jennewein, Panorama, p. 91


14 Jennewein, Panorama, p. 97.

15 Jackson, p. 5.

16 Interview with Phil Hogen, Kadoka, South Dakota, 6 August 1981.
CHAPTER IV

CULTURAL ENVIRONMENT

Introduction

The cultural environment is a reflection of how man uses his physical surroundings while aiding in the formation, growth, and maintenance of his lifestyle. Because cultures vary within the human community, the manner in which a certain people exploits, utilizes, or ignores the natural landscape will also vary. This section, then, is a discussion of the relationship the residents of Jackson County have developed with their physical environment. Aspects of this relationship to be included herein are agriculture, mining, industry, recreation, power and utilities, transportation, and cities and towns.

Agriculture

For a good portion of the residents of Jackson County, agriculture is synonymous with life. For throughout history, the two have been inextricably intertwined. The rugged terrain and unforgiving climate have dictated the lifestyle of squatters, homesteaders, and modern farmers alike. This lifestyle has always been basically the same. It has always been based on the land. In
Jackson County, the land overpowers everything else. Man cannot attempt to "whip" nature out here. He must learn to live with it; to coexist. This process started in the early 1900's when homesteaders quickly found out it was impossible to survive on 160 acre plots of land. It continued when cattle ranchers discovered that total dependence on a single commodity would leave them frustrated and bankrupt. Finally, it has evolved into the sophisticated science of coexistence that is practiced by the diversified farmers of today. Agriculture is life to the residents of Jackson County. Today, as in the past, it provides a rewarding living.

Few other counties in the nation rely so completely on agriculture as does Jackson County. This is dramatically reflected by examining the breakdown of land use within the county. In 1974, the Census of Agriculture reported that, in the area north of the White River, 96% of the land was farmland. In that same year, the land south of the White (formerly Washabaugh County) was completely devoted to agriculture. While this statistic is, of course, distorted, it reflects the incredible dominance of the farm industry on land utilization in the county. Since 1974, little has changed to affect these figures. Urban sprawl and the loss of prime farmland are not problems faced by Jackson County residents.
One of the most widely talked about trends to occur in modern farming has been the disappearance of the small farm in the wake of larger operations. Jackson County has also felt the effects of this nationwide trend. The graphs in Figures 29 and 30 show the number of farm units and the relative farm size of the county's operations as they have developed from 1920-1969. This leaning toward fewer farm units and larger acreages has eased somewhat in the past few years, though it still does continue.

Despite the fact that agriculture is practiced on a larger scale than ever before, the family unit is still the prime force behind the industry in Jackson County. Family owned farms dominate the statistics of land ownership. Few corporate operations exist in the area. Because land holdings are so extensive, families have been, in nearly 50% of the cases, forced to hire help to get the necessary work done. On those farms an average of over 2 helpers are put on the payroll. ²

As Figures 31 and 32 show, the majority of the farmland in the county is comprised of pasture and range. Many factors influence this land use pattern. The two most important are the terrain and the climate. These are the limiting factors on Jackson County agriculture. Since a great percentage of the area's land is in slope,
Figure 29 - Number of Farms, Jackson County, 1930-1970

Figure 30 - Average Farm Size, Jackson County, 1925-1970

507,156 Total Acres

- 75.6% Cropland
- 23.3% Pasture & Range
- 1.1% Other

Figure 31 - Land Use North of the White River, Jackson County, 1978

679,040 Total Acres

- 85.9% Pasture & Range
- 11.7% Cropland
- 2.4% Other

Figure 32 - Land Use South of the White River, Jackson County, 1978

tillage is difficult. The characteristic dry climate restricts crop types that may be grown. Consequently, it is not an economically sound practice to rely totally on crop raising in this region.

While the terrain and climate limit crop production, they are not insurmountable obstacles to cattle raising. The rough and broken topography supports plant life sufficiently nutritious and abundant to allow grazing. Thus, where the plow cannot go, go the cattle. (Figure 33)

From the beginning, the cattle industry was the dominant agricultural practice in Jackson County. Today, it is the chief source of income for area ranchers. In the year 1978 alone, the sale of cattle and calves in Jackson County totaled over 29 million dollars. Every farmer or rancher in the area raises livestock to some extent. Table 2 gives an inventory of the county's livestock. These figures reflect the prevalence of cattle.

Hogs and pigs are raised only on a limited basis. Sheep are also found in Jackson County, though in small numbers. Poultry, while common on many of the ranches, is consumed by the family rather than sold at the market. Dairy products, also, are rarely sold. Only three farms reported income from dairy sales in 1978.

