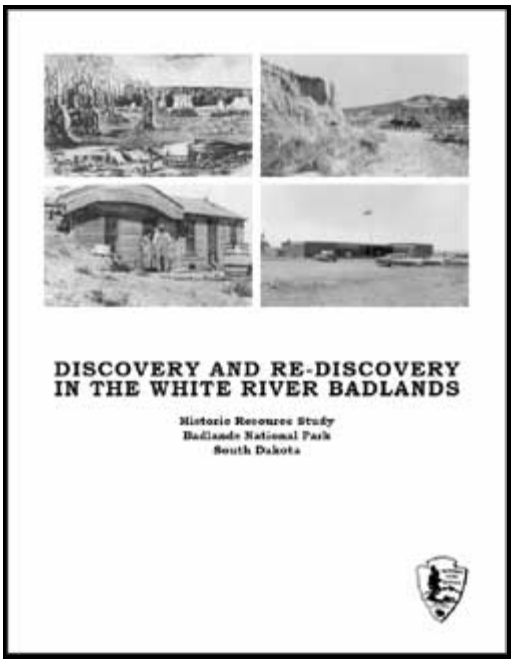
BADLANDS

Discovery and Re-Discovery in the White River Badlands

Historic Resource Study

DISCOVERY AND RE-DISCOVERY IN THE WHITE RIVER BADLANDS

Historic Resource Study
Badlands National Park
South Dakota



Prepared By:
J. Sanderson Stevens, Principal Investigator, JMA
Jacky Taylor, Landscape Architectural Historian, JMA
Mark Hufstetler, Historian, RTI
Mitzi Rossillon, Historical Archeologist, RTI

by
John Milner Associates, Inc.
239 South 5th Street, Sutie 917
Louisville, Kentucky 40202

Renewable Technologies, Inc.
Butte, Montana 59701

Bahr Vermeer & Haecker Architects, Ltd.
Omaha, Nebraska 68508

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Historic Resource Study

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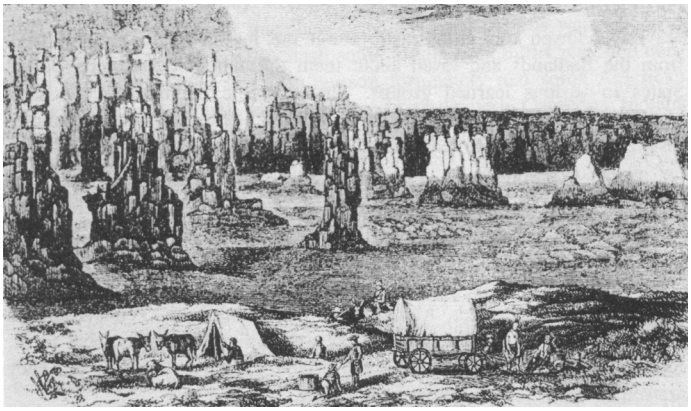
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DISCOVERY AND RE-DISCOVERY IN THE WHITE RIVER BADLANDS

Historic Resource Study
Badlands National Park
South Dakota

NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR

DISCOVERY AND RE-DISCOVERY IN THE WHITE RIVER BADLANDS

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Badlands National Park
South Dakota

John Milner Associates, Inc.
239 South 5th Street, Suite 917
Louisville, Kentucky 40202

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Butte, Montana 59701

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Omaha, Nebraska 68508

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J. Sanderson Stevens, Principal Investigator, JMA
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Recommended

_____ _____

Superintendent, Badlands National Park Date

Approved

_____ _____

Regional Director, Midwest Region Date

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CHAPTER ONE

Introduction

CHAPTER 1

INTRODUCTION

What is a Historic Resource Study?

The National Park Service (NPS) is the steward of our nation's most important cultural and natural resources, and as such the NPS is charged with the protection and preservation of these resources within the national park system. To this end, the NPS Office of Policy issued NPS-28 (Cultural Resource Management Guidelines). NPS-28 presents procedures to be followed in the research, planning, and stewardship of the nation's most important cultural resources. One component of NPS-28 is the need to establish baseline research reports that serve a variety of purposes. A historic resource study (HRS) is one of several baseline type studies required by NPS-28. The HRS is "a baseline study that provides a historical overview of a park and identifies and evaluates the Park's cultural resources within a historic context."[1] The HRS is designed to serve a variety of end-users, including but not limited to, resource managers, park planners, interpreters, cultural resource specialists, and the interested public. Ideally the HRS consists of documentary research and field investigations to identify, map, and evaluate the authenticity, integrity, and significance of the resource. The HRS, which also includes the preparation of National Register (NR) nominations, forms the foundation for the completion of required documents such as the Cultural Landscape Inventory and the List of Classified Structures. The HRS also identifies data gaps and the need for additional historical studies. By definition the HRS is multi-disciplinary in character with the emphasis on history.

Badlands National Park, located in southwestern South Dakota, contains a unique and diverse range of resources (geological, paleontological, archeological, historical, cultural, and architectural) that contribute to the Park's exciting and unique history. Due to budget constraints as well as the wealth of historic and cultural resources within Badlands National Park, the HRS process for Badlands National Park will require a multi-stage process. This initial HRS report, which represents an overview and context of the Park's historic and cultural resources, is based on the results of extensive, but not comprehensive, documentary research of existing files, reports, and other records available at the Park (or other NPS facilities) and selected repositories in South Dakota and the immediate region, such as files and records at the Office of the State Archeologist (OSA) (Rapid City), State Historic Preservation Office (SHPO) (Pierre), State Historic Library (Pierre), NPS-Denver Service Center, NPS-Midwest Region (Lincoln and Omaha, NE), South Dakota School of Mines (Rapid City), South Dakota University (Vermillion), and many other repositories in the area. Three primary components of the traditional HRS process are not funded at this time; these include field observations, updated resource mapping, and completion of NR nomination forms. These components are discussed below.

Field observations to determine and describe the significance, integrity, authenticity, and associative values of the Park's various resources are not part of the initial HRS work

effort. Rather, field investigations will be conducted at some future time when funding becomes available. Likewise, the current HRS will not include an updated historic/cultural resources base map. Instead, maps presented in this report reflect existing resource data provided by NPS Geographic Information Systems (GIS) maps. Thus, known resources that are not currently mapped in an electronic format, or resources that are not currently in the NPS GIS database are not included in the HRS report at this time. Preparing updated GIS base maps for the various historic and cultural resources within the Park will be conducted after completion of the field observation task. At this time, the HRS will not include preparation of NR nomination forms. Not only is funding lacking for such a large task, but to date the NPS has not had any internal discussions on potential historical, archeological, paleontological, or multiple-listing NR Historic Districts within the Park. Preparation of NR nomination forms will be completed after (1) field observations and resource mapping have been completed, and (2) cultural resource specialists in the Midwest Regional Office and Badlands staff have an opportunity to discuss the presence, number, and boundaries of any NR Historic Districts (be they historical, archeological, paleontological, or multiple-listing).

The purpose of this HRS report is to review historical and scientific literature in order to develop an understanding of the natural and cultural processes and environments that influenced landscape changes, land-use history, and human settlement within the Badlands National Park throughout the prehistoric and historic periods. The HRS utilizes historic contexts and research themes established by, and for, Badlands National Park as well as research contexts and themes prepared by the SHPO and the OSA. The overall environmental history (geology, geomorphology, paleoenvironment, and paleontology) and the cultural history (archeology, history, cultural landscapes, and historic architecture) of the Park were developed through a review of existing documentation. The geological and paleontological research focused on how the geological (including paleontological) and environmental history of the Park affected the cultural history and historical resources within the Park and not on the geology and paleontology, per se. The research focus for the cultural history of the Park ranges from the arrival of the first Paleo-Indians, 10,000 BC to the development of the Park and its current boundaries. In recent years, the Park has completed a comprehensive archeological overview, an ethnographic overview, and sponsored numerous geological and paleontological investigations.[2]

What are "badlands"?

The term "badlands" is a word used by geologists, geographers, geomorphologists, paleontologists, archeologists and others to refer to a particular area or region that is characterized by a deeply dissected, easily eroded landscape that is difficult to traverse, supports arid to semi-arid vegetation, and has little potable water.[3] Badlands topography often contains fossiliferous deposits, but the age and extent of fossil beds within badlands topography is highly variable. In addition to the famous Badlands of South Dakota, badlands topography occurs in a variety of places across the western United States, including, but not limited to, east-central Montana, west-central North Dakota, northwestern Nebraska, central Oregon, northeastern Utah, and southwestern Wyoming. As defined above, badlands are both a geologic and physiographic concept.

The first badlands topography encountered and described by Euro-American explorers, trappers, fossil collectors, and paleontologists were the Badlands of southwestern South Dakota and northwestern Nebraska (Note: this area is often referred to as the Big Badlands or more accurately as the White River Badlands).[4] The Lakota Indians referred to this land as *Mako sica* (*mako*=land, and *sica*=bad; also *Maka sica*), and the French fur trappers referred to the area as *Les Mauvaises Terres a Traverser* (bad lands to travel across).[5] White cautions that it is possible that the Lakota name is merely a reverse translation of the French term.[6] It is also possible that the more accurate Lakota term is *Paha ska* (White Hills) as opposed to *Paha sapa*, the Lakota term for the Black Hills.[7]

As noted previously, the Big Badlands extend from southwestern South Dakota into northwestern North Dakota. The Big Badlands are divided into two main geographic areas: the White River Badlands of South Dakota and the Badlands of Nebraska. Badlands National Park is contained within the White River Badlands geographic area. For purposes of this HRS, the study area is limited to Badlands National Park and lands immediately adjacent to the Park. However, in reviewing the historic literature of the region and developing a historic context for this report, it was necessary to look beyond the limits of the Park boundaries. This is especially true for understanding the geological, paleontological, and archeological background of the White River Badlands.

White River Badlands

As noted by O'Harra, the Badlands are not easily defined.[8] Geographically speaking, the White River Badlands include those portions of Shannon, Pennington, Jackson, and Bennett counties that are drained by the White River. The White River Badlands also include small portions of Shannon and Pennington counties that are drained by the South Fork Cheyenne River. Between the deeply eroded badlands topography rise fertile tablelands that, for the most part, provide relatively easy access to aquifers and are suitable for some types of crops. Some of the most scenic and historic portions of the White River Badlands, such as Sheep Mountain Table, Stronghold Table, Cedar Pass, and the Wall, lay between the White River on the south and the South Fork Cheyenne River on the north. Today much of this area comprises Badlands National Park. The Park, which contains nearly 244,000 acres, consists of three non-contiguous parcels: the North Unit, the South Unit, and the Palmer Creek Unit. The North Unit is surrounded by Buffalo Gap National Grassland, the Pine Ridge Indian Reservation (Oglala Sioux), and private land holdings, whereas the South Unit and the Palmer Creek Unit are contained within the Pine Ridge Indian Reservation. The three park units and the adjacent and interceding lands are the focus of this HRS report.

The typical White River Badlands landscape consists of spires, narrow ridges, steep cliffs, buttes, and alternating peaks and valleys that exhibit banded colors of red, yellow, tan, and brown. One of the first Euro-Americans to describe the badlands region was mountain man James Clyman, who in 1823 traversed the area on his way west. Clyman wrote, "The whole of this region is moveing [sic] to the Misourie [sic] River as fast as rain and thawing snow can carry it."[9] Thaddeus Culbertson, who conducted an exploration of the White River Badlands on behalf of the Smithsonian Institute in 1850

described the area as follows, "Fancy yourself on the hottest day in summer in the hottest spot of such a place without water, without an animal and scarce an insect astir, without a single flower to speak pleasant things to you and you will have some idea of the utter loneliness of the Bad Lands."[10] The stark and woeful description by Culbertson contrasts with the many writers who extol the virtues of the dramatic beauty and solitude that is the Badlands. For example, Dr. F.V. Hayden wrote in 1855, during one of his many explorations of the Badlands and surrounding environs, "…(I) looked down upon one of the grandest views I ever beheld…the area resembled some vast theatre, it reminded me of what I imagined of the amphitheatre of Rome, only nature works on a far grander scale than man."[11] Equally impressed with the rugged beauty of the Badlands was Frank Lloyd Wright who visited the Badlands in 1935 and described his experience in the following manner, "I was totally unprepared for the revelation called the Dakota Bad Lands…What I saw gave me an indescribable sense of mysterious elsewhere—a distant architecture, ethereal…, an endless supernatural world more spiritual than earth but created out of it."[12] As many residents and visitors to Badlands National Park can attest, both of the extreme views are accurate to some extent, for the Badlands represent a land of contrasts where rugged beauty and majestic landscapes are confronted by the harsh realities of climatic extremes and the struggle for life within a badlands environment.

Lakota mythology provides an explanation for the origin of the *Mako sica*. The account presented below is presented in more detail in Hall's (1997) *Reflections of the Badlands.*[13] According to Lakota legend, all the land to the east of the *Paha sapa* (Black Hills) were lush grasslands with an abundance of shade trees, game animals, plants for food and medicine, and lots of cool springs. *Wakantakan* (the Great Spirit) declared that all tribes that wanted to live in this paradise must agree to live in peace and harmony. Suddenly after many years of tranquility, a barbaric tribe (possibly the Shoshone, Comanche, or Crow) came from the west and drove off all the other tribes. The tribes tried to regain their land through peaceful means such as gifts, prayers, offerings, and negotiations, but to no avail. Finally, the displaced tribes gathered and formulated a plan to retake their idyllic land. The morning of the planned attack, *Wakantanka* caused a great storm over the land. Clouds blocked the sun, thunder rumbled across the land, and lightening bolts streaked across the sky. Fire spewed from the ground and eventually a wide gap opened in the earth and engulfed the contentious mountain tribe and all of its possessions. But the great chasm also swallowed the lush grasses and streams, and all the plants and birds and animals, leaving a stark and barren wasteland to forever remind the people that they should live in harmony with both nature and their fellow man and never try to gain an advantage over nature or other tribes.[14]

Prehistoric and historic uses of the Badlands are varied. Hall suggests that the Lakota only entered the Badlands when it was necessary to traverse the area in order to go from one location to another along a few principle routes.[15] According to White, the Badlands were used for a variety of purposes that included hunting, such as bison, antelope, and deer; collecting sacred plants and wild foodstuffs, such as sweet grass, wild turnips, soapweed (yucca), and various berries; burials, sacred ceremonies, and rituals, such as the Sun Dance and the Ghost Dance; vision quests, at Sheep Mountain Table; and sanctuary, at Stronghold Table.[16]

Badlands National Park

Today, Badlands National Park consists of approximately 243,000 acres in three units (North Unit, South Unit, and Palmer Creek Unit) and extends across portions of Shannon, Pennington, and Jackson counties in southwestern South Dakota (Figure 1). In 1929, Congress authorized the creation of Badlands National Monument and directed South Dakota to acquire certain lands and construct a scenic road for public access. Badlands National Monument was established in 1939 consisting of 110,000 acres. In 1968, Congress authorized the acquisition of an additional 134,000 acres of tribal reservation lands (Oglala Sioux) for their outstanding scenic and scientific character. In 1978, Congress redesignated the monument as Badlands National Park. Today the Park is host to over one million visitors per year as well as various scientific research teams and university field schools. The mission of the Park is to:

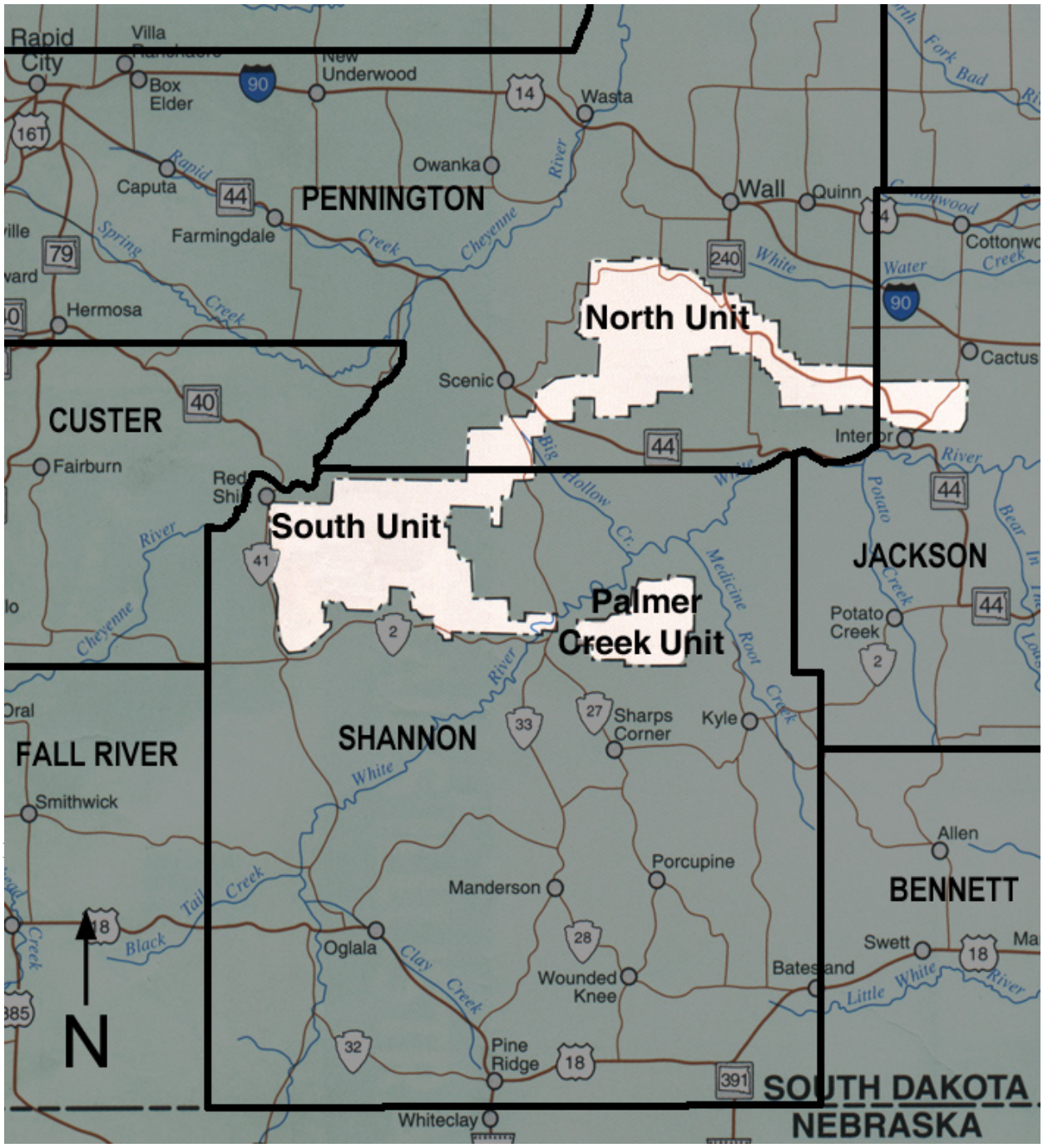
- protect the unique landforms and scenery of the White River Badlands for the benefit, education, and inspiration of the public;
- preserve, interpret, and provide for scientific research the paleonotological and geological resources of the White River Badlands;
- preserve the flora, fauna, and natural processes of the mixed grass prairie ecosystem;
- preserve the Badlands wilderness area and associated wilderness values;
- interpret the history of the Sioux Nation and Lakota people.[17]

HRS Report Organization

Following the report introduction, the initial HRS report for Badlands National Park is divided into eight chapters based on resource type, research themes, and chronology. Unlike many national parks, the majority of historic and cultural resources associated with Badlands National Park are related to the Park's unique geologic, paleontological, and prehistoric past. Chapter 2 includes discussions from the earliest fossil discoveries in the mid-nineteenth century to the most recent scientific studies and interpretations in such diverse fields as biostratigraphy, paleontology, taphonomy, paleomagnetism, paleoecology, Cenozoic paleosols, and Quaternary geomorphology. Chapter 3 presents an overview of the prehistoric and protohistoric occupations and settlement in the vicinity of the Badlands (ca. 12,000 BP to AD 1770), and Chapter 4 presents a discussion of American Indian occupation of the White River Badlands from AD 1770 to 1891. As a result of the regions historical and cultural development, greater emphasis is placed on the history of the above resources than the shorter, though equally complex, Euro-American and American Indian relationships of the last 110 years.

Euro-American relationships with American Indians as well as Euro-American history are the focus of the final five chapters of the report. Chapter 5 presents a summary discussion of Euro-American and American Indian interaction in the West River region of South Dakota, and Chapter 6 focuses on the early development of Euro-American settlement patterns in the region. Chapter 7 discusses the agricultural and other uses of the White River Badlands through case studies of selected Euro-American and American

Indian families. The last two chapters, *Twentieth Century Economic Development and Tourism* (Chapter 8) and *The Development of Badlands National Park* (Chapter 9), primarily deal with Euro-American development of the region and the Park, respectively. Chapter 10 *Selected Bibliography* completes the report. Maps, photographs, and tables sufficient to illustrate the text are included within each chapter as needed.



Source: National Park Service

Source: Library of Congress.

Figure 1: Map of Badlands National Park Showing Units and Geographical Boundaries.

[1] National Park Service "Bulletin 28: *Cultural Resource Management Guidelines*," n.d. National Park Service, US Department of the Interior, chapter 2, p. 7.
[2] Adrien L. Hannus, et al., *The Archeology of Badlands National Park, South Dakota*, National Park Service, Midwest Archeology Center and Badlands National Park, Draft 2003; David R.M. White, *Mako Washte: An Ethnographic Overview and Oral History of the Badlands National Park*, National Park Service, Badlands National Park, Draft 2001.
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[4] C.C. O'Harra, *The White River Badlands*, South Dakota School of Mines, Bulletin No. 13, Rapid City, SD, 1920.
[5] Ronald R. Weedon, *Natural History of the Black Hills and Badlands*, edited by Sven G. Froiland, (Augustana College, Sioux Falls, SD, 1999), 177.
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[7] Ibid.
[8] O'Harra, *The White River Badlands*, 1
[9] Lanham, *The Bone Hunters*, 26
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CHAPTER TWO

Historical Overview of Geological and Paleontological Studies within the White River Badlands

CHAPTER 2

HISTORICAL OVERVIEW OF GEOLOGICAL AND PALEONTOLOGICAL STUDIES WITHIN THE WHITE RIVER BADLANDS

Introduction

Thomas Jefferson, one of the chief author's of the Declaration of Independence, a two-term President, and the person most responsible for the Louisiana Purchase and the Lewis and Clark *Corps of Discovery*, was also an amateur paleontologist and archeologist. He published an article in 1797 describing fossil remains of extinct giant sloth. Jefferson later collected and described mastodon remains from Big Bone Lick in Kentucky as well as excavated an American Indian (Monacan) burial mound near his home in Virginia. Although Jefferson may have been one of the earliest fossil collectors, vertebrate paleontology, the study of present animal life through an examination of fossil remains and their geological context, did not become a recognized scientific discipline until 1812 with the publication "Researches on Fossil Bones," by George Cuvier, a Frenchmen. Although many early paleontologists were little more than "bone collectors," today vertebrate paleontology requires a multi-disciplinary approach that combines elements of zoology, biology, anatomy, geology, ecology, and other related studies.

The person widely recognized as the "Father of American Vertebrate Paleontology" is Joseph Leidy, who was born in Philadelphia in 1823 and earned a Doctor of Medicine degree at the University of Pennsylvania before abandoning his practice to pursue research and teaching. Beginning in the late 1840s, many of Leidy's early publications describe mammalian fossils sent to him by various collectors that had been to the White River Badlands. Studies of fossil remains from the White River Badlands of South Dakota contributed greatly to the science of vertebrate paleontology in North America. The number, diversity, and high degree of preservation of the fossils exposed in the White River Badlands not only spawned the growth of vertebrate paleontology in America, but the fossils contained within the White River Group also provided a wealth of information regarding the evolution of Cenozoic mammals. Within a matter of decades the White River Badlands became a mecca for vertebrate paleontologists.

This chapter, which presents a historical summary of some of the more significant scientific discoveries that have occurred in or near the Park over the last 160 years, is divided into two primary subsections. The first subsection discusses the various expeditions (individuals, museums, universities) to the White River Badlands between 1846 and 1950. Given the nature of this historic resources report, the focus of this section is more on the history of research (or researchers) and its impact on the growing discipline of vertebrate paleontology and less on descriptions of the actual discoveries. In some regards the application and refinement of research methods developed in the Badlands represents a microcosm of the developments within the discipline as a whole.

That is to say, some of the earliest "paleontologists" were more concerned about collecting large samples of fossil remains than the context and integrity of the samples.

The second subsection of this chapter discusses the contributions to various geological and paleontological subdisciplines that have occurred within the last 55 years as result of on-going research in the White River Badlands. Some of the newer studies within the Badlands include, but are not limited to, biostratigraphy, micro-paleontology, paleoenvironmental reconstructions, paleomagnetic correlation, tectonic studies, geochronology and paleopedology (i.e., the study of old soils), and Quaternary geology and geomorphology. Paleontological and geological research has occurred in both the North and South Units of the Park. Work continues within the Park as each new investigation or discovery results in as many new questions as it answers.

Summary of Previous Paleontological Investigations (1846-1950)

Early Fossil Discoveries and Contributions to American Paleontology (1846-ca. 1890)

Early Discoveries and Exploration in the Badlands (1846-1870s)

The first published discovery of fossil remains from the White River Badlands was authored by Dr. Hiram Prout, a St. Louis physician, in 1846. Prout, who obtained the bone from a fur trapper working for the St. Louis (or American) Fur Company, stated that the fur trapper had discovered the fossil in the *Mauvises Terre* (Badlands) on the White River about 150 miles south of Fort Pierre and 60 miles east of the Black Hills.[1] The fossil was described as a maxillary fragment of an extinct life form he called *Paleotherium*, or an ancestor of the "horse." The fossil was later classified incorrectly as a titanothere (i.e., the term "titanotheres" is no longer a valid name and these animals were eventually reclassified as "bronotheres"), an early (and extinct) mammalian life form that exhibited various morphological elements that were similar to the horse and the rhinoceros. Several months later Dr. Leidy described the fossil remains of an early camel that he named *Poebrotherium.* The publication sparked interest among other geologists, and in 1849, Dr. John Evans, under the direction of David Dale Owen, visited the White River Badlands for the purpose of observing the geology of the area and collecting fossils. The fossils collected by Evans ultimately ended up in the hands of Joseph Leidy, and he along with Evans and Owens, published some of these discoveries.[2] Shortly thereafter, Thaddeus Culbertson led an expedition from the Smithsonian Institution to the Badlands in 1850 and published his findings the following year.[3] Unfortunately, Culbertson was not a healthy man, and he died soon after his article was published. Leidy subsequently studied Culbertson's fossils as well as many others that were sent to him. In 1851 Dr. Prout sent his fossils to Leidy, who reclassified the *Paleotherium* remains as a titanothere/bronothere. Leidy, who previously described *Poebrotherium* (early camel) and titanotheres/bronotheres, also described the ubiquitous oreodont fossils. Oreodonts represent a strange sheep-sized ruminant animal with teeth designed for both grazing and browsing, along with sharp canines, and individual digits on each foot. The more Leidy published, the more famous he became, and eventually nearly all the fossils recovered in the Badlands in the 1850s and 1860s were sent to him for analysis. It was

through these beginnings as well as his attention to detail and description that Joseph Leidy (1823-1891) became known as the "Father of American Vertebrate Paleontology."

One of the early pioneers in American geology and paleontology was Ferdinand Vandiveer (F.V.) Hayden. Hayden, a doctor of medicine, but better known for his knowledge of geology and mineralogy, first traveled to the Badlands region in 1853 where he collected fossils for James Hall, State Geologist of New York. Hayden later joined several military expeditions to Nebraska and Dakota Territory as the topographical engineer and chief geologist. In 1855 and 1857 Hayden joined the Geological Survey of the Territories under the direction of General William S. Harney and Lieutenant G.K. Warren. The 1855 expedition, often referred to as the "Warren Survey" was designed to provide topographic mapping of "Sioux Country." Hayden worked closely with Warren, and together they produced a large body of data on the western territories. Warren and Hayden also surveyed in and around the White River Badlands in 1856 and 1857 (note the 1857 expedition went through the middle of the Badlands on Harney's Fort Laramie to Fort Pierre march following the Harney massacre of a Lakota Indian camp near Ash Hollow Cave in Nebraska—see discussion in chapter 4). In 1859 and 1860 Hayden joined expeditions to the region that were led by Captain William Reynolds. Hayden prepared a number of publications on the geology and topography of the areas he surveyed, and in all cases, Hayden collected a variety of fossil material that he sent to Professor Leidy for analysis.[4] Following the 1855 expedition, Hayden described the Badlands in the following terms, "Contrasted with most of the country on the Upper Missouri, the White River Valley is a paradise, and the Indians considered it one of the choice spots on earth."[5] During the Civil War, Hayden served as a surgeon in the US Army, but he spent his time collecting fossils and mapping geological formations. He returned to Nebraska Territory and the Badlands in 1866 and 1869.[6]

In 1869, Leidy published a large summary volume on all of the fossil material that had been sent to him during the preceding 20 years. The report identified over 40 extinct mammalian species and described and cataloged thousands of individuals, including no less than 700 individual sheep-like mammals called oreodont or *Merycoidodon culbertsoni*.[7] The report also presented a description of the geological formations that produced the fossils.[8] The work by Leidy established a firm foundation for the study of Cenozoic mammals in North America. In addition, Leidy and Hayden established that the fossiliferous formations of the White River Badlands were the result of erosion and not the result of downward faulting. Leidy's large and meticulous volume brought together over 20 years of knowledge and formed the basis for all subsequent research in the White River Badlands for the duration of the nineteenth century. At one point, Leidy estimated that he received three to four million tons of fossils between 1846 and 1869, including the collections from Dr. Hiram Prout (1846), the American Fur Company (1847), Dr. David Dale Owen and Dr. John Evans (1849-1852), Thaddeus Culbertson (1850), Dr. John Evans (1853), and F.V. Hayden (1855-1857, 1866).

Leidy, following Hayden's interpretation of the data and despite his meticulous descriptions and illustrations of the fossil remains, agreed with Hayden and incorrectly

interpreted the White River Badlands as lacustrine (lake) deposits of Miocene age, and it would be several more years before paleontologists and geologists more accurately interpreted the nature and origin of the fossil-bearing deposits and even longer before the majority of the deposits were assigned to the Late Eocene to Late Oligocene time periods. (Note: Through paleomagnetic correlation, with other radiometrically dated deposits, sediments preserved at Badlands National Park are now dated from the Late Eocene to Late Oligocene.) As will be discussed later in this chapter, some recent studies suggest that White River beds are primarily late Eocene and early Oligocene in age. Some of the key genera identified and described by Leidy included: *Oreodon, Titanotherium, Hyopotamus, Hyracodon, Anchitherium, Hyoenodon, Machairodus, Trionyx, Testudo, Helix, Planorbis*, and Limnoea.[9] It should be noted that many of the genus names reported by Leidy are no longer current. Leidy correctly demonstrated that the overwhelming majority of animals, except for the ubiquitous turtles and tortoises, were mammalian herbivores and carnivores that lived in a grassland or savannah habitat that was void of both marine and brackish animals or habitats. He also noted that some species, such as *Merycoidodon culbertsoni* in particular, were gregarious animals that were attacked by predatory animals such as *Hyoenodons, Dinictis,* and *Drepanodon*.[10] Despite poor contextual data (or at best limited provenience information) Leidy was able to describe evolutionary sequences for the following taxonomic lineages (again it is pointed out to the reader that some genus names used by Leidy are no longer used): Carnivora (canines, mustelids, and felines), Pachydermata, Artiodactyla (poebrotheria, oreodonts, camelids, cervids), Perissodactyla (rhinoceros, equids, tapirs), Solidungula, Rodentia (castorids, gophers), and Insectivora.