Although the cattle industry in Jackson County has always been the leading agricultural endeavor, farmers
Figure 33 - Cattle on a Badland's Pasture
Table 2

Livestock Inventory of Jackson County, 1978

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle and calves</td>
<td>46,999</td>
</tr>
<tr>
<td>Hogs and Pigs</td>
<td>2,159</td>
</tr>
<tr>
<td>Poultry (chickens only)</td>
<td>1,897+</td>
</tr>
<tr>
<td>Sheep and Lambs</td>
<td>630+</td>
</tr>
</tbody>
</table>

+ Some figures were withheld to secure the privacy of livestock owners. The figures above represent the portion of the total that was disclosed.

of the area realized that to rely totally on one product was not wise. Those who could make it by raising livestock exclusively became the exception rather than the rule. Consequently, most farmers in the county now raise wheat or forage crops in conjunction with livestock.

Winter wheat is the dominant crop on the diversified farms of Jackson County. It is seeded in the fall of the year on land that was in summer fallow. Through the winter, the seeds lay dormant until spring when they resume growth. The amount of wheat planted varies from year to year, based on the market. The southern sections of the county near Long Valley are especially successful in raising this crop. Yields county wide range from 27 to 30 bushels per acre.

Another important segment of diversified agriculture is the growing of feed for livestock. In wet years, the range stays lush and green, allowing cattle to grow fat on the grasses of the county. In the more prevalent drier periods, however, there is a great need to supply them with supplemental feed for the winter. The balance of the crops grown in Jackson County are raised for such a purpose. The most widely harvested forage crops are alfalfa, tame hay, and forage sorghum. (Figure 34) Hay, in fact, is the second leading crop of the county. On the average, 1 acre of land will yield slightly over 1 ton of
Figure 34 - Swathing Alfalfa
hay. Crop totals for the county are found in Table 3.

Irrigation is not a significant activity in Jackson County. There is too little water of good quality available to efficiently utilize an irrigation system. The 1980 Agricultural Stabilization and Conservation Service Farm Acreage Report shows that only 3000 acres were irrigated in that year. The White River area is among the few sections of the county where sufficient water exists to make irrigation feasible. Most landowners with property on the White use a pump system to take water from the river to their fields. The irrigation systems that do operate are almost exclusively used on alfalfa.

Not all water systems in Jackson County are of the pump variety. The majority of irrigation done in the uplands is accomplished through other methods. One of the most successful alternatives to pumping is the water-spraying system. In this method, the landowner builds a dam on a dry draw to catch rainfall and form a small reservoir. From the reservoir, any number of designs may be implemented. A popular system is that in which a series of diversion ditches are constructed leading from the reservoir to the fields. The water from the ditches spreads out over the field providing valuable moisture.

The Jackson County farmer-rancher has learned to cooperate with mother nature quite well. He has learned
Table 3
Jackson County Cropland Planted and Harvested

<table>
<thead>
<tr>
<th>Crop type</th>
<th>Acres Planted, 1980</th>
<th>Harvested, 1978</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>68,895.6</td>
<td>1,768,788 bushels</td>
</tr>
<tr>
<td>Hay</td>
<td>57,466.8</td>
<td>60,856 dry tons</td>
</tr>
<tr>
<td>Oats</td>
<td>8,773.5</td>
<td>72,782 bushels</td>
</tr>
<tr>
<td>Barley</td>
<td>3,139.2</td>
<td>39,225 bushels</td>
</tr>
<tr>
<td>Sorghum</td>
<td>4,166.8</td>
<td>W</td>
</tr>
<tr>
<td>Corn</td>
<td>714.8</td>
<td>W</td>
</tr>
</tbody>
</table>

W - Figures withheld

to take advantage of any help she has to offer. Still, there are other problems that require his constant attention.

Wind and water erosion are problems throughout the area. As was mentioned in the section on soils, the main deterrent to erosion in pasture land is good range management. In recent years, minimum tillage farming has become more popular as well. With the increasing cost of fuel, this form of farming can save energy as well as soil.

Weeds and pests also plague farmers efforts to make a living off the land. The main nemesis of the crop raiser is field bindweed or "creeping jenny." Field bindweed, a perennial, requires constant attention to keep it under control. Pests include rodents, primarily the prairie dog, and the coyote. Both are controlled to some extent through poisoning.

Without a doubt, however, the most serious problem the modern Jackson County agriculturalist faces is the increasing cost of farming. Fuel, pesticides, feed, and herbicides are all increasing in price at a rate beyond the capability of the landowner to withstand. This, coupled with depressed market conditions, make farming continually more challenging. This means the farmer will have to become even more efficient. With the
knowledge gained through generations of experience, the Jackson County rancher will undoubtedly meet the challenge of the future and continue to make agriculture a successful, gratifying way of life.

**Mining**

Mining has always been important to the west river area of South Dakota. It was the search for gold that initially brought fortune seekers to the Black Hills. Unfortunately, the Black Hills has turned out to be the only major source of minerals in the region.

The mineral resources of Jackson County are, however, extremely limited. Metallic minerals do not exist in sufficient quantities to make their extraction an economic success. Sand and gravel is the only important mining activity presently taking place within the county.

Sand and gravel extraction is widespread throughout South Dakota. Virtually every county mines and uses these minerals to some extent. Consequently, sand and gravel are, by volume, the state's leading mineral. 8

In Jackson County, the sand and gravel mining activity is carried on by the Jackson County Highway Department. In the 1978-9 Mineral Yearbook, the highway department was listed as the only active mining operation in the area. Sand and gravel achieve their highest use
in the building and maintenance of roads. Of the two, gravel is extracted in the greater amount. 1978 figures for the amount of sand and gravel mined were withheld, though through some estimation based on the value of the minerals, it can be safely said that over 1000 thousand short tons were removed by the county.9

**Industrial and Commercial Development**

The industry and commerce of Jackson County are reflective of historical development of the area. When the first whites utilized Jackson County land for livestock grazing, they could not have known that their occupation would continue through the years as the primary industrial activity. Though it has undergone some change, the economy of this section of western South Dakota has historically relied on agriculture as its economic base. Agriculture, discussed in detail in a preceding section, will, in all likelihood, continue to provide the base upon which the county's economy is built.

Second to agriculture as an economic activity is tourism. Jackson County is fortunate to lie in a region of incredible scenic beauty. This scenic beauty attracts tourists from all over the world each year.10

Interstate 90, a major carrier of tourists across the state, runs across the breadth of Jackson County. The
cities of Belvidere and Kadoka have the most to gain from this situation as they lie in close proximity to the Interstate and have accommodations available for the visitor. Most tourists that pass through Jackson County are on their way either to or from the Black Hills. As a part of their travel, a good portion of them stop in the Badlands National Park. (Figure 35) In fact, tourists have rated the Badlands third, behind Mt. Rushmore and the Black Hills, as the highlight of their visit to South Dakota. Kadoka takes advantage of this circumstance by prominently advertising its location near the Badlands.

As Figure 36 shows, the majority of visitors come from South Dakota's neighboring states. Travellers from these and other regions contribute to the economy of Jackson County. The sales receipts from 1975, in Figure 37, show an approximate breakdown of income generated by these seasonal visitors. Lodging and restaurant meals, which constitute the majority of tourist-based income, is handled primarily by Kadoka which according to the Kadoka Community Betterment Association, boasts 750 overnight accommodations and 4 restaurants.

While tourism makes up the second most important segment of Jackson County's economy, it is nevertheless seasonal. The summer months of June, July, and August are the principal times of travel for the tourist.
Figure 35 - Badlands National Park Near Cedar Pass
Figure 36

Percent of Out-of-State Visitors to South Dakota
Summer 1975

Figure 37 - Sales Receipts From Out-of-State Travellers, Summer 1975

Source: Montgomery and Garry, Travellers, p. 32.
Consequently, tourism is viewed as only a supportive industry for the agricultural base of the area. Another important part of the local economy is the commercial firms that provide goods and services for the residents of the county. Table 4 lists the various businesses of selected Jackson County towns. An examination of this list indicates the agricultural emphasis toward which these operations are geared. Kadoka provides the most diverse combination of establishments and is, therefore, the leading commercial center in the county. According to Loren G. Hill, in his thesis, "A Trade Area Study of Kadoka, South Dakota," the town has established a significant trade area in Jackson County. After compiling results through a questionnaire, Hill classified the various goods and services found in the area. These he rated as either strong or weak in their relation to Kadoka's drawing power throughout the region. Rated as strong areas were lumber, newspaper, hardware, plumbing and heating supply, paint and glass, bulk oil, grain elevator, excavating contractor, veterinarian, and the restaurant trade. Among the weak drawing establishments were adult clothes, barber, mortuary, drug store, variety store, furniture, and livestock trucking. These weak areas are not, however, an indication that the residents of the county must do without those services. Many people
**Table 4**

**Representative List of Selected Business and Industry in Jackson County**

### Belvidere
- Apco Gas Station
- BankWest
- Barber Transportation Co.
- Belvidere Bar
- Belvidere Store
- Double H Cafe & Lounge
- H & H Cafe
- Hubbard Farm & Ranch Center
- I-90 Midway Murdo-Kadoka KOA
- Hullinger Oil
- Nemec Texaco
- Osborn Repair Service