Marsh vs. Cope: The Infamous "Bone Wars" (1872-1892)

The "Bone Wars" of the 1870s were soon to change the climate and direction of American paleontology and as a result Professor Leidy all but abandoned his work in the American West and left the identification and description of extinct mammalian fauna to a new generation of paleontologists. The so-called "Bone Wars" began in the 1870s between two of the biggest names in American paleontology, Othniel Charles (O.C.) Marsh (1831-1899) and Edward Drinker Cope (1840-1897). At the dawn of the 1870s, the American government experienced a short-lived and somewhat tenuous period of peace with the Lakota and other Plains Indians, and Leidy had just published his voluminous work on the extinct mammalian fauna of Dakota and Nebraska. Interest in the American West was at full throttle and the White River Badlands was the place to be if one was interested in collecting fossils.

O.C. Marsh, born in 1831 near Lockport, New York, was the nephew of the wealthy philanthropist, George Peabody. Marsh obtained his MA from Yale in 1862 and then went to Germany for several years to complete his education in geology, biology, and evolutionary biology. He studied in Europe for several years and returned to the United States a strong proponent of Darwinian theory and natural selection. In 1869, George Peabody died and left a considerable sum of money to his nephew that he used to finance field expeditions, collect fossils, and otherwise improve his career.

Edward Drinker Cope was born the son of a moderately wealthy Quaker family in 1840 in Philadelphia. Cope was a student of Leidy's and after graduating from Princeton in 1861, he worked for the Smithsonian Institution for a brief time before his father sent him to Europe where he visited professors and museums. Unlike Marsh, Cope was not a believer in Darwinian Theory, rather he was a leading Neo-Lamarckian theorist (i.e., he believed changes in developmental (embryonic) timing and not natural selection was the driving force behind evolution).

During the early years of American paleontology, most collectors sent their fossils to Dr. Leidy for analysis, description, and taxonomic classification. By 1870 the climate within the paleontological arena began to change. Both Marsh and Cope had financial backing that Leidy could not hope to duplicate. When these ambitious newcomers entered the paleontological arena, research took a back seat to the accumulation of fossils, and fossil collections were sold to the highest bidders, namely Marsh and Cope. Marsh, who was aware of the abundance of fossil remains sent to Dr. Leidy each year, decided to organize a research trip for Yale University and the Peabody Museum to the American West in 1870. Although Marsh also accompanied the field teams from 1871-1873 and had a brief field visit in 1875, thereafter he rarely ventured into the field, preferring to hire assistants and collectors, while he remained at the museum or traveled to Washington to bend the ear of various political figures or other influential people.

In 1875, Marsh entered the field one last time. He traveled to the White River Badlands to study the brontothere beds. These elephant-sized animals, similar to the fossils first described by Prout and Leidy nearly 30 years prior, were distantly related to the horse and the rhinoceros, which he had studied extensively in the past. In November 1875, the expedition of scientists and soldiers was stopped by Lakota warriors who were convinced that Marsh was going to the gold fields in the Black Hills. Marsh displayed his usual charm and political savvy and was allowed to proceed after he promised to spend a considerable amount of time with Chief Red Cloud.[11] Marsh and Chief Red Cloud became good friends, and in fact, one of the men in the Marsh expedition later married Chief Red Cloud's daughter. Marsh became such good friends with Chief Red Cloud, that when he learned that the federal government and the Indian agents were not providing the Lakota with their promised rations of food and clothing, he publicly blasted the federal government and Indian agents for their harsh and inhumane treatment of Indians and demanded that the promised food rations be provided to the starving tribes. Marsh's influence in Washington helped to procure the withheld rations.[12]

During his western trips, Marsh collected a number of fossils from the Badlands region, and he eventually published a number of articles detailing the evolution of the horse. It was during these trips that Marsh acquired the nickname "Big Bone Chief" and "Bone Medicine Man" from the Pawnee and Sioux. In addition to Marsh's contribution deciphering equine evolution, his published works helped to fill in gaps in the Darwinian evolutionary tree. Following Thomas Huxley, he also suggested that birds evolved from dinosaurs and published several articles in support of this position. Marsh also described

Apatosaurus (he later identified Brontosaurus which is also an Apatosaurus, hence Brontosaurus is no longer a valid scientific name), Stegosaurus and Triceratops.

One of Marsh's more significant contributions to paleontology included his efforts to determine the geological formation for each fossil locality in order to establish horizon markers; a method, first introduced by William Smith around 1800, but heretofore was not widely practiced, yet today it constitutes a basic element of biostratigraphy. Marsh also sought to amass an enormous collection of fossils (which he did) in order to display these unique specimens in the Peabody or Smithsonian museums. To that end, Marsh also introduced the practice of reconstructing and displaying the entire individual based on the fossil remains. In so doing, he indirectly encouraged his hired workers to seek and extract complete specimens, which was also a novel idea for its time.

During the late 1870s the United States government sponsored four geological and topographical surveys of the American West. Two of the surveys, led by F.V. Hayden (survey of the territories) and G. M. Wheeler (survey of the 100th meridian) hired Cope as the vertebrate paleontologist for the expeditions. The other two surveys, led by Clarence King (survey of the 40th parallel) and John Wesley Powell (survey of the Rocky Mountain region) hired Marsh as the vertebrate paleontologist. In 1879 the various surveys were combined to form the United States Geological Survey (USGS). The first director was Clarence King, who resigned after one year, and he was followed by John W. Powell. Both King and Powell were good friends with Marsh, and Marsh was able to parlay these political connections to his benefit.

The Cope and Marsh feud continued throughout the 1870s and 1880s. Leidy publicly expressed his disgust at their actions and declared that he had no stomach for this type of behavior. His distaste for professional name-calling and ill-will among his peers, coupled with the fact that he lacked the financial backing to keep pace with fossil collectors like Cope (his protégé) and Marsh (a great admirer), both of whom were able to hire multiple teams to scourge the western fossil beds for new materials, ultimately led Leidy to withdraw from the "Bone Wars" competition. At the time of his death in 1891, Leidy had authored nearly 230 publications on vertebrate paleontology and described over 130 new genera and over 300 species of fossil vertebrates, many of which derived from the formations of the White River Badlands. One of Leidy's last publications in vertebrate paleontology was his summary work in 1873 entitled, "Contributions to the Extinct Vertebrate Fauna of the Western Territories, Part I, USGS of the Territories, vol.1."

Formative Years of American Vertebrate Paleontology (1880-1890s)

In addition to being the founding fathers of American vertebrate paleontology, Leidy, Cope, and Marsh worked with and trained a long list of students and associates that transformed the budding field of paleontology from a fossil collecting exercise to the rigorous scientific discipline that we know today. The formative years of American paleontology started in the 1880s and 1890s when universities, museums, and the USGS began to send field expeditions to the White River Badlands and elsewhere. Although Marsh did not return to the Badlands after his 1875 visit, he sent parties from the

Peabody Museum to the area for the purpose of collecting fossils from 1886-1890, and from the USGS from 1894-1898 (with the exception of 1896).[13] The materials collected by the USGS were eventually transferred to the Smithsonian Institution. Marsh's students and associates included a number of well-respected and famous professionals, including Erwin H. Barbour (later with the University of Nebraska), George Baur, Oscar Harger, John Bell (J.B.) Hatcher (then with the USGS and later with Princeton University), Samuel W. (S.W.) Williston, George Bird Grinnell (anthropologist and ethnographer), Marcus Farr, and Richard S. Lull to name but a few. Hatcher, it should be noted, was among the first to collect intact and complete specimens, a technique still practiced today.

Cope was a mentor, close friend, and associate with Henry F. Osborn (1857-1935) and William B. Scott (1858-1947), both of whom graduated from Princeton University. After graduating from Princeton, Scott elected to complete his studies in Germany. He then returned to Princeton University where he remained throughout his career. Osborn, a fellow student with Scott at Princeton, also traveled to Europe to complete his education and later returned to Princeton University as a professor of comparative anatomy from 1881-1890. In 1891 he moved to Columbia University to organize the Biology Department (1891-1896) and later was Professor of Zoology from 1896-1910. In 1891 Osborn also founded the Department of Vertebrate Paleontology at the American Museum of Natural History in New York, and he remained with the museum for 45 years until his death in 1935. Osborn also joined the USGS staff in 1900 (after Marsh's death) and became senior geologist in 1924. Scott and Osborn, along with a number of other famous paleontologists (like J.L. Wortman) from the American Museum of Natural History and/or Princeton University, visited the White River Badlands on almost an annual basis from the 1890s to the 1910s, and they published their findings in a number of professional journals.

Princeton University, under the leadership of Scott and his friend and colleague H.F. Osborn, made their initial visit to the Badlands in 1882. Upon their return to the East Coast, Scott and Osborn learned that the New York papers had erroneously reported that the entire Princeton party, including military escort, had been attacked and killed by Sioux warriors. Scott and others from Princeton returned to the Badlands for many years, including 1890, 1893 (with Hatcher), and in 1894, under the leadership of Hatcher. O'Harra notes that these expeditions were of "very great importance," and he notes "the abundant fossil remains collected enabled Professor Scott to describe in a most complete manner a number of the more noted extinct animals and to indicate with more certainty their proper classification and relationship."[14] Later research teams from Princeton were led by Harold R. Wanless, William J. Sinclair, Glenn L. Jepsen (a student of C.C. O'Harra's at South Dakota School of Mines [SDSM]), and John Clark.[15]

H.F. Osborn, along with several other capable researchers, led expeditions from the American Museum of Natural History to the fossil beds of northwestern Nebraska and southwestern South Dakota in 1892-1894, 1897, 1903, 1906, 1908, 1911-1914, and 1916. The expeditions were well-financed and well-organized, and from the start the

researchers were blessed with extraordinary discoveries. The research, discoveries, and publications generated by these expeditions provided an opportunity to more accurately establish, "the details of stratigraphy and correlation and to indicate with greater certainty the characteristics and habits of the various animals while in the living state."[16] The well preserved and nearly complete skeletons collected by these expeditions allowed researchers and museum staff to reconstruct the animals with skin, fur, and other lifelike appearances. The work conducted by Osborn and his staff contributed greatly to the understanding of the geology, paleontology, and biostratigraphy of the Badlands region.

University and Museum Contributions to Badlands Geology and Paleontology (ca. 1892–1950)

University and Museum Researchers (1890–1950)

The decades between the 1890s and 1950 saw a transformation in the geological and paleontological research in the White River Badlands. Because the majority of researchers came from the academic community, scientific investigations were elevated to new levels. Researchers finally stopped competing with one another for collecting the most fossils or describing the first fossil remains of a new species and began to accurately describe and interpret the fossil data and the geological formations that produced the fossils. In addition to the aforementioned expeditions that were led by Scott or Osborn, numerous other researchers traveled to the White River Badlands (or adjacent areas of Nebraska and eastern Wyoming). Some of the researchers that ventured to the area during this period included the following:

- Erwin H. Barbour (initially as a student under Marsh and later as a professor at the University of Nebraska),
- John E. Todd (1894 and 1896, University of South Dakota),
- J.B. Hatcher (Yale University and USGS) and O.A. Peterson (1902 Princeton University and subsequently for many years, Carnegie Museum, Pittsburgh),
- F.B. Loomis (1903 and 1907, Amherst College),
- W.D. Matthew (mid 1890s to 1910s, American Museum of Natural History),
- O.C. Farrington (1904, Field Museum),
- N.H. Darton (1897, 1899 Yale Peabody Museum and in later years USGS),
- C.C. O'Harra (1899-1920, SDSM).

O'Harra took students to the Badlands area, in particular to School of Mines Canyon, near Sheep Mountain Table, to learn geology and collect interesting fossils. Although O'Harra spent a considerable amount of time in the Badlands, he did not establish a formal field school. Nonetheless, the tradition started by O'Harra was continued by his successors, like Glenn Jepsen, James Bump, John Clark, Philip Bjork, James Martin and others. In 1924, Jepsen initiated the first true field school for the School of Mines as he took a group of students to the School of Mines Canyon near Sheep Mountain Table. The tradition of annual field schools to the Badlands continued into the 1960s and 1970s. In 1924 the field camp was held at the Everett's Ranch, and in 1926 the camp was located two miles south of Olsen's Ranch and one mile west of Beard's Ranch near the north edge of Cuny Table. Field crews also prospected near Stronghold Table (northeast corner

of Cuny Table). In his 1920 book on the *White River Badlands*, O'Harra includes a picture of one of the field cabins near the head of Indian Draw.[17]

E.H. Barbour, a professor at the University of Nebraska and director of the university museum, visited the tri-state (Nebraska, South Dakota, and Wyoming) area on numerous occasions as he led parties to the area in 1892, 1894, 1895, 1897, 1905, 1907, and 1908. Barbour was one of the first of several paleontologists to work the fossil beds on the James Cook ranch. This land was eventually donated to the NPS by his son and is better known today as the Agate Fossil Beds National Monument. Barbour is also credited with discovering several archeological sites during his trips to the Badlands area, and in later years his name is associated with the excavation of some important archeological sites (Scottsbluff Quarry and Paleo-Indian sites associated with extinct bison remains) for the University of Nebraska Museum.

The Carnegie expeditions to the Badlands region are credited with the discovery of new, strange, and wonderful species. In addition to work in the Whiter River Badlands, the Carnegie Museum also worked for many years at the important fossil bed deposits near Agate Springs, Nebraska,[18] which are now part of Agate Fossil Beds National Monument. One locality at the Monument is named Carnegie Hill while another locality is named University Hill, in honor of the various university teams that worked at the site.

Despite roughly 100 years of fossil collecting and scientific expeditions and scores of collectors, paleontologists, geologists, and other scientists, the fossil localities of the early collectors and the location of their associated campsites remains an enigma. Both the fossil bed localities and the researcher's campsites should be considered significant cultural and historical resources that are eligible to the National Register of Historic Places. Discussions with Park staff (Ms. Marianne Mills, Dr. Rachel Benton, and Mr. Bill Supernaugh), and Mike Greenwald and Dr. James Martin, staff at the Museum of Geology and Paleontology at the South Dakota School of Mines and Technology (SDSMT), Rapid City, and review of the archeological sites files at OSA (Rapid City) failed to reveal the location of any early campsites or fossil collecting localities. It is recommended that the Park and the NPS, in conjunction with the SDSMT, the OSA, and other universities and museums that historically worked in the area, make a concerted effort to locate, record (including GPS mapping, site plans, verbal descriptions, and photographs), and preserve these paleontological and archeological sites. Unfortunately, many of the early fossil localities and camp sites can not be located because USGS topographic maps did not exist at the time when these early sites were being excavated.

Contributions to Badlands Geology and Stratigraphy

The White River Badlands constitute a small component of the Great Plains physiographic region. The Great Plains, which extend from Mexico northward into Canada and from the Rocky Mountains eastward to the Missouri River trench, have often been described as a vast featureless plain in a sea of blowing grass. In fact the Great Plains physiographic region exhibits tremendous variability. Trimble divides the Great Plains regions into no less than 10 sections or provinces, including the High Plains, Black

Hills, Unglaciated Missouri Plateau, and the Glaciated Missouri Plateau.[19] The Badlands lie with the Unglaciated Missouri Plateau, but are equally proximate to the High Plains province of northwestern Nebraska and eastern Wyoming and the Black Hills province directly to the west. The High Plains, which occupy portions of western Nebraska, Kansas, Oklahoma, and Texas and eastern Wyoming, Colorado, and New Mexico, constitute a vast, relatively flat plain that slopes eastward from the Rocky Mountain front. The Pine Ridge, directly south of the Badlands, separates the High Plains from the Unglaciated Missouri Plateau. The later province contains a number of small, more or less isolated mountain masses that rise above the rolling plateau. Numerous rivers bisect the plateau, typically exhibiting deeply dissected, broad alluvial valleys.