### Interior
- Badlands Big D Station
- Badlands Guest Ranch
- Badlands National Monument
- Badlands Standard Service
- Circle 10 Campground
- Cedar Pass Lodge
- Interior Campground
- Interior Market
- KOA Badlands Kampground
- Meadow-Lark Tree Drive-Inn
- Prairie Homestead

### Kadoka
- A-1 Motel
- BJ Arcade
- Badlands Insurance Agency
- Badlands Beauty Salon
- Badlands Bull Test
- Badlands Court
- Badlands State Bank (BankWest)
- Club 27
- Crescent Court
- Cucklerburr Motel
- Discounty Fuels Inc.
- Equity Union Bulk Service & Exchange
- Gateway Restaurant
- Grable Ditching
- H & H El Centro Motel & Cafe
- Helen's Beauty Salon
- Hilltop Motel
- Hogen's Hardware
- Hubbard Milling Co.
- Husky Car Truck Stop
- Jack & Jill
- Kadoka Press
- Kadoka Standard Service
- Kadoka Sundries
- Kadoka Telephone Company
- Kadoka Veterinary Clinic
- Kirk's Campground
- Lakota Chrysler-Dodge
- Leewood Motel
- Lyle's Skelly Service & Restaurant
- The Mercantile
- Mor Mans Feeds
- Nibble Nook Drive In
- Oien Implement
- Old West I-90 Mobile
- People's Market
- Seidler Trucking
- Silver Court
- Slim's Custom Leather
- Spears Ditching
- Stable
- Stout's Steel & Salvage
Kadoka continued

<table>
<thead>
<tr>
<th>Business Name</th>
<th>Business Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe's Repair</td>
<td>Sundowner Motor Inn</td>
</tr>
<tr>
<td>Kadoka Bar</td>
<td>Vice Oil Company</td>
</tr>
<tr>
<td>Kadoka Junction Cafe</td>
<td>Wagon Wheel Court</td>
</tr>
<tr>
<td>Kadoka Kampground</td>
<td>West Motel</td>
</tr>
<tr>
<td>Kadoka Locker Plant</td>
<td>West River Excavation Shop</td>
</tr>
<tr>
<td>Kadoka Lumber &amp; Supply</td>
<td>Woodall Funeral Home</td>
</tr>
</tbody>
</table>

in western South Dakota commonly travel distances of 50 to 75 miles to do their shopping. Popular destinations of Jackson County consumers are Phillip, Martin, Rapid City and Wall. The combination of these local and regional establishments provide the residents of Jackson County with the necessary goods and services for the maintenance of their lifestyle.

Manufacturing is another constituent of an area's economic structure. In Jackson County, however, it is a minor one. The great majority of the labor force is involved in agriculture and, therefore, is not available to work in a manufacturing type firm. The South Dakota Manufacturers and Processors Directory of 1979 listed only 2 manufacturing establishments in Jackson County. These were the Kadoka Press and Wambli Archery. The Kadoka Press, a weekly newspaper, is based in Kadoka and serves the surrounding county area. Wambli Archery produces arrows for sporting goods and is situated in Wamblee. Neither employs a large labor force, as the Kadoka Press is classified as a type A establishment, employing from 0-25 workers, and Wambli Archery is classified as type B, employing from 25-99 workers.

In general, the economy of Jackson County is reflective of the national situation. Agriculture,
like many other economic areas, is subject to nationally influenced upward and downward cycles. When cattle prices are high, the economy of the county is good. By the same token, when cattle prices are low, the entire region suffers. Tourism is also greatly affected by national trends. The years 1979 and 1980 were poor ones for the tourist trade in Kadoka. This was a reflection of the high cost and shortage of gasoline. Travellers felt they could no longer afford the long vacations they had enjoyed in the past. This, coupled with the fear of not being able to find fuel, kept travellers off the roads. By 1981, however, gasoline paranoia disappeared and Kadoka's tourist-based economy has shown it. Occupancy rates for the local hotels and motels have been extremely high.\footnote{15 While the saying, "as goes Kadoka, so goes the nation" may not be true, the reverse has a great deal of merit in Jackson County.}

Recreation

When evaluating the desirability of a location, recreation is an important ingredient of the cultural environment. As Americans acquire more and more leisure time, the importance of recreational opportunities increases. While the leisure time of the residents of Jackson County is undoubtedly less than average, their
desire to take time to relax is not.

Recreation can take many forms. One type is that which is dependent on developed areas designed especially for the purpose of enjoyment and relaxation. Unfortunately, Jackson County is somewhat lacking in this area. The main development is Badlands National Park at Cedar Pass. (Figure 35) Among the facilities located here are a restaurant, gift shop, nature center, and campground. Popular forms of recreation partaken of in the park include driving and sightseeing, nature study, camping, picnicking, horseback riding, and hiking. The Badlands provides an ideal place for families to learn about the earth's history and observe nature in a prairie environment.16

A second federally operated recreation area is the Buffalo Gap National Grassland. Recreational opportunities in the grassland, however, are limited. Of the 115,490 acres that comprise the Jackson County section of the grassland, none have been developed for organized activity. It does, nevertheless, provide an opportunity for the plant hobbyist to view and identify the native vegetation of a Great Plains grassland.17

Water-based leisure activities are also limited in the county area. Since there are no naturally occurring lakes, this type of recreation is found only on artificially created reservoirs. There are 4 water
access points in Jackson County located at Andrews Lake, Bachin Lake, Kadoka Lake, and Freeman Dam. Camping facilities are more readily available as there are 6 licensed campgrounds within the county boundaries. Other recreation facilities include a roadside park, trap range, nine-hole golf course, the Kadoka City Park, and 2 lighted softball fields.

Outdoor leisure time is often spent hunting or fishing depending on the time of year. Jackson County provides an adequate supply of game for the hunter. Most popular are the deer, grouse, and pheasant. Pronghorn antelope can also be found in the county along with other small game and fur-bearing animals. Since there are no game production areas in the county, permission must be obtained before hunting on private land.

Fishing opportunities in Jackson County are somewhat limited. The primary source of this activity is in reservoirs and private stock dams. Many are stocked with panfish, trout or bass. As with hunting, fishing on these stock dams is done only with permission of the landowner.

Much of the recreational activity in Jackson County is of the type that does not require special facilities. Popular activities are driving and sightseeing, attending high school sporting events, indoor sports, picnicking, horseback riding, hiking and bicycling.
As is true of any place, the recreational opportunities of Jackson County are limited only by those who wish to partake in them.

**Power and Utilities**

In this age of modern living, power and utilities bring comfort and convenience to the people of this earth. It was many years before the rural segment of our society was able to enjoy the same service that urban dwellers had come to take for granted. Wind served as power for electric generators while coal furnaces heated farmsteads. Fortunately, these days of minimal service are gone.

Today, the residents of Jackson County are served by the same modern utilities found in the cities. Perhaps the most important utility, in terms of convenience, is electricity. The northern section of the county obtains its electrical service from the West Central Electric Co-op, Inc., out of Murdo, South Dakota. The Pine Ridge portion receives power from Lacreek Electric Association, Inc., based in Martin, South Dakota.

As there is no natural gas company supplying Jackson County, most of the homes are heated by either propane gas or fuel oil. Residents obtain these commodities from local independent bulk oil dealers.22

Local companies also play an important role in the
telephone system of Jackson County. Serving the immediate Kadoka area and segments beyond is the privately owned and operated Kadoka Telephone Company. The remainder of the county is supplied by Golden West Telephone Cooperative based in Wall, South Dakota.23

The above companies combine to serve the Jackson County area with up-to-date power and utilities to meet the needs of its modern citizens.

Transportation

Transportation has changed in Jackson County since the early days of settlement, though not as much as one might think. The first homesteaders relied on the railroad to bring them to the free land of the west. Once here, the horse was the popular means of transportation. Soon, however, animal power was replaced by the automobile and truck as man's technology advanced. Today, the horse, car, and truck are still commonly used modes of transportation in Jackson County. The horse finds its importance when used to check livestock in particularly rough terrain. The most widely used form of transportation, however, is the passenger car. It represented 54% of the total vehicle registrations in the county for the years 1961-1974.

Not surprisingly, the truck is also extremely important to area residents. During the same time period trucks
accounted for 46% of registration, a reflection of the county's agricultural background.

Highways, railroads, and an air field comprise the transportation network of Jackson County. As shown on the map in Figure 2, the county does not possess an extensive road system. Rough terrain and money shortages have combined to limit development. The system is, however, adequate to meet the basic needs of its residents. Interstate 90, a federally aided 4 lane divided highway, dominates the county's road system. As the region's major east-west thoroughfare, it carries a heavy load of traffic, usually to out-of-county destinations. Major state highways include Highways 73, 63, 44, and 16A. These experience heavy local traffic as they connect most segments of the county and are in the best driving condition.