Prior to the Tertiary period, most of the Great Plains region was submerged beneath vast inland seas. The extended period of geological uplifting (the Laramide orogeny) that formed the Rocky Mountains also resulted in uplifting the area that we today call the Great Plains. The Great Plains, in general, and the Badlands, in particular, were shaped by the deposition and subsequent erosion of alluvial and eolian deposits. Thus, many of the deposits of the High Plains and the Unglaciated Missouri Plateau date to the Cenozoic Era although some Cretaceous or other Mesozoic sediments are exposed in some portions of these provinces. For example Pierre Shale, which is exposed in some parts of the Badlands and the surrounding area (like the Cheyenne River valley), dates to the late Cretaceous period.

During the 1850s and 1860s when the first fossils were being sent to Leidy and others for analysis, the geological history of the American West was poorly known, but this fact is not too surprising, given the limited amount of scientific research conducted in the American West prior to the 1860s. Scientists, geologists, and paleontologists knew that marine fossils (both vertebrates and invertebrates) were common in limestone (deep sea) and shale (deltaic) formations to the east of the Great Plains. Fossil remains of fish, various invertebrates, and swimming reptiles confirmed the presence of inland seas across much of western North America during the Cretaceous period. This fact, coupled with the presence of unconsolidated deposits of fine-grained sandstone, soft shale, mudstone, siltstone, and clay, in combination with the large quantity of fossil turtles (actually tortoises) and the absence of marine invertebrates and fish, led Hayden and most other researchers to conclude that the Badlands formations were derived not from marine deposits, but rather from large lakes that gradually dried up during the Cenozoic Era.[20]

Leidy and others recognized that the fossil beds of the White River Badlands belonged to the Tertiary period, but he initially believed the deposits dated to the Eocene epoch, or early Tertiary period.[21] When Hayden later argued that the deposits were Miocene in age, Leidy concurred with his colleague. Throughout most of the nineteenth century, researchers attributed the deposits to a lacustrine origin, but over time and with better collecting methods, more complete skeletons, and more comparative data (comparable fossils from Oregon, Utah, Wyoming, and Nebraska), researchers recognized the Badlands deposits as pre-Miocene in age. By the turn of the century, the fossil-bearing deposits of the White River Badlands were interpreted as belonging to the Oligocene (the

lower deposits) and lower Miocene (upper deposits). As will be discussed in subsequent sections of this chapter, more recent studies and the development of new dating techniques have led to a refinement in both the geochronology of the various formations as well as the duration of the formations.

Given the uncertainty in dating the deposits as well as the correlation between these deposits and others in the western US, some early researchers elected to refer to the beds by index fossils contained within the different deposits. Thus, for example, Hayden and others referred to the lowest beds (Chadron Formation) as the Titanotherium beds, and the overlying beds (lower Brule Formation) were referred to as the Oreodont beds (or occasionally as the "turtle and oreodon" beds). As early as 1858 Hayden defined a White River series, and he used characteristic fossils to define the lithostratigraphic units. Late-nineteenth century researchers that helped to define (and later refine) the geologic history of these formations include J.B. Hatcher, J.L. Wortman, H.F. Osborn, and W.B. Scott.[22]

In 1893, Wortman recognized the *Titanotherium* beds of Hayden, and he subdivided the Oreodon bed into the lower-lying Oreodon beds (lower, middle, and upper unit) and upper barren clays. Wortman also recognized and described the *Protoceras* beds and the *Lepauchenia* (upper unit) as stratigraphically different and above the barren clays. Wortman defined a typical locality as the area where the Cheyenne and White rivers are nearest to each other (i.e., the area south of Scenic near Sheep Mountain Table and the South Unit of the Park). Near the lower portion of the Oreodon beds, Wortman noted a particularly thick (10-20 feet thick) and far ranging sandstone formation (stream channel deposits) that contained a distinctive and abundant ancestral aquatic rhinoceros (named *Metamynodon*). He labeled this formation the *Metamynodon* sandstone. Directly above the *Metamynodon* sandstone, he noted a "lower nodular" zone and 75-100 feet above that zone, he also noted a second or "upper nodular" zone. Both nodular units were considered highly fossiliferous. Wortman also extended the top of the Oreodon beds 100 feet above "upper nodular" zone, which heretofore were considered to be the top of the Oreodon beds.[23]

Wortman also defined the *Protoceras* beds (also stream channel deposits), formerly considered part of the Oreodon beds. This formation, which is poorly known outside of the White River Badlands, was named for an interesting and extinct fossil known as *Protoceras*. These fossils are described as "some of the most interesting mammals ever discovered."[24] The animal resembled a small "deerlet" of India or a musk deer of the Asiatic highlands, but was not related to either, rather this creature was a ruminant (even-toed or Artiodactyla) with four toes on the front feet and two toes on the hind feet. The males exhibited two or more pairs of horns or bony protuberances on the skull (some forms had as many as five pairs of protuberances), and the upper canines were particularly elongated. The appearance of horns on the *Protoceras* fossils marks the earliest appearance of horns among artiodactyls.

In 1899, W.D. Matthew challenged the theory of a lacustrine origin for the White River Badlands formation and suggested that most of the sediments were derived from eolian

activity, whereas the sandstone formations were fluvial in origin.[25] In that same year and also in 1901, N.H. Darton published two reports in the USGS that first applied geographic names to geological units in the Badlands region rather than referring to the stratigraphic units by an index fossil or a number. Darton named the "Chadron Formation" (formerly referred to as the *Titanotherium* beds), the "Brule Formation" (formerly the *Oreodon* beds), and the Arikaree Formation. Although the geographic name given to the formation was for Chadron, Nebraska, Darton declined to describe a type locality, referring simply to the "typical beds" in South Dakota. Likewise, in naming the Brule Formation, Darton again referred to a typical locality as the "Big Badlands of South Dakota."[26] Darton also identified (but did not name) a unit that underlies the Chadron Formation in South Dakota and parts of Nebraska. Macdonald notes that Matthew in 1901 and Wanless in 1923 continued to refer to the formations as the "*Titanotherium* beds," and the "*Oreodon* beds," respectively, but in 1910 following O'Harra's work, nearly all subsequent researchers used the terms Chadron, Brule, and Arikaree Formations.[27]

One of the breakthrough studies at the turn of the century was by W.M. Davis in 1900 when he published an article in *Proceedings of the American Academy of Arts and Sciences* in which he suggested that the Tertiary deposits of the Great Plains were of fluvial origin. A fluvial origin for the Chadron and Brule Formations explained many unresolved issues related to a lacustrine origin for the White River formations. The presence of channel sandstones, nodular layers, gravel deposits, alternating layers of clay and/or silt interspersed with various sand layers coupled with the absence of marine invertebrates and fish were more easily understood and explained in a depositional environment with a fluvial origin. In 1910 and 1920, O'Harra noted the following regarding the origin of deposition for the White River formations:

> There now seems to be abundant evidence for the belief that the deposits were of combined lagoon, fluviatile, floodplain, and possibly eolian origin instead of having been laid down over the bottom of great and continuous bodies of standing water as was first supposed." He goes on to write, "…broad streams…developed across this vast area (by "area" he means the Great Plains between the Rocky Mountains and Black Hills and the Badlands) a network of changing channels, backwaters, lagoons, marshes, and grass-covered flats…Thus the clays, sandstones, conglomerates, eolian sands, and even the volcanic dust…are all accounted for and the life conditions of the time are in reasonable measure made plain.[28]

Given this understanding of the origin of the formations, geologists and paleontologists were able to finally understand that the White River Badlands were the result of numerous cycles of deposition-erosion-redeposition-erosion (and accompanied, at least during the Oligocene and Miocene periods, by uplift related to volcanic activity in the Rocky Mountains and Black Hills) controlled by changing climatic and environmental conditions. Given the nature of the various fossil lineages identified from the Badlands it was obvious to all that the region became increasingly more arid with time. Another

geological breakthrough occurred in 1923 when H.R. Wanless published an article on Miocene stream channels in the Badlands.[29] By the time of this publication, it was generally agreed, based on fossil evidence, that the upper formations in the White River Badlands were late Oligocene to early Miocene in age. Among other findings, Wanless demonstrated that a thick, white ash layer (subsequently named the Rockyford Ash) overlay the Brule Formation and formed the lowest or basal unit in the Arikaree or Rosebud Formation. The Rosebud Formation of northwestern Nebraska and southwestern South Dakota is roughly the equivalent of the Arikaree Formation. Wanless correctly described numerous channel deposits and other fluvial depositional units within the White River Group, but he retained the earlier biological nomenclature in referring to the fossil beds and stratigraphic layers. The confusion in stratigraphic nomenclature was in part due to the influence of Wanless' dissertation advisor, William J. Sinclair.

In 1907 Matthew named the Rosebud Formation for his work near Porcupine Butte and noted that the white stratum at the base of this formation (i.e., the white ash layer) was nearly identical to the white stratum capping the White River Formation on Sheep Mountain Table in the Badlands. At the time, and in subsequent publications, Matthew, Osborn, Bump, and others used the Rosebud Formation to define the strata between the Brule Formation (Oligocene) and the Ogalalla Formation (Pliocene). Although it was believed at this time (early 1900s) that the Arikaree and Rosebud Formations were Miocene in age, researchers recognized even at this early date that the formations were not continuous between South Dakota and Nebraska.

In 1937 the Wood Committee was appointed to clarify the biological and geological nomenclature applied to the fossil beds and geological strata in the vicinity of the White River Badlands as well as across North America. The Wood Committee attempted to clarify a complex hybrid of local rock units and time units that had been delineated by the first and last occurrence of mammalian genera. The efforts of the committee were an important step in trying to organize and standardize the terminology surrounding the geological formations and fossil-bearing strata, but the named units they developed were not true stratigraphic units because they were not based on biostratagrahic zones.[30] The Wood Committee named three North American Land Mammal Ages (NALMA) in the Oligocene, namely the Chadronian, Orellan, and Whitneyan, from oldest to youngest. Identification of the Eocene-Oligocene boundary was thought to be critical to understanding major extinction events during the late Eocene.

In 1949 Wood published an article entitled *"Oligocene Faunas, Facies, and Formations."* [31] In the article Wood noted that the White River Group demonstrated two types of facies gradation based on grain size. One gradation was from upstream to downstream, while the second gradation was lateral, ranging from the main river channel, to the minor stream channel, to backwater channels, to floodplain deposits and eolian deposits. Wood's work demonstrated that the various units within the White River Group were both time transgressive (i.e., the strata do not necessarily occur at the same point in time in the geological record) and geographically or spatially transgressive (i.e., the strata are not necessarily uniform across their area of deposition). Thus, he argued the

formations within the White River Badlands should be viewed as gradational both chronologically and geographically from west to east, with older and thicker deposits to the west and more recent and thinner deposits to the east.

Other important contributions to the geology and stratigraphy of the Badlands were made by John Clark in 1937 and James D. Bump in 1951. Clark, who earned a Ph.D. from Princeton University in 1935, studied the stratigraphy and paleontology of the Chadron Formation in the Badlands of South Dakota. Through his research Clark divided the Chadron Formation into Lower, Middle, and Upper members, and he considered the sediments within the formation to represent "one major sedimentary cycle, with two subcycles, the first consisting of the Lower Member, and the second of the Middle and Upper Members."[32] Clark also noted a faunal and lithological change toward a Brule environment during or before Upper Chadron time. Clark later gave names to the Lower, Middle, and Upper Members of the Chadron Formation; from oldest to youngest they are Ahearn, Crazy Johnson, and Peanut Peak.[33]

Schultz and Stout provided the temporal names Orella Member and Whitney Member to the lower and upper parts of the Brule Formation from their work in western Nebraska.[34] Bump, in analyzing fossil mammals from the Brule Formation in the White River Badlands, also divided the paleontological remains into two major units, the Orella Member (lower) and the Whitney Member (upper). He further subdivided each major member into lower, middle, and upper units or zones.[35] In 1956 Bump described the strata of the Brule Formation and assigned geographic names to the members of the Brule Formation. The lower lying strata designated the Scenic Member, while the upper units were designated as the Poleslide Member.[36] Bump also noted that the "White Ash Layer," which was defined by Wanless in 1923, represented the basal unit of the Arikaree or Rosebud Formation.

Contributions to Paleontology

Through their field investigations and countless hours of laboratory study and comparative analysis, the early pioneers in the field of paleontology were able to demonstrate that the Tertiary deposits of North America contained a wealth of information regarding mammalian evolution. The fossil beds of the White River Group proved to be not only among the most important in the world, but also contained some of the longest continuous fossil sequences in all of North America. The fossils of the White River Group (early Oligocene to early Miocene in age) are among the most important in the world because they cover a period of time that was critical to the history of mammalian evolution. With the extinction of dinosaurs at the end of the Cretaceous period, mammals, which had existed since before the Cretaceous, were able to rapidly evolve and occupy the various environmental habitats and niches left vacant by the extinction of dinosaurs. The earliest mammals were extremely primitive and it is not until the Oligocene epoch that mammals begin to take on a more modern appearance and actually show some resemblance to their modern day ancestors. In addition, early paleontologists and their colleagues and students were able to demonstrate that the

evolution of some lineages of herbivores (e.g., horse) and carnivores (canid) was contained within the North American fossil record.

Just as the geology of the White River Badlands was refined by academic study between 1890 and 1950, the knowledge of mammalian evolution during the Late Eocene to Early Miocene periods was significantly advanced during this same period. In 1902, C.C. O'Harra prepared an annotated bibliography for contributions to the geology and geography of the Black Hills region (including the Badlands) that were made between 1846 and 1900.[37] At the time he cautioned that readers should consider the work incomplete because lack of time precluded him from including all the articles on vertebrate paleontology. Nonetheless, the bibliography lists over 200 articles and papers, including over 30 articles written between 1892 and 1900 that are related to vertebrate paleontology from the Whiter River Badlands. The principal authors regarding paleontological studies from the White River Badlands include a list of familiar names.

- O.C. Marsh (prepared 6 articles, including articles on: Miocene mammals, *Miohippus* or *Protoceras* beds, Miocene artiodactyls, Tertiary artiodactyls, ancestral tapirs, descriptions on male and female protocerid skulls),
- H.F. Osborn (prepared 5 articles, including articles on: the rise of mammals, *Aceratherium*, cranial evolution of brontotheres, extinct rhinoceroses),
- J.B. Hatcher (prepared 4 articles, including articles on: titanotherium beds, two-horned rhinoceros (*Diceratherium)*, recent and fossil tapirs, and corrections on the previous *Diceratherium* article);
- W.B. Scott (prepared 4 articles, including articles on: *Agriochoerus*– artiodactyls, *Ancodus* (primitive animal resembling early pigs with some characteristics shared with hippopotamus), *Protoceras, Hyaenodon* (earliest evidence of carnivores-primitive wolf-like appearance but size of black bear));
- J.L. Wortman (prepared 5 articles, including articles on: differentiation of the *Protoceras* beds, evolution of *Protapirus* (ancestral tapirs), osteology of *Agriochoerus*-artiodactyls, and evolutionary history of camels);
- H.F. Osborn and J.L. Wortman (prepared 4 articles, including articles on: *Protoceras*, *Artionyx*-a new genus of Ancylopoda, fossil mammals from the lower Miocene, and Perissodactyls including discussion on the evolution of horses, tapirs, and brontotheres);
- and G.I. Adams (Felidae-extinct cats), M.S. Farr (*Mesohippus*-extinct horse), O.C. Farrington (Annual Report of the Field Museum, 1898 field investigations), and J.E. Todd (report of 1896 field investigations) each authored one article.

In addition to the contributions made by these authors, a number of other researchers studied paleontological remains from the White River Badlands during the first half of the twentieth century. Other paleontologists working in the Badlands included C.B. Schultz, G.L. Jepsen, J. Clark, R.W. Wilson, H.E. Wood, F.B. Loomis, W.D. Matthew, G.G. Simpson, A. Wetmore, and A.E. Wood.

Research from the White River Badlands was able to shed light on the evolutionary history of a number of ungulates (hoofed animals) and carnivores. The early paleontologists divided the ungulates into two groups: Perissodactyla (odd-toed herbivores) and Artiodactyla (even-toed herbivores). The Perissodactyla include five major groups; these include living groups such as tapirs (*Tapiroidea*), rhinoceroses Rhinocerotoidea), and horses (Equoidea), and two extinct groups Brontotheroidea (brontotheres) and Chalicotheroidea. The order had its peak in the Eocene and early Oligocene, but by the end of the Oligocene, 10 of the 14 families were extinct. *Hyracodon* (running rhinoceros) and *Metamynodon* (river rhinoceros) are among the more common fossils of extinct rhinoceros-like lineages to appear in the Chadron and Brule Formations within the White River Badlands.

The evolution of *Mesotherium (Mesohippus)* and *Miohippus* are particularly well-defined from fossils within the White River Badlands. The brontotheres (titanothere is the common name) evolved from a relatively small to medium-sized animal during the early Eocene to the incredibly large brontotheres (8-9 feet at the shoulders) with a large pair of nasal horns during the early Oligocene. These creatures became extinct during the early Oligocene and are not present in the Poleslide Member of the Brule Formation. The perissodactyls dominated medium- and large-sized herbivores during the early Tertiary period. With the exception of the horse, most members of this order are three-toed.

The *Artiodactyla* or even-toed ungulates generally express the loss of the first digit in all but the earliest Tertiary forms, but the second and fifth digits are present in almost all Tertiary taxa. Some of the extinct forms present in the White River Badlands include various lineages related to pigs and hippos (e.g., Anthracotheriidae), oreodonts (Merycoidodontidae), camels (e.g., *Poebrotherium, Stenomylus, Procamelus Camelops*), protocerids (Protoceritidae), and peccaries. The early radiation of artiodactyls during the early Eocene gave rise to many pig-like stocks, rooters, and browsers of the forests and woodlands. A second radiation of artiodactyls occurred during the late Eocene and early Oligocene and gave rise to the early ruminants (oreodonts, camels, protocerids) which diversified during the subsequent Miocene epoch to take advantage of the expanding savannah and grassland habitat.

In addition to herbivores, early paleontologists recovered a variety of fossil carnivorous mammals including both extinct groups (such as Creodonta) and ancestral groups (such as Canidae (dogs), Ursidae (bears), Mustilidae (skunks, minks), and Procyonidae (raccoons). The creodonts, an extinct and primitive type of carnivore, were represented by two genera from the Chadron Formation, but only one genus, *Hyaenodon*, survived into Orellan and Whitneyan times. Dogs are represented by the family Canidae as well as a more primitive family known as Amphicyonidae. There are ten genera of Canidae and Amphicyonidae present in the White River Badlands and the fossils show a number of similarities to modern dogs including a wide range of sizes. Within the family Nimravidae, the so-called saber-toothed cats of the Oligocene all possessed elongated canines, but only the genera *Hoplophoneus* and *Eusmilus* show the development of true saber-toothed cats. However, other cats such as *Dinictis, Pogonodon*, and *Nimravus* also

had exceptionally long canines. Fossil remains of ancestral bears, mustelids, and raccoons are rare.

During the period of 1892 to 1950, as paleontologists learned more about the extinct fauna and the geological formations that produced the fossils, it became increasingly clear that biostratigraphic units and boundaries were not necessarily compatible with lithostratigraphic units. The Wood Committee attempted to clarify the biological and geological nomenclature applied to the fossil beds and geological strata in North America. The NALMA or provincial mammal ages present within or near the Park include from oldest to youngest: Duchesnean (Eocene), Chadronian (Eocene), Orellan, Whitneyan, and Arikareean (Oligocene), and Arikareean, Hemingfordian, and Barstovian (Miocene).

As originally established by the Wood Committee, the Chadronian was defined geologically (or lithologically) on the basis of the Chadron Formation (as defined near Chadron, Nebraska, and not the White River Badlands). Biologically, the Chadronian was defined as the time that *Titanotherium* (or *Brontotherium*) and *Mesohippus* coexisted.[38] Thus, the definition combined lithostratigraphy (the geochronology of the Chadron Formation) and biochronology (the overlapping temporal and geographical ranges of *Mesohippus* and *Brontotherium*). As long as *Mesohippus* was not known in strata older than the Chadron Formation and brontotheres were not known from above the Chadron Formation, the dual definition, while not internally inconsistent, remained workable.[39] As Prothero and Emry recently pointed out, confusion regarding the Chadronian-Orellan boundary resulted from the "uncritical definition" of the boundary by Schultz and Stout from their work in the Toadstool Park area of Nebraska. In 1987, Emry and others eventually recommended that the Chadronian be defined in faunal or biostratigraphical terms and argued that lithostratigraphic units had no role in the definition of a biochronologic unit.

The Wood Committee based the Orellan on the Orella Member of the Brule Formation in northwestern Nebraska and included the old term "Oreodon beds" in the definition. The Wood Committee based the Chadronian-Orellan boundary on the last occurrence of brontotheres and at the top of the Chadron Formation. This became a problem when it was discovered that at least four documented occurrences of brontotheres were known to exist above the Chadron-Brule contact as defined by Schultz and Stout. The Whitneyan was defined on the basis of the Whitney Member of the Brule Formation in northwestern Nebraska and included the old *Protoceras-Leptauchenia* beds. As Emry et al. pointed out some years later, there were a number of problems with this definition, not the least of which was basing a biochronological unit on a lithostratigraphic unit. Another problem they noted was the fact that many of the key index taxa are only known from one place and that most species of the Whitneyan are restricted to South Dakota and Nebraska. Suggested revisions to these biochronological units are discussed in subsequent sections of this chapter.

Despite the establishment of the NALMA, paleontologists soon recognized that biostratigraphic units were, at best, only loosely related to lithostratigraphic units. Of equal importance was the recognition that biostratigraphic and lithostratigraphic units were both spatially and temporally transgressive, thereby establishing the need to further refine the chronology of these units on a regional scale before trying to extend generalities across North America let alone trying to correlate North American events with similar events in Europe or Asia.

In 1967, Clark et al. identified a number of factors that affect the formation, preservation, and discovery of fossil remains. Some of the factors listed by these authors that affect preservation are the following:

(1) Biotic – a number of features influence the life of individuals or a species that in turn can affect the availability of individuals or species to be preserved in the fossil record. Such factors include range of the species, habitat or niche of the species, population density, pressure to leave preferred habitat, and osteological considerations like body size and bone density.
(2) Thanatic – circumstance surrounding the death of the individual which affect fossilization such as the cause of death, locus of death, age at death; to the authors it is a matter of the sum of fresh corpses on a surface prior to the burial of that surface by the next episode of sedimentation.
(3) Perthotaxic – factors such as climate, amount of time the bones have been exposed on the surface prior to burial, and degree of scavenging.
(4) Tapic – bone burial including time between episodes of sedimentation, thickness of sediments, velocity of depositional current, nature of sediment (texture, grain size), degree of post-depositional bioturbation, permeability of the sediment.
(5) Anataxic – factors serving to expose and destroy bones and fossils after burial such as weathering *in–situ*, exposure by erosion, degree of weathering and transportation.
(6) Methods of collecting fossils can bias the samples collected, including such factors as visual prospecting vs. excavation technique vs. mining fossils, or historic resampling, or biases due to differential cementation.
(7) Curation Factors – curation biases can bias the sampling procedures.[40]

Geological and Paleontological Studies Meet the Modern World (1950 to Present)

Geology and Stratigraphy of the White River Badlands Region

Stratigraphy and Description of New Units (ca. 1950-1975)

By the onset of the 1950s the stratigraphy of the White River Group of the South Dakota Badlands was widely recognized and accepted, at least on a generalized level, but many questions remained unanswered, and it would require years of additional research to refine the stratigraphy and geochronology of the region as well as develop correlations between the White River Group and similar formations in areas such as Nebraska and

Wyoming. As noted previously, in 1951 Bump divided the Brule Formation into the Orella and Whitney members and further divided each member into lower, middle, and upper units, and in 1954 Clark named the Ahearn, Crazy Johnson, and Peanut Peak members of the Chadron Formation,[41] Bump followed his earlier work with a 1956 publication in which he named the Scenic and Poleslide members of the Brule Formation.[42] The nomenclature and type descriptions worked well enough until C.B. Schultz and T.M. Stout of the University of Nebraska Museum took it upon themselves to publish a paper that placed the type sections for the two formations in Nebraska (rather than the South Dakota White River Badlands) despite the work of previous scientists such as Darton, Matthew, Osborn, Wortman, Wanless, Clark, and Bump.

In 1961, Harksen named the Sharps Formation for exposures near Sharps Corner, South Dakota.[43] The type sections for the Sharps Formation included a 270-foot exposure eight miles north of Sharps Corner and a 340-foot exposure five miles southwest of Sharps Corner. Together these exposures represent over 390 feet of basal Miocene deposits. Harksen defined the Sharps Formation as the basal unit of the Miocene-aged Arikaree Group.[44] Harksen also noted that the Sharps Formation was underlain by Rockyford Ash, which defines the boundary between the Brule Formation (late Oligocene) and the Arikaree Group (early Miocene), and is overlain by the Monroe Creek Formation. He characterized the Sharps Formation as a massive, tan-colored silt intermixed with volcanic ash layers.[45]

In 1969 Harksen and Macdonald prepared two articles on the stratigraphy of the "Big" Badlands. The purpose of the articles was both an attempt to define some typical sections on one hand and to clarify and/or correct some of the errors and misinterpretations of previous investigators. In discussing the recently named Sharps Formation and underlying Rockyford Ash, Harksen and Macdonald acknowledged that the use of the Rockyford Ash as the Oligocene-Miocene boundary was arbitrary and open to debate.[46] They justified this determination with the caveat that standard epoch boundaries are based on breaks in the European section, but in a continuous North American section the boundaries must be arbitrary until such time as an absolute date has been determined.[47] They also noted that the Rockyford Ash had long been acknowledged as a boundary marker, so they elected to retain that distinction. Their paper attempted to rectify earlier errors and misinterpretations regarding the Sharps Formation.

Harksen and Macdonald point out that in 1906 Matthew and Thompson of the American Museum of Natural History reported that the contact between the Oligocene and the Miocene beds was gradational and only recognizable by the fauna. Matthew believed that the entire post-Brule section should be referred to as the "Rosebud Beds." But in fact, Matthew and Thompson were looking at the gradational contact between the Sharps Formation and the Monroe Creek Formation and not the contact between the Brule and the Sharps Formation. In a 1907 article, Matthew divided the "Rosebud Beds" into upper and lower units. The lower unit began near the top of the Sharps Formation, included all of the Monroe Creek Formation, and the lower part of the Harrison Formation. The upper unit included the upper part of the Harrison Formation and the Rosebud

Formation.[48] Harksen and Macdonald bemoaned the fact that this misinterpretation and "nomenclatural confusion resulting from the transference of the name "Rosebud Beds" to include all of the post-Sharps Formation sequence and the mistaking of the Sharps Formation for the Brule Formation…effectively stalled further study for many years."[49] The Monroe Creek Formation conformably overlies the Sharps Formation, and in turn it is conformably overlain by the Harrison Formation. The Monroe Creek and Harrison Formations, originally defined by Hatcher in 1902, are considered part of the Arikaree Group, and for the most part have remained free of controversy. It should be pointed out that at the time of the Harksen and Macdonald article, the Monroe Creek and Harrison Formations were thought to be Miocene in age.

According to Harksen and Macdonald another source of confusion was the misidentification of the Rosebud Formation by Skinner and Taylor. The Rosebud Formation overlies the Harrison Formation and in turn is unconformably overlain by Pliocene deposits. In a 1967 article, Skinner and Taylor presented a definition of the type section for the Rosebud Formation that greatly restricted the temporal span yet at the same time their definition lacked a clearly defined top and bottom for the unit.[50] In contrast, Harksen and Macdonald examined a larger area along the Little White River and utilized the entire sequence of pink silts to define the Rosebud Formation. These authors argued that this interpretation was closer to the original definition intended by Gidley back in 1904. More importantly, their interpretation expands the temporal span for the Rosebud Formation and jeopardizes, if not eliminates, the concept of the Marsland Formation. They also argued that the Rosebud Formation in the vicinity of the Rosebud Agency is the temporal equivalent of the Sharps-Monroe Creek-Harrison-Rosebud sequence near Wounded Knee.[51]

Harksen and Macdonald concluded their work with a caution that researchers needed to remember that "formations may vary in time laterally and should not be based on taxonomic units to the exclusion of lithology," and they went on to suggest that

> Skinner and Taylor were disregarding lateral lithologic variation as a geologic fact and were striving to preserve the term Marsland Formation as a unit name despite its spotty history and roving type section." Must we always be reminding our colleagues that rock units are no respecters of time boundaries and need not be confined to a designated piece of time, be the same age from one end to the other, nor be defined on the basis of contained fossils.[52]

In 1969 Harksen and Macdonald published a second article that also sought to sort through the confusion in nomenclature, with specific reference to the Chadron and Brule Formations. The authors noted that the "whole story is one of name substitution and roving type localities."[53] Yet they point out that Evans clearly showed where the "*Paleotherium*" beds were located, that Darton related his Chadron Formation to the typical beds in the Badlands, and Osborn pinpointed the type locations both on a map and with photographs. The authors argued that the type section for the Chadron Formation, as defined by Bump in 1956, should be retained. They also designated and defined

several type sections for the Brule Formation that they maintained should be used henceforth as the type sections for this formation. One of the more useful aspects of the article was a chart presented by the authors that depicted the development of the stratigraphic nomenclature in the White River Badlands. The chart summarizes no less than 13 different nomenclatures for this area. In discussing the nomenclature applied to the Chadron and Brule Formations (biological at first and later geographical) over the last 70 years, Harksen and Macdonald acknowledged that, with the exception of Osborn's work in 1929, the historical development of names and type sections applied by most other authors ignored Darton's original intentions.[54] As a result of this study, they reconfirmed the type area used by Bump for the Chadron Formation and designated a type section for the Brule Formation.[55]

As part of the guidebook to Cenozoic deposits in South Dakota, Harksen prepared a detailed chapter, complete with graphic resumes of Tertiary strata, on the Cenozoic history of southwestern South Dakota.[56] The chapter provided a good summary of the history of the nomenclature as well as generalized descriptions of the various units. Harksen notes that the most fossiliferous portion of the Chadron Formation in the White River Badlands is the Indian Creek-Battle Creek area where Clark (in 1937 and 1954) defined the Ahearn, Crazy Johnson, and Peanut Peak members. Unfortunately, the lithologies of the Ahearn, Crazy Johnson, and Peanut Peak members can only be traced for a few miles. According to Harksen, the explanation lies in the fact that the area selected by Clark is a structural trap and collects sediments from the surrounding area, and consequently, the lithology of the area is dissimilar to the rest of the Chadron.[57] The Brule Formation contains an aggregate depth of about 460 ft of both fluvial and eolian sediments. Because of the different hardness of the beds in the Brule Formation, it weathers into a tread and riser topography as opposed to the haystack topography of the Chadron Formation.