The minor county roads of Jackson County present another situation. At most times, they are in acceptable driving condition. There are, however, sections of the county that should be travelled only after conference with a knowledgeable county resident. These are the low-lying areas of the badlands. After a rain, many tributaries flood the unpaved roads, depositing a layer of mud and making them impassible to all but heavy or 4-wheel drive equipment. (Figure 38) Unfortunately, the county road system has been recently beset by another problem.
Figure 38 - Impassable Road
Since the closing of the Milwaukee Railroad line through Kadoka, grain hauling activity has, of necessity, shifted from rail to trucks. This has greatly increased traffic on the county's roads. Without constant maintenance, these roads will experience rapid deterioration. At present, however, there are no highway construction projects scheduled until after 1984.26

Transportation by air, is but a minor constituent of the total transportation system of Jackson County. While no commercial air service exists, the county is served by one air facility located in Kadoka. The Kadoka air field consists of a lighted turf runway capable of handling light aircraft only. (Figure 39) Aviation fuel and hangars are available on the site which is used primarily by local residents.27

As shown in the map of Figure 40, the rail system in Jackson County consists of 2 tracks traversing the region from east to west. The northernmost route, operated by the Chicago & Northwestern, angles through the northwestern corner of the county near the town of Cottonwood. Its primary use is grain and cement hauling. This line, however, has no stop station within Jackson County. Consequently, farmers in this region take their product to either Phillip, Midland, Quinn, or Wall for marketing.

The area's second railroad is the abandoned
Figure 39 - Kadoka Airport
Figure 40 - Jackson County Railroads

Source: South Dakota Department of Transportation, Division of Railroads, Railplan South Dakota, vol. 1 (Pierre, South Dakota: Division of Railroads, Department of Transportation, 1978), p. 22.
Milwaukee, Murdo to Rapid City line. The closing of this track has seriously hurt the farmers of the area. In the past, the Milwaukee served the county area through four elevators located at Belvidere, Kadoka (2), and Interior. Its loss has increased the cost the farmer must bear in getting his grain to market. There is some hope for re-opening the line, however, as the state has purchased the track and rated it as a first priority route, important to the state's rail network.

28

Cities and Towns

Throughout history, it has been a cultural trait of man to gather, for man is a gregarious creature. He possesses a strong need for social interaction. Although it is true that many cultures have, among their number, a segment of society that lives in semi-isolation, most of the human species finds it desirable to have a gathering place where friendships can be strengthened and social ties formed. The city and town meet man's need for such a gathering place.

Another important function of a town is the service it renders to the surrounding area. As man spread westward across the United States, his technology improved. Consequently, he became increasingly dependent on others to provide him with the tools with which to
carry on his more complicated life. The self-sustaining culture of the past gradually developed into a culture of specialists. Agriculture was the specialty of Jackson County settlers. Although, by modern standards, these people were extremely self-sufficient, they nevertheless relied on others to supply them with goods and materials not locally abundant. They needed a center that would serve as a supplier of goods and services and as a link to outside markets. The town met these needs and became the hub of activity for residents of the hinterlands.

While the villages of the Native Americans tended to move with the season and availability of food, it was the culture of European man to select a permanent site for his towns. In Jackson County, the selection was based primarily on the availability of a link to the more settled parts of the country. In northern Jackson County, this link was provided by the railroad. The establishment of town sites, therefore, very closely followed the path of the railroad. Lined up along its route were, from east to west, Stamford, Belvidere, Kadoka, Weta, and Interior. Stamford and Weta have since become ghost towns. (Figure 27) Belvidere, Kadoka, and Interior, however, survived.

The selection of town sites in the southern section of the county is not as clear. No railroad served the area and, therefore, had little effect on the
selection of plots. Probably, town sites were founded on the basis of suitability of terrain and proximity to old trails. Towns in the southern reaches are also fewer in number than in the north. This is primarily due to the land restriction that was placed on non-Indians prior to 1911. By the time the area was opened for leasing by whites, the majority of the settlers had arrived during the boom of 1905-1910.\textsuperscript{29}

Figure 41 shows the towns of Jackson County and their location as they appear today. As has been the case historically, they are small and widely scattered. The largest town is the county seat at Kadoka. Supporting a population of 832, it is the leading trade center of Jackson County. (Figure 42) As was explained in the section on Industry, Kadoka provides area residents with many of the goods and services required to carry on their lives. The smaller towns exist primarily as minimum convenience centers supplying items such as fuel and food. The balance of the towns in Jackson County are listed with their accompanying population in Table 5.

Of the nearly 3,000 residents of Jackson County, only a little under a third live in towns.\textsuperscript{30} The agricultural lifestyle of the population keeps most people on the farm. Those who live in town are, for the most part, involved in providing the farmers and ranchers with the
Figure 41 - Towns of Jackson County

Source: Jackson County Highway Map
Figure 42 - Main Street, Kadoka
Table 5

Population of Towns of Jackson County

<table>
<thead>
<tr>
<th>Town</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belvidere</td>
<td>80</td>
</tr>
<tr>
<td>Cottonwood</td>
<td>4</td>
</tr>
<tr>
<td>Interior</td>
<td>62</td>
</tr>
<tr>
<td>Kadoka</td>
<td>832</td>
</tr>
<tr>
<td>Wanblee</td>
<td>*</td>
</tr>
<tr>
<td>Long Valley</td>
<td>*</td>
</tr>
<tr>
<td>County Total</td>
<td>3437</td>
</tr>
</tbody>
</table>

* No population reported for these towns. Their population is included within the figures for East and West Washabaugh townships which are 233 and 1673 respectively.

goods and services they require. There is also a segment which provide residents with cultural institutions such as churches, schools, post offices, and recreational facilities. Thus, the town will continue to play an important role in Jackson County.

The future does not hold much in the way of change for the area. Limited employment in non-agricultural fields are a detriment to an increase of population. The area may, however, experience a minimal amount of growth. The population is stabilizing at a figure that is desirable for the efficient running of the county's agricultural and tourism-based lifestyle. Perhaps that is how it should be. For large population increases would cut into the vast beauty of the land, and it is the land, after all, that provides life to those who call Jackson County their home.
Endnotes


3. Ibid., pp. 354 and 504.

4. Ibid.

5. Interview with Stan Uhlir, Kadoka, South Dakota, 5 August 1981.

6. Ibid.

7. Ibid.


10. Interview with Joyce Hicks, Kadoka, South Dakota, 5 August 1981.


12. Hicks.


15 Hicks.


18 Ibid., p. 511.

19 Ibid., p. 542.


21 Hogan, Geography of South Dakota, p. 55.

22 Interview with Larry Parkinson, Kadoka, South Dakota, 6 August, 1981.


25 Jackson County, South Dakota. General Highway Map. (Cedar Rapids, Iowa: Cedar Publishing Co., Inc.).


27 Ibid., pp. 60 - 61.

28 South Dakota Department of Transportation, Railplan, pp. 80 - 81.
29 Interview with Otto and Lois Prokop, Kadoka, South Dakota, 5 August 1981.


CHAPTER V

CONCLUSION

Overview

Jackson County is a unique and refreshing area of our country. While most of the United States has bowed to the increasing pressures of our fast-paced society, Jackson County residents have managed to keep their lives in perspective. The result is an area of friendly, straightforward people who harbor a love for the land.

The story of the geologic history of Jackson County is a fascinating one. Underlain by marine deposits of Pierre Shale 80 million years old, the area has experienced alternating periods of deposition and erosion. Today's topography is the result of the stripping away of sediments carried to Jackson County by ancient rivers leading from the Black Hills.

Rolling hills, badlands, valleys, dissected uplands, and buttes all contribute to the terrain of Jackson County. The rolling landscape of the Pierre Hills comprises the northern one-third of the study area. Badlands topography and the White River valley are found through the middle third while dissected uplands and buttes dominate the
southern reaches of the county. This combination gives a scenic, varied look to the land.

While all aspects of the physical environment are interrelated, it is especially so for the climate, soils, vegetation and animal life of the county.

The climate is that of a semi-arid plain. Precipitation values are low with the bulk of the moisture received during the early summer. Snowfall is generally light. Temperature ranges, both annually and diurnally, are extreme. Readings of $38^\circ C$ in the summer and $-29^\circ C$ in the winter are not uncommon.

Jackson County soils carry some of the lowest nitrogen values in the state. They are of the Aridic Ustoll variety, characteristic of a warm, dry plain. Erosion can be a serious problem when not held in check by soil conservation practices.

The vegetation of Jackson County is reflective of the climate and soils of the area. By far the dominant vegetation types are the short and mid grasses. Buffalograss, blue grama, and western wheat grass occur in the greatest abundance. Stream edges and river valleys support trees of the elm-ash-cottonwood association, as well as a number of woody shrubs. The Pine Ridge badlands terrain is home to Ponderosa pine and Rocky Mountain juniper.

The physical environment of Jackson County supports
animal life of prairie grassland variety. Included are birds, mammals, and reptiles. The bird life of the area is dominant in terms of numbers. Characteristic are kingbirds, meadowlarks, buntings, and grackles. Besides the larger birds such as hawks, owls, and eagles, game birds live in the grassland of Jackson County. The most plentiful is the grouse, followed by the pheasant, partridges, and wild turkeys. Common mammals to the area include the prairie dog, coyote, whitetailed deer, mule deer, pronghorn antelope, and various kinds of small mammals. Reptiles carry the biggest reputation, though somewhat undeserved. The prairie rattlesnake is the only poisonous snake found in Jackson County. Other snakes are the hog-nosed, bull, blue racer, and red-barred garter snake.