Overlying the Peanut Peak Member, the uppermost unit of the Chadron Formation, is the Scenic Member of the Brule Formation. Within the Scenic Member are the so-called *Metamynodon* channels. These river channel deposits were so-named because they contain numerous fossils of the extinct river rhinoceros called *Metamynodon*. The Poleslide Member, the upper unit of the Brule Formation, contains the famous *Protoceras* channels, so-named because it is the only place where the artiodactyl *Protoceras* fossils have been recovered.[58]

The Rockyford Ash overlies the Brule Formation and forms the base of the Sharps Formation, which itself is the basal formation of the Arikaree Group.[59] Harksen noted that the Rockyford Ash actually represents reworked wind-blown ash deposits that are of varying thickness across the region. The remainder of the Sharps Formation consists primarily of pink, wind-blown silt and clay deposits. Harksen also noted that at some point during deposition of the Sharps Formation, an extended period of erosion occurred. The overlying Monroe Creek Formation, which primarily represents paleo-loess deposits, contains a higher percentage of volcanic ash compared to the Sharps Formation. The high percentage of paleo-loess in the Monroe Creek Formation accounts for the vertical

weathering profile. The Harrison Formation overlies the Monroe Creek Formation and is the uppermost unit of the Arikaree Group.[60] In South Dakota, the Rosebud Formation overlies the Harrison Formation and, at the time of the 1969 field trip, constituted the end of the Miocene sequence in southwestern South Dakota. According to Figure 3 of Harksen's field guide article, the Rosebud Formation is unconformably overlain by the Pliocene-aged Ogallalla Formation.[61] The unconformity represents a period of extension erosion during the Miocene-Pliocene boundary. Conversely, northwestern Nebraska contains a nearly complete sequence of late Miocene to late Pliocene deposits.

According to Harksens's Figure 3, Pliocene deposits are essentially absent from the geological record in southwestern South Dakota.[62] During late Pliocene times, renewed uplift of the Rocky Mountain region and the Black Hills triggered an extended period of violent erosion that continued into the early Pleistocene. The last significant fluvial sediments in the White River Badlands are the Medicine Root Gravels, which Harksen estimates to be Nebraskan (early Pleistocene) in age.[63] The Medicine Root gravels were deposited at a time when Nebraskan glaciation turned the streams of the Black Hills into raging torrents and the streams became choked with course materials from the core of the Black Hills. When conditions returned to a more normal status, the stream valleys were filled with coarse gravels. The fine-grained sediments (sands and silts) within the coarser grained gravels were eroded leaving behind the coarse gravel sediments as cap deposits on the interfluves.[64] Harksen noted Medicine Root gravels capping hills in Shannon and Jackson County as well as a high area on the south edge of Cuny Table, which marks the westernmost exposure of these gravels.[65]

In 1974, Harksen prepared an article on "Miocene Channels in the Cedar Pass Area Jackson County, South Dakota" in which he commented on the presence of an unconformable contact between the Brule and Sharps Formations.[66] Harksen noted at least two locations in the Cedar Pass area of the Park where Miocene channels cut into the underlying Oligocene-aged Brule Formation. These erosional channels deposited channel sandstones similar to the *Protoceras* channels in the Poleslide Member. The *Protoceras* channels by definition are restricted to the Poleslide Member, so the presence of Miocene-aged (?) channel sandstone deposits at the same level constituted an interesting problem in need of resolution.[67]

Stratigraphic Revisions (1975 to Present)

Beginning in 1995, the National Park Service and the University of Nebraska entered into a cooperative agreement to study the geological and paleontological resources of the South Unit of the Park. The research focused on three primary areas: (1) geological mapping of the Chadron Formation and understanding associated depositional environments, (2) documentation of fossil resources and fossil theft within the South Unit, and (3) geological mapping of the Chadron Formation that relates depositional environments to the regional distribution of fossils. One result of the study was a proposed stratigraphic revision of the Chadron Formation. Dennis Terry and others suggested revisions to the lithostratigraphic nomenclature for the White River Group. It also became clear that the Chadron Formation, contrary to long held traditional thinking,

dated to the late Eocene period and not the early Oligocene.[68] The White River Group (Eocene to Oligocene) is underlain by the Cretaceous-aged Pierre Shale and Fox Hills Formations and overlain by the Arikaree Group. At the close of the Cretaceous period, the Pierre Shale was severely altered by pedogenic weathering and development that resulted in the Yellow Mounds Paleosol, which is characterized by rounded mounds that are yellow, orange, and lavender in color and up to 26 m in thickness.[69] The Yellow Mounds Paleosol is the lower of the two paleosols within the Interior Zone. Overlying the Pierre Shale and the Yellow Mounds Paleosol is the Chamberlain Pass Formation, which Terry defined as the basal formation of the White River Group. The Chamberlain Pass Formation consists of white channel sandstones, red overbank mudstones, and greenish proximal overbank mudstones and siltstones.[70] Based on Retallack's work in 1983 on Cenozoic paleosols in the Badlands, it appears the red overbank mudstones were modified through pedogenesis to form the Interior Paleosol, and the greenish overbank mudstones were modified to form the Weta Paleosol Series.[71]

At some point near the end of pedogenic development of the Interior Paleosol, erosion of Clark's "Red River Valley" downcut through the Chamberlain Pass Formation and the Yellow Mounds Paleosol and into the Pierre Shale Formation. The paleovalley was subsequently filled with sediments that formed the Ahearn Member (up to 24 m of red and green sandstones and claystones) and the overlying Crazy Johnson Member (12-15 m of greenish claystones and sandstones). The last member of the Chadron Formation is the Peanut Peak Member, which unlike the Ahearn and Crazy Johnson members, is not confined to the paleovalley and in fact is more regional in extent. Evans and Terry provide a summary on the significance of stream incision and alluvial sedimentation in the basal units of the White River Group.[72]

The Crazy Johnson Member consists of 6-9 m of massive buff and green claystones that contain discontinuous limestone lenses near the top of the rock unit.[73] These discontinuous limestone beds are discussed in more detail in the subsequent section. The paleosols contained within the White River Group indicate a trend toward increasing aridity, as indicated by changes in the size of the root traces from forested environments to drier more open grassland environments. As a result of this geologic mapping, "the channel sandstones of the Slim Buttes Formation are now included in the Chamberlain Pass Formation and the Peanut Peak Member has been expanded to include the massive clays of the eastern facies."[74]

In terms of fossil remains within the Chadron Formation in the South Unit of the Park, Terry concluded that the Crazy Johnson Member contained 77 percent of the significant (i.e., commercial or scientific value). Terry noted that this may in part be accounted for by the fact that the Crazy Johnson Member represents a greater proportion of the outcrops in the study area.[75] The Peanut Peak Member produced nearly 14 percent of the fossils while the Scenic Member of the Brule Formation and the Ahearn Member of the Chadron Formation each produced about 4.5 percent of the fossils. Nearly 61 percent of the fossils were recovered from sandstone lithologies while 39 percent of the fossils were found in mudstone lithologies.[76]

In terms of depositional environments, Terry determined that the Chadron Formation can be characterized as an "aggrading fluvial system that formed in response to local changes in base level. Channel morphologies changed from confined, lenticular deposits in the floor of the paleovalley to broad, thin deposits of shallow river systems with increasingly wider floodplains as the paleovalley filled."[77] Terry also notes that the changes in base level related to the retreat of the Cretaceous Interior Seaway and the formation of the Yellow Mounds Paleosol were eustatic in nature, whereas the changes in base levels during the Chamberlain Pass and Chadron Formations were the result of responses to tectonic uplift of the Black Hills and Rocky Mountains.

In a related article that compared the stratigraphy of the lower portion of the White River Group in South Dakota with comparable exposures in northwestern Nebraska, Terry recommended the following revisions:

(1) abandon the term Interior Paleosol Complex because it is actually composed of two separate and distinct soils (the Yellow Mounds Paleosol, developed on Pierre Shale, and the Interior Paleosol, developed on overbank deposits of the Chamberlain Pass Formation);
(2) abandon the term "Chadron A" as used by Schultz and Stout and reject the correlation of these deposits with the Ahearn Member in light of the fact that the Chamberlain Pass Formation is recognizable in Nebraska;
(3) reject the correlation of the "Chadron B" to the Crazy Johnson Member and instead expand the term Peanut Peak Member to include undifferentiated strata outside of the "Red River Valley" of South Dakota; and
(4) abandon the term "Chadron C" in favor of the Big Cottonwood Creek Member for deposits that overlie the Peanut Peak Member in northwestern Nebraska and reject the correlation of the Big Cottonwood Creek Member in Nebraska with the Peanut Peak Member in the White River Badlands.[78]

Within the last four years, Philip Stoffer, (and others) on behalf of the USGS, published two comprehensive works that summarize some of the more recent geological and biostratigraphic discoveries within the Park, including stratigraphic revisions and current nomenclature. The first report, prepared in 2001, presented data that was attributed to the Cretaceous-Tertiary (K-T) boundary within the Park.[79] The second report, prepared in 2003, discusses the geology of the Park.[80] The 2003 article presents a comprehensive overview of the Cretaceous through Tertiary formations contained within the Park as well as a summary of the Quaternary events that shaped the landforms that the Park visitor experiences today. The paper focuses on the revolutionary discoveries that have occurred within the last 20-25 years as scientists and students continue the long history of geological and paleontological research and field investigations within the Park in an effort to generate new information and apply new technologies and/or dating techniques to the growing body of data.

Stoffer et al. conducted several years of research on the interpretation and regional correlation of Late Cretaceous sections within the Park. Based on their research data, these authors argued that the Park contained a nearly complete, albeit condensed, Late Cretaceous section that could provide resolution to the Cretaceous/Tertiary (K-T) boundary question within the Badlands sequence. Stoffer et al. began their research in the lower, more fossiliferous zones exposed along Sage Creek and proceeded up-section into the more unresolved upper part of the section. During Cretaceous times the Badlands region as well as much of the Great Plains was part of the Western Interior Seaway. The Late Cretaceous, which is subdivided into the Campanian and Maestrichtian (also Maastrichtian) epochs (ca. 75 – 65.5 MA), consists of Pierre Shale and the Fox Hills Formation (from older to younger). Biozones within these ages are based on the presence or absence of various key index marine fauna (e.g., mollusks, ammonites, dinoflagellate cysts). One of the problems in finding a resolution to the K-T boundary in the Badlands has been the lack of fossils preserved in the upper part of this "historically enigmatic sequence."[81] Presumably, if the K-T boundary were present within the Park, evidence of its occurrence would appear in sediments between the Fox Hills Formation and the Yellow Mounds Paleosol.

Retallack (see discussion of Cenozoic Paleosols below) was the first to suggest that the K-T boundary was below the Chadron Formation, perhaps related to the Yellow Mounds Paleosol (named in 1966 by Pettyjohn). This interpretation suggested that the Pre-Chadron K-T boundary represented an extended period of weathering and erosion that removed the latest Cretaceous and early Paleocene sediments.[82] Stoffer et al. countered that the Badlands section showed evidence

> …to support interpretation of ongoing sediment deposition concurrent with regional and local uplift as far back as late Campanian and up through the mid-late Oligocene…Our observations suggest that uplift of the Black Hills, the Sage Creek Arch, the Chadron Arch, and other local and regional structures influenced sedimentation patterns of the Pierre Shale and Fox Hills Formations east of the Black Hills.[83]

One problem identified by Stoffer et al. was difference in sedimentation rates and deposition for the Fox Hills Formation. The authors indicated that changes in sea level, coupled with on-going tectonic activity, resulted in greater deposition in subsiding areas whereas as rising areas, like the Sage Creek Arch, experienced little if any deposition at this time.[84] Thus, the Late Cretaceous section in the Sage Creek area was missing the Fairpoint Member and the White Owl Creek Member. Another contribution by Stoffer et al. was the recognition of a "widespread interval of soft-sediment deformation."[85] The authors thought that that this stratigraphic unit, which they labeled as the Disturbed Zone (DZ), could be synchronous with the K-T boundary. Originally, Stoffer et al. interpreted the DZ unit to be representative of a slump zone, but upon further investigation they determined that the event was too widespread to represent slumping.[86]

The Disturbed Zone was studied at three locations in the Park, the Wilderness Access Trailhead, Grassy Tables Overlook, and Dillon Pass/Conata Creek area. According to Stoffer et al., the DZ lies unconformably between the Fox Hills Formation and the basal units of the Yellow Mounds Paleosol. Paleomagnetic data provide a basis for interpolating sedimentation rates within the DZ and the underlying Pierre Shale Formation. The authors noted a dramatic reduction in sedimentation rates from 6.0 to 6.5 meters every million years between the Campanian/Maestrichtian boundary (71.3 MA) and the K-T boundary (65 MA) versus a sedimentation rate of 1 meter per million years during deposition of the DZ. Marked changes in lithologies from clay and shale to silty sand facies were interpreted as indication of major hydrological changes.

Within the North Unit of the Park, Stoffer et al. focused their discussion about the alleged K-T boundary on a thin glauconitic marl unit near the bottom of the DZ. The presence of glauconite has traditionally been an "indicator mineral" of slow, shallow marine sedimentation, particularly during times of transgression.[87] Although glauconite has been observed in massive, bioturbated sandstone units in the Fox Hills Sandstone, the authors reject this model for the presence of the glauconitic marl near the bottom of the DZ. Rather they believe that the glauconite is associated with extraterrestrial meteor impacts. They also point out that the Badlands glauconite is not a true glauconite but rather a suite of different clay minerals such as iron (Fe), potassium (K), and silica (Si). The thin laminated red clam-bearing clay lies conformably on top of the glauconite layer and is overlain by the DZ. The DZ layer contains no Cretaceous fossils despite the fact that Stoffer et al. conducted five years of study that concentrated, among other things, on paleontological remains within the DZ. No Cretaceous bone fragments or mollusks have been recorded from the DZ, and glauconite is not present within a meter above the DZ.[88]

Based on the above data and their interpretations of that data, Stoffer et al. concluded that the DZ represents the K-T boundary of marine sediments deposited with the Western Interior Seaway. The authors further argued that the dates for the DZ as well as dates for units above and below this layer are within the timeframe for the giant meteor (Chicxulub) that impacted the Gulf of Mexico north of the Yucatan Peninsula.

> The DZ represents a late Maestrichtian regional environmental catastrophe with an associated intense seismic component and is younger than the belemnite-bearing unit dated around 67.1 MA. The differing fauna below and above a unique glauconitic marl layer suggests that a significant environmental change had already occurred a relatively short geologic time prior to the formation of the Disturbed Zone.[89]

Stoffer et al. concluded that the K-T boundary was present within the Park and was represented by the top of the Disturbed Zone. That is, the DZ allegedly marked not only a major change in fauna, but also a significant change in sedimentation patterns from interior marine sediments to terrestrial deposits. The presence of contorted sandstone beds and melted glass spherules coupled with the above data was interpreted by the authors to represent the K-T boundary.

More recent studies of the biostratigraphy and chronometric age of the Lower Fairpoint Member of the Fox Hills Formation have resulted in the dismissal of the idea that the Park contains evidence of the meteoric impact that defines the K-T boundary. Studies by Palamarczuk et al. and Chamberlain et al. have been paramount in dismissing the notion that evidence of the K-T boundary is present within the Park.[90] These studies examined dinoflagellate cysts, palynomorphs, and lithological data collected from a 30 m thick interval of the Fox Hills Formation. The study section consisted of a series of siltstones and sandstones, dark in color with massive bedding and glauconitic at the base.[91] Dinoflagellate cysts (microfossils used to date marine sediments) and palynomorphs (which include, but are not limited to, spores, gymnosperm and angiosperm pollen grains, and certain algae colonies) are present in sufficient quantities in the lower 4 m of the section to indicate that the section has a probable age of lower upper to middle upper Maestrichtian. Above this 4 m section is a .5 to 5 m thick disturbed zone (the same DZ as noted above). To recall, the DZ was thought to represent the K-T boundary on the basis of improvised macrofossil fauna, sedimentological interpretations, and small amounts of impact debris. As noted above, the DZ is characterized by contorted sandstone beds, shocked quartz and melted glass spherules that can be traced over an area of 1,000 km^2. The DZ, which expresses indeterminant polarity, is "bracketed by a reversed and normal magnetic polarity zone throughout the study region."[92]

The study section analyzed by Palamarczuk et al. and Chamberlain et al. overlies gray Pierre Shale and lies below a zone of sandy concretions that have been placed in the middle of the Fairpoint Member of the Fox Hills Formation. That is, although terrestrial palynomorphs are common, studies indicate that the abundant dinoflagellate cysts are diagnostic of the lower upper and middle upper Maestrichtian. Palamarczuk et al. also note that dinoflagellates are present in small numbers above the DZ. Based on these data, the authors conclude that the palynomorphs and sedimentological data indicate a near shore marine depositional environment for the basal 4 m that gradually grades upward to a fluvial or deltaic environment.[93] Chamberlain et al. conclude that the

> "… DZ impactite within the study interval is not associated with the Manson Impact (too old) nor the end – K Chixculub Impact (too young), but instead represents either a hitherto unrecognized local impact event, or a distal correlative of the impactite reported from the Raton Basin."[94]

One possible explanation for the DZ is that the DZ represents an earlier meteor impact that occurred prior to the "Chicxulub" impact that currently defines the K-T boundary. Chamberlain et al. argue that the dinoflagellate data are present to within 25 centimeters (cm) of the DZ, and thus, there is no convenient way to account for a million years of sedimentation in the intervening 25 cm of rock. As a growing body of data suggest, there was more than one meteor impact near the end of the Cretaceous, and in all likelihood the DZ represents one of these earlier impacts, but it does not represent the K-T boundary.

Miscellaneous Stratigraphic Studies

Another study that has both stratigraphic and paleoclimatic implications is a Master's thesis by Linda Welzenbach that focused attention on lacustrine limestone formations in the Lower White River Group.[95] She investigated four freshwater limestone units (the Bloom Basin Limestone beds) that occur at the contact between the Chadron and Brule formations. The area of study (ca. 300 square kilometers) was located north of the North Unit of the Park, about 2-3 miles southeast of Wall and 5 miles southwest of Quinn. The beds consist of a fining upward sequence of mudstone, wackestone, packstone, and algal bindstone.[96] The faunal assemblage expressed in the beds "reflect high abundance but low diversity and include two taxa of gastropods, ostracods, fish, aquatic turtle, charophytes, and algal filament ghosts."[97]

Welzenbach argued that the faunal assemblage indicates water depths of up to 10 m, with a fresh to brackish oxygenated water column. The presence of ostracods and charophytes indicated a low energy setting, and based on various lines of evidence, Welzenbach concluded that the lakes were fed by springs and ground water. She suggested that at this locality, the Chadron Formation fluvial system changed to a fully carbonate lacustrine system with a lake that was over 300 km^2 in areal extent and upwards of 10 m or more in depth.[98] Although the lake persisted for many years, it suddenly experienced a terminal emergence (evidenced by mud cracks and a faunal death assemblage), and was subsequently filled by the Brule Formation fluvial system. Welzenbach interpreted these changes to be the result of base level changes and major climatic changes during the Middle to Late Eocene and the Late Eocene to Early Oligocene.[99] She also concluded that the disruption in drainage or fluvial incision occurred prior to deposition of the Brule Formation.

In 1998 Welzenbach and Evans continued the study of carbonate deposition in a fluvial sequence in the Lower White River Group. They identified at least four lacustrine limestone beds in the upper part of the Chadron Formation from various locations in South Dakota and Nebraska, ranging from Wall, South Dakota, to Toadstool Park in Nebraska.[100] They examined the stratigraphy, lithology, and paleontology of Late Eocene-Early Oligocene freshwater limestone beds at 16 localities in the area. In addition to corroborating the earlier findings of Welzenbach, their study identified two notable discoveries.

> (1) "The lacustrine limestones are pure carbonate, indicating that these depositional systems were isolated or protected from the adjacent, overbank-dominated fluvial systems, and (2) the lacustrine limestones and paleogroundwater deposits are found adjacent to structural features (e.g., faults, fracture systems), suggesting that the deposits were the result of a localized, structurally controlled place of paleogroundwater discharge."[101]

The lacustrine limestones, which are confined to the upper Chadron Formation, do not occur in the underlying Chamberlain Pass Formation or the overlying Brule Formation. The authors interpreted this to mean that Black Hills uplift led to the initiation of regional

paleogroundwater flow systems during deposition of the Chadron Formation. Increased aridity and decreased discharge of the paleogroundwater led to changes in the paleohydrology of the region (flow rates and flow direction) and termination of the paleogroundwater discharge, which in turn resulted in evaporation of the lakebeds and the subsequent deposition of the Brule Formation.[102]

Paleontological Discoveries

Macrofossil Studies

Since the Wood Committee's attempt to define biochronological units for the North American Land Mammal Ages, many researchers have pointed out the errors and inconsistencies in the definition and use of the NALMA units. Prothero and Emry provide a summary of the problems in the NALMA as defined by the Wood Committee and present a list of revisions and recommendations to rectify the problem.[103] As discussed previously, one of the problems with the Chadronian Land Mammal Age was the uncritical definition of the top of the Chadron Formation and the presence of brontotheres above the alleged top of the formation. The identification of the Big Cottonwood Creek Member (limited to Nebraska only) as the uppermost unit of the Chadron Formation corrected the problem of brontotheres supposedly occurring in rock units above the Chadron Formation. Prothero and Emry concluded that definition of the end of the Chadronian, as defined by the Wood Committee, is "insufficient by itself, and although it can be part of the definition, it is impractical as a means of recognizing the end of Chadronian time."[104]

It was "recommended that the Chadronian-Orellan boundary be placed at the first appearance of the distinctive taxon *Hypertragulaus calcaratus*, along with the first appearance of a number of additional reference taxa."[105] Prothero and Emry suggested the following time periods for the Chadronian: Earliest Chadronian (37 – 36.5 MA), Late Early Chadronian (36.5 – 35.7 MA), Middle Chadronian (35.7 – 34.7 MA), and Late Chadronian (34.7 – 33.7 MA). With the revision of the top of the Chadron Formation to include the Big Cottonwood Creek Member, the conflict regarding the occurrence of brontotheres above the Chadron (as it was defined by Schultz and Stout and the Wood Committee) was eliminated. In the article, the Prothero and Emry support recommended revisions to define the Orellan as the first appearance of *Hypertragulus calcaratus, Leptomeryx evansi, Paleolagus intermedius,* and *Miniochoerus chadronensis*; the boundary could also include the last appearance of *Poebrotherium eximium* and *Miohippus grandis.*[106] The authors proposed the following date ranges for the Orellan: Earliest Orellan (33.7 – 33.4 MA), Late Early Orellan (33.4 – 33.1 MA), Early Late Orellan (33.1 – 32.5 MA), and Latest Orellan (32.5 – 32.0 MA).

In discussing the original definition of the Whitneyan, Prothero and Emry noted that it was inappropriate and misleading to define a biochronological unit on the basis of lithostratigraphic units. Based on the limited geographical range of the key biostratigraphic units and the limited number of fossils present in the key beds, it was recommended that the Whitneyan be based strictly on biostratigraphic criteria. It was proposed that the Whitneyan be divided into two sections: the Early Whitneyan (32.0 –

31.4 MA) and the Late Whitneyan (31.4 0 30.0 MA). The end of the Whitneyan and the beginning of the Arikareean was defined as the first appearance of *Nanotragulus loomsi*, *Palaeolagus hypsodus, Palaeocastor nebrascensis, Leidymys blacki,* and *Mesoreodon minor*.[107] These taxa first occur in the lowest levels of the Sharps Formation (just above the Rockyford Ash) on the south side of Sheep Mountain Table. The end of the Whitneyan is marked by the last occurrence of a number of taxa including *Leptomeryx, Merycoidodon, Paratylopus, Paralabis, Colodon, Protapirus, Hesperocycon, Osbornodon, Dinictus,* and *Eumys*.[108] As a result of the revisions to the nomenclature and definitions of the NALMAs, there are now four distinct biostratigraphic intervals for the Chadronian, four proposed levels for the Orellan, and two formal zones for the Whitneyan. Collectively, these NALMAs span roughly 7 million years from 37-30 MA. More importantly the land mammal ages are based on biostratigraphic zones and radiometric dates. The authors conclude that the above revisions, if accepted, "offer the first high-resolution, well-calibrated chronostratigraphy for the White River Group. Such high-resolution data have already proven useful for a number of evolutionary and paleoclimatic studies where precise dating of faunal events is necessary."[109]

In partnership with other museums and universities, Rachel Benton, Ph.D., Park Paleontologist, Badlands National Park, continues to study and research paleontological remains within the Park. One study by DiBenedetto examined the sedimentology and taphonomy of the Brian Maebius site in the Tyree Basin of the Sage Creek Wilderness Area of the Park. DiBenedetto examined a variety of fossil remains, including a number of small mammals, from a locality situated in the "Lower Nodular Zone," Scenic Member, Brule Formation. The fossil remains included extinct squirrel, mouse, other rodents, rabbit, and an insectivore as well as extinct forms of horse, rhino, and a ruminant.[110] He also examined coprolites and the first preserved pollen grains from the Scenic Member. Pollen data indicate the presence of trees such as pine (*Pinus*), hickory (*Carya*), oak (*Quercus*), and elm (*Ulmus*) along with a mixed grassland community of ragweed and marsh elder (*Ambrosia*), goosefoot (*Chenopodia*), aster (*Composita*), and seed and grass plants (*Gramina*).[111] A sedimentological analysis of the locality suggested a natural levee or backchannel levee habitat with a freshwater swamp nearby surrounded by xerophytic (arid) elements. The assemblage suggests a climatic change from warmer to cooler conditions (15.1º C to 14.1º C) and increasingly xeric conditions (830 mm precipitation/year to 600 mm/year).[112] DiBenedetto concluded that strata were deposited by a laterally moving fluvial system with episodic deposition during fluvial cycles of about 700 year's magnitude. Based on the fossil mammals and pollen, DiBenedetto argued for a varied and abundant fauna assemblage within a fluvial system with grassland elements nearby.[113]

Microfossil Studies

The study of Cenozoic microfauna (e.g., small mammals such as moles, voles, mice, and squirrels) was rarely a concern among vertebrate paleontologists in the first 100 or more years of research in the White River Badlands. In 1896 Hatcher was one of the first to suggest that harvester ant mounds were likely to contain microvertebrate fossils. Paleontolgists operated under the assumption that because small mammals live and die

within a particular environmental niche within limited geographical range, therefore a fossil assemblage from a given locality, when taken as a whole, would provide paleontologists with a rather unique opportunity to reconstruct the paleoenvironmental conditions of the formation from which they were derived. Gary Johnson conducted his master thesis study at SDSMT on microvertebrates from the Middle Oligocene deposits of the White River Group. Johnson collected 198 microfaunal samples from 330 harvester ant mounds. The mounds were located in Middle Oligocene deposits (Brule Formation).[114] Johnson recorded small vertebrate and invertebrate remains, representing 19 families and 22 genera. Six of the 22 genera were reported for the first time in middle Oligocene deposits. One of the more interesting finds was the recovery of the first primate premolar from Middle Oligocene beds of the White River Group.[115] Johnson also reported two new types of Sciuridae (squirrels), probably suggestive of *Proscirus*, which would be the first *Proscirus* in the middle Oligocene. Johnson also reported the first *Agnotocastor* (fossil beaver) remains in the Middle Oligocene beds.[116]

Several years later in 1972, Laurie Macdonald (now Laurie Bryant), also from SDSMT, conducted a study of microfossil remains from the Monroe Creek (Early to Middle Miocene) Formation near Wounded Knee.[117] The Monroe Creek Formation, which falls in the middle of the Arikareean NALMA, is a thick sequence of wind and stream deposited silt and volcanic ash. Like Johnson before her, Macdonald collected harvester ant mounds. She was able to collect small fish, frogs, lizards, snakes, birds, and mammals.[118] Macdonald noted that the overwhelming majority of mammalian remains were representative of burrowing animals that were able to burrow into the soft silty sediments. Among the fossil remains collected by Macdonald, she reported 68 percent were pocket gopher and pocket mouse, and 20 percent of the remains consisted of lizards, snakes, rabbits, hedgehogs, moles, ground squirrels, deer mice, and jumping mice.[119] More recently, Mike Greenwald, Research Scientist for the Geology Museum-SDSMT, has conducted numerous studies on microfaunal remains from various paleontological excavations and monitoring projects within the Park.

Paleomagnetic and Tectonic (Volcanic Tuffs) Studies

The discovery of various radiometric dating techniques and their inclusion into mainstream scientific research proved to be of great benefit to geologists and paleontologists beginning in the 1960s and1970s. New research techniques and areas of study, including magnetostratigraphic studies and paleomagnetic correlation, have rendered a number of startling interpretations to the geology and paleontology of the White River Badlands. Beginning in 1985 and continuing to the present, magnetostratigraphic studies and paleomagnetic correlation have resulted in changing time lines for various biostratigraphic boundaries during the Cenozoic Era. Prothero conducted magnetostratigraphic studies of the White River Group that produced "a network of paleomagnetic datum planes for detailed correlation."[120] Prothero noted that detailed correlation of the stratigraphy of the White River Group has always been a problem. One reason for the problem is the difficulty in correlating land mammal biostratigraphy with the global marine record, especially given the few places were Oligocene mammal-bearing deposits interfinger with marine deposits in North

America.[121] He also noted that radiometric dates were currently available only for the Chadronian period, while rocks of the Orellan and Whitneyan periods have yet to produce reliable dates. Prothero suggested that magnetic polarity stratigraphic studies could resolve the aforementioned problems. Prothero maintained that,

> If the local microstratigraphy can be correlated with the global magnetic polarity timescale, both absolute dating and correlation with the worldwide geochronological record are possible. Once correlation with global record is established, local changes in the mammalian fauna can be related to the major paleoclimatic changes that took place during the Oligocene. [122]

Prothero collected numerous paleomagnetic samples at 5.5 foot intervals within each sampled stratigraphic column at various locations within and adjacent to the Park. The results of this initial work suggested the following boundaries of the land mammal ages: Duchesnean/Chadronian-36.5 million years ago (Ma), Chadronian/Orellan – 32.4 Ma, Orellan/Whitneyan – 30.7 Ma, and Whitneyan/Arikareean – 28.5 Ma. (Note: the above dates have been superseded by more recent studies and improved dating techniques. Prothero's work also suggested that the famous "Lower Nodular Zone," which yielded a large number of fossils and was considered a stratigraphic marker, is time transgressive with outcrops becoming progressively younger to the west. He cautioned that the "time transgressive nature of the nodular layers in the Big Badlands should serve as a caveat for lithostratigraphic correlations based on other widespread marker units."[123] Prothero also demonstrated that the "most crucial phases of the Chadronian/Orellan transition are not preserved in the Big Badlands" of South Dakota, but are present in the biostratigraphic ranges exhibited near Lusk and Douglas, Wyoming.[124]

Later magnetostratigraphic and paleomagnetic studies by Prothero and Swisher contradicted his initial findings. In a 1992 article, the authors argued that their new radiometric dates would change long-held interpretations of the age and correlation of NALMAs with the Eocene-Oligocene timescale. Revised dates of importance to the Big Badlands include the following: Duchesnean/Chadronian-37 million years ago (Ma), Chadronian/Orellan-33.9 Ma, Orellan/Whitneyan-(slightly predates) 31.8 Ma, and Whitneyan/Arikareean-(slightly post-dates) 30.05 Ma.[125] The revised dates of these NALMA boundaries affect the traditional interpretations of faunal changes. For example,

> …the minor faunal change between the Duchesnean and Chadronian, once thought to be the Eocene-Oligocene transition, is now within the late Eocene. The extinctions at the Chadronian/Orellan boundary, once touted as the Mid-Oligocene Event are now correlative with the Terminal Eocene….There is no significant faunal event during the middle Oligocene in North America, as is also true of the marine record….The shorter duration for the Chadronian also means that rates of species origination and extinction are now comparable with other NALMA events.[126]

Prothero and Swisher conclude that many of the more troublesome questions regarding correlations for the Eocene/Oligocene boundary are now resolved.

Other studies in the White River Group have sought to find the source of the numerous widespread volcanic tuff beds that occur throughout the formation. Larson and Evanoff studied White River tuffs from Colorado, Wyoming, and Nebraska.[127] The tuffs were classified according to geochemical properties, mineralogy, and radiometric dates. The tuffs range in age from 35.5 Ma to 30 Ma, with volcanic deposits older than 31 Ma containing mostly rhyolitic to rhyodacitic tuffs, and tuffs younger than 31 Ma are predominantly dacitic. These data, combined with radiometric dates and tuff composition, suggest that the source of the tuffs was derived from volcanic activity in Utah and Nevada.[128] Larson and Evanoff suggested that the White River fossils could provide detailed biostratigraphic data, but cautioned that on a regional scale only detailed stratigraphic ranges have been determined for the Brule Formation. They also cautioned that while magnetic polarity zones "provide the most detailed correlations for the White River sequence, magnetic polarity zones are not themselves uniquely diagnostic, and without the aid of additional stratigraphic indicators, correlation of magnetic zones in terrestrial sequences is problematic."[129] Based on their study of volcanic tuffs, these authors demonstrated that polarity zones can be completely missing in local sections. Because tuffs are more common than polarity zones, they suggest that studying volcanic tuffs can provide greater stratigraphic resolution.

In recent years, the study of tectonism has gained favor among geologists working within the Park. In 1996 the "Field Guide to Tertiary Tectonism in the Northern Great Plains: Road Log, Field Trip 1" reported that magnetostratigraphy, faunal correlations, and lithostratigraphy demonstrated that the boundary between the White River Group and the overlying Arikaree Group should be placed within the Sharps Formation which is Late Oligocene in age.[130]

From older to younger, the Chadron Formation is underlain by the famous "Yellow Mounds Paleosol" and the "Interior Paleosol." The White River Group rests unconformably on a surface that preserves at least two weathering profiles of different age. The older surface, the Yellow Mounds Paleosol, was recognized as a weathering surface since 1965 and if exposed, can be easily identified throughout the Park. In the northern and eastern parts of the Park, the Yellow Mounds Paleosol was formed on the Fox Hills Formation and Pierre Shale, while further to the west this paleosol developed on weathered Pierre Shale.[131] Both of the marine formations (i.e., Pierre Shale and Fox Hills) are of Late Cretaceous age, while the Yellow Mounds Paleosol is generally considered to be early Eocene in age.[132] Overlying the Yellow Mounds Paleosol is the Chamberlain Pass Formation, identified by Terry and Evans.[133] According to the authors, the Interior Paleosol developed on the weathered surface of the Chamberlain Pass Formation. The reddish color of the Interior Paleosol suggests development in a higher oxygenating environment compared to the Yellow Mounds Paleosol or green beds of the underlying marine sediments. The authors maintain that burial of the aforementioned paleosols by gray floodplain deposits of the overlying Chadron Formation indicates a

significant change in base level between Late Cretaceous and Late Eocene.[134] Much of that change is believed to be the result of tectonic activity, as evidenced by a number of faults that occur in Late Cretaceous marine formations within the Park.[135]

Based on their work in 1998, Stoffer et al. reached somewhat similar conclusions regarding Late Cretaceous sediments and evidence of tectonic events within the Park. These authors demonstrated four cycles of eustatic sea level change that occurred during the Late Cretaceous period that are correlated with regression of the Western Interior Seaway and the onset of the Laramide regional deformation.[136] The authors conclude that tectonic uplift in the Badlands region during the late Cretaceous period is evidenced by (1) "the abundance of reworked sediments in some horizons, (2) the occurrence of buried slumps near fault zones, and the thinning of strata associated with the Maestrichtian ammonite range along the eastern flank of the Black Hills."[137]

Paleoecological and Paleoclimatological Studies

Thus far, this chapter has focused on geological and paleontological studies whose primary intent was to provide scientists and others with sufficient information to correlate regional biostratigraphic and lithostratigraphic data and discuss the timing and nature of evolution for various Cenozoic land mammals. Within the last 30-40 years, another interesting and equally useful purpose of geological and paleontological studies has emerged. Namely, the ability to infer and/or interpret paleoecological and paleoclimatic conditions during specific periods of geologic time. Early paleontological studies alluded to this type of interpretation, when stating that one period was warmer or cooler than another (e.g., Eocene vs. Oligocene) or one period was wetter or drier than another (again Eocene vs. Oligocene). However, beginning in the 1960s John Clark, while at SDSMT and later with the Field Museum of Natural History in Chicago, initiated studies that he hoped would not only interpret the climatic history of the Oligocene, but also allow others to predict where future areas of desert and jungle may occur and define and locate the boundary between well-watered soils and barren deserts.[138] Based on various field studies sponsored by the NPS and Badlands National Monument from 1957-1961, Clark attempted to interpret the geological history of the Park and reconstruct the paleoclimatic history of the late Cretaceous (Pierre Shale and Fox Hills Formation) through late Oligocene (Poleslide Member) periods in the White River Badlands of South Dakota.

Clark suggested that during the Laramide Revolution when the Black Hills were uplifted, the arching of Cretaceous strata, coupled with uplift, resulted in low structures east of the Black Hills. Thus, western South Dakota was transformed from low swamps and jungles watered by streams from mountains in Idaho and Wyoming to a broad, flat-bottomed valley trending southeastward with higher ridges to the north and south.[139] Clark argued that during the subsequent Paleocene-Eocene periods nothing spectacular happened in South Dakota. Streams from the Black Hills dome slowly down cut sedimentary rocks, warmer and cooler periods alternated, with grassy areas expanding at the expense of jungles during more arid times. This extended period of deep weathering and erosion presumably resulted in the Yellow Mounds Paleosol and the Interior Paleosol. According to Clark, during the earliest Oligocene (or perhaps during the Eocene-Oligocene

transition) the climate must have been exceedingly warm and moist, giving rise to stream rejuvenation whereby quiet muddy rivers and streams became torrents, choked with sand and gravel. Following this relatively short period of deposition, the streams began to erode once more leaving behind heavier gravels as surface gravels on older soils.[140]

According to Clark, the sediments from the Poleslide Member of the Brule Formation were deposited during the mid to late Oligocene. The old trough that extended southeastward from the Black Hills at the end of the Laramide Revolution now contained a stream called the Red River. Clark estimated the stream valley to have been three to five miles in width, but only 70 feet or less in depth. The Cheyenne River was not in existence at this time.[141] Clark notes that at this time the Red River began to fill with sand and fine-grained gravels as well as some red clay from the Spearfish and Minnelusa Formations. The sediments that filled the Red River channel formed the Ahearn, Crazy Johnson, and Peanut Peak members of the Chadron Formation. Although these units are exposed south and west of Sheep Mountain Table, the Chadron Formation is not exposed on Sheep Mountain Table. Over time, the valley continued to fill and volcanoes in the west provided various layers of ash. He speculates that the climate at this time was cooler than in the preceding periods because the deposited materials, for the most part, were unweathered.[142] Based on paleontological remains from the Ahearn Member (oldest) of the Chadron Formation, the animals at this time (brontotheres, three-toed horses, four-toed camels, soft-shelled turtles, small tropical turtles) were "predominantly stream-loving, forest forms that thrived in a humid, warm-temperate forest."[143]

Following this period of stream aggradation, a new period of deposition began that covered the initial deposits and filled the trough with more sediments that eventually lapped over the edges of the parallel ridges. These greenish sands and clays, which buried numerous brontotheres, deposited 20 to 40 feet of fine gravel, sand, and clay that constitute the Crazy Johnson Member of the Chadron Formation. The Red River continued along its former course, but was joined by two tributary streams, one near Scenic, South Dakota and the other just east of Wall, South Dakota. Eventually, the streams lost both their volume and velocity and the resulting shrunken creeks deposited a layer of fine silt and clay 15 to 30 feet thick, while more easterly areas developed wide shallow swamps (or lakes) with calcareous algae that formed limy deposits at the bottoms of the swamps. These silts, clays, and limy zones constitute the Peanut Peak Member of the Chadron Formation. At the close of the Chadron times, the region consisted of a, "… broad, almost featureless swampy plain (mostly wooded) with small, gently flowing creeks (eastward and southeastward)…(and) open areas of thick grass alternated with woodland in the interstream areas."[144]

According to Clark, the Middle Oligocene (now Early Oligocene), represented by the Scenic Member of the Brule Formation, was characterized by a cooler and drier climate. Streams were smaller and less powerful, and narrow bands of riparian vegetation paralleled the stream banks, but grasslands were predominant in interfluvial settings. Eventually the streams began a period of deposition, known as the Lower Nodular Zone or Layer, that entombed numerous animals. At some point, the climate became more

humid and the streams increased their volume and bedload and eventually deposited several feet of siltstone over mudstone.[145]

The sediments from the Poleslide Member of the Brule Formation were deposited during the mid to late Oligocene. The majority of these sediments have eroded with the only outcrops of the Poleslide exposed at the top of higher elevations such as Cuny Table, Sheep Mountain Table, the Pinnacles, and the Cedar Pass area. The sediments within the Poleslide Member are described as "massive, fine-grained mudstones (tan to buff colored), with abundant unweathered volcanic ash. They represent continued floodplain deposition under temperate arid conditions…"[146] Channel-fill sediments are noted at several places, including several that trend southeastward into the north face of Cuny Table, another trends eastward along the south face of Sheep Mountain Table, while another runs eastward, just north of the Wall between Norbeck Pass and Cedar Pass.[147] Clark speculates that during the Late Oligocene the climate became progressively more arid and cooler (with perhaps even frosty winters) than at any previous time.

In 1967, Clark et al. followed their earlier study with a larger more extensive research effort that culminated in a monograph entitled, *Oligocene Sedimentation, Stratigraphy, Paleoecology, and Paleoclimatology.*[148] The work included a 54-page chapter on the "Geology, Paleoecology, and Paleoclimatology of the Chadron Formation, and a 35-page chapter on the "Paleogeography of the Scenic Member of the Brule Formation." Among other innovative approaches, Clark et al. attempted to make an analogy between the depositional environments of the "Red River" of the Badlands and certain geographical and environmental regions of the Amazon River floodplain and delta. Unfortunately, the analogy also borrowed numerous Brazilian (and other foreign) terms that were unfamiliar to North American scientists, and the study gained little support. Clark et al. also attempted to calculate rates of deposition for the various members of the Chadron and Brule Formation, but these too were not widely accepted. Nonetheless, the book does provide a serious examination of fluvial deposits both longitudinally along the stream course and laterally across the terraces, backchannels, floodplains, and the main stream channel. The report resulted in 58 numbered conclusions (three pages) that ranged from the impacts of the Laramide Revolution at the end of the Cretaceous period to climatic and environmental events that took place at the end of the Oligocene epoch. Clark et al. addressed issues such as sedimentation rates, stratigraphic facies, and paleoenvironmental and paleoclimatological reconstructions.[149]

More recently, Dr. James E. Martin of SDSMT was able to reconstruct the paleoenvironmental conditions in the area during the late Pleistocene and early Holocene. Martin examined mammalian remains, particularly microfauna, from the nearby Lange-Ferguson Clovis Kill Site just south of the Park. The Clovis horizon produced 24 vertebrate taxa, including 14 small mammals.[150] Based on the modern geographical range of the various species recovered from the Clovis occupation (ca. 11,000 BP), Martin suggested an area of sympatry of northeastern North Dakota with elements of boreal forest, mixed deciduous forest, and grassland.[151] Locally, he suggested a paleo-mesic, riparian habitat with a low energy stream near a permanent water body. He also

suggested that the greater effective precipitation during the Clovis period allowed for a more dense and diverse vegetation mosaic that in turn supported a more diverse faunal assemblage than current conditions can sustain.

Geochronology

Cenozoic Paleosols

The study of paleosols, or fossil soils, has provided scientists with a variety of new insights into the stratigraphy, taphonomy, paleoecology and paleoclimatology of the White River Badlands. The application of paleopedogenic studies in the Badlands is relatively new. One of the first studies was conducted by Greg J. Retallack of Indiana University. Retallack, who studied a 143 meter (m) stratigraphic column in the Pinnacles area of the Park, identified 87 paleosols ranging in age from Late Eocene to Late Oligocene.[152] Retallack noted that three criteria (root traces, soil horizons, and soil structure) can be used to differentiate fossil soils from soils that simply enclose sedimentary deposits (i.e., non-soils). Retallack characterized the paleosols into ten different kinds of fossil soils, each representing a distinctive ancient environment based on such factors as climate, organisms, topographic relief, parent material, and time of formation (i.e., degree of environmental stability). According to Retallack, the fossil soils evince a progressively drier climate "from humid during Late Eocene time to semiarid during Late Oligocene time. There was also a concomitant change in vegetation from Late Eocene forest, to Early Oligocene open woodland, to early Late Oligocene savanna with a stream-side gallery woodland, to mid-Late Oligocene savanna, and finally to latest Late Oligocene open grassland with scattered stream-side trees."[153] The mammalian faunal record during this time changed from forest and woodland species to a savanna dominated assemblage.

After several millions of years of uplift, streams eroded the Late Cretaceous marine deposits and began to fill with sediments during the Late Eocene period. Retallack suggests that topographic relief was generally low and uniform but occasionally interrupted by stream incision, particularly at the Eocene-Oligocene boundary and again during the later part of the Late Oligocene. Parent material for these paleosols generally consisted of volcanic ash, resorted soil material, and transported alluvium.[154] Retallack reports that resorted soil materials were most common in the wooded landscape of the Early Oligocene and volcanic ash became more prominent in parent materials of less developed, sparsely vegetated arid soils during the very end of the Oligocene. According to Retallack, the amount of time available for soil development changed "became progressively less with time, from strongly developed soils during the Late Eocene and Early Oligocene to moderately developed soils during the Late Oligocene."[155] Retallack also estimated the rate of sediment accumulation based on the time of soil formation and concluded that sediments accumulated at a progressively higher rate from the Late Eocene to the Late Oligocene. Retallack also provided block diagrams for various time periods that depicted paleoenvironmental conditions and preferred habitats for the prominent mammals during specific time periods.

In 1985, Retallack conducted a tour of fossils soils at three locations near the Pinnacles Lookout at the Park. The tour was part of the expeditions for the 45th Annual Meeting of the Society of Vertebrate Paleontology. In addition to the numerous paleosols, Retallack noted several major disconformities within the sequence that represent periods of landscape stability and erosion, that in part are related to climatic deterioration.[156] Unlike fossils recovered from paleostream channels, "fossil mammals in fossil soils are more likely to be close to where they lived and of about the same age as enclosing rocks… Each kind of fossil soil can be regarded as a unique kind of taphonomic situation in which some kinds of fossils were preserved but not others. Each fossil soil also represents a distinctive ancient ecosystem which may have supported distinctive assemblages of vertebrates."[157] Retallack pointed out that fossil soil horizons exhibit more graditional boundaries than sedimentary layering, with graditional changes to truncated surface horizons, and diffuse subsurface horizons composed of red argillic (Bt) horizons or calcic horizons (Ck) with calcareous nodules.[158] Retallack concluded that continued study of fossil soils and faunal assemblages have the potential to further delineate four new lines of research. (1) Paleosols may be used to assess the resolution of vertebrate biostratigraphy; (2) paleosols are useful indicators of old (or ancient) environments because they are independent of other indicators (and they provide evidence of ecosystems when vertebrate fossils are not preserved); (3) the variety of paleosols within a stratigraphic level reflect the range and diversity of sub environments within ancient landscapes; and (4) using independent evidence of ancient environments obtained from fossil soils, it may be possible to assess the degree