An important part of the physical environment of any area is the water. Surface and ground water resources in Jackson County are limited. The major surface water feature is the White River which normally experiences flow throughout the year. The balance of the surface water features consist of stock dams, tributaries, and reservoirs. Ground water in the area is often hard to find and highly mineralized. The northern one-third of the county is especially short of this important resource.

Jackson County has experienced an interesting
past. The original inhabitants were the nomadic tribes of the northern plains. The Mandan and the Arikara were the next groups to travel through the Jackson County area. The most influential tribe to roam the county was the Teton Dakota. From the late 1700's through the mid-1800's the Teton experienced a good life on the plains. Game was plentiful and trade with the white man lucrative. By the 1870's, however, white settlers came in greater and greater numbers. Tension developed between the two groups until war finally broke out. The fragmentation of the Indian forces and military power of the U.S. Army proved to be too much for the Teton. They were eventually forced onto reservations of which the Pine Ridge Indian Reservation in today's Jackson County is one.

The white man first encountered the western sections of South Dakota in the late 1700's after the explorations of La Verendrye in 1763. French fur traders were perhaps the first whites to settle in the area. Cattle was the most important industry in the early Jackson County. Cheap livestock from Texas were driven to the northern plains to graze on the lush grasses. The railroad and the accompanying homesteaders, however, brought a change to the landscape. Fences and tilled earth ended the period of the "free range" for cattlemen. The agriculture industry changed to a more diversified type business where
crop and livestock raising were both practiced. Over the years, the industry developed into the modern, efficient business that it is today.

Throughout the history of Jackson County, agriculture has been the primary source of livelihood for the residents of the area. Cattle and crop raising continue to be the dominant business practiced. The agriculture reflects the nationwide trend in that farm numbers are decreasing while farm sizes are on the upswing. Cattle and calves are the dominant form of livestock found in the county. They graze on the pasture and range which makes up approximately 80% of the land area of the county. Cropland accounts for much of the balance of the acreage. The primary crop is winter wheat. Farmer-ranchers of the area experience problems common to agriculturalists nationwide. Costs of production are rising faster than profits.

Mining is of little importance in the county. The only activity is carried on by the Jackson County Highway Department through the mining of sand and gravel.

Industry in Jackson County is dominated again by agriculture. It is the economic base of the area. Second to agriculture is tourism. The Badlands National Park attracts tourists from the world over. Kadoka is the major supplier to the tourist trade providing 750 rooms for
western South Dakota travellers. 

Kadoka is also the major trade center in Jackson County. Especially strong trade patterns exist in the areas of lumber, newspaper, plumbing and heating, bulk oil, and hardware among others.

Manufacturing and processing is a limited resource. Only 2 industries are listed in the South Dakota Manufacturers and Processors Directory. They are the Kadoka Press (newspaper) and Wambli Archery.

Transporting facilities are also somewhat limited in Jackson County, they consist of roads, an airport and railroads. The road system is marginal. It does, however, service all sections of the county. Increased pressure has been placed upon the highways by the closing of the Milwaukee Line railroad. The train serviced grain operators through the towns of Belvidere, Kadoka, and Interior. Air facilities in Jackson County exist at Kadoka. The Kadoka airport can handle small aircraft through its lighted, turf runway.

The Badlands National Park is the most important recreational resource in the area. Driving and sightseeing, hiking, picnicking, are among the popular activities of Jackson County residents. Hunting and fishing also attract a large number of participants in their respective seasons.

The power and utilities of Jackson County provide
residents with all the services necessary to keep pace with today's modern society. Telephone utility is furnished by the Kadoka Telephone Company and the Golden West Telephone Company. Lacreek Electric Association, Inc. and West Central Electric Co-op, Inc. combine to supply the county area with electric power. Home heating is done by propane and fuel oil. Local bulk oil dealers are the primary sources for these items.

The towns of Jackson County are widely scattered and low in population. The county seat and largest town is Kadoka with a population of 832. Others include Belvidere, Wanblee, Cottonwood, Long Valley, and Interior.

**Future**

The future does not look to bring drastic change to Jackson County. Because of the decrease in farm numbers, population will probably not increase. Young people of the area are leaving in search of more lucrative careers away from the limited opportunities locally available. Some of the marginal towns such as Cottonwood or Long Valley may have problems surviving. The base of economic activity in Jackson County will be carried on by agriculture. The industry itself may undergo change due to increase in technology. Irrigation and water development will be important issues in the future. The tourist
trade should continue to support a portion of the area residents as the Badlands will undoubtedly draw travellers far into the future.

The land and people will continue to be the area's most important resources. In Jackson County, the land and people have grown to depend on each other. That relationship will continue far into the future.
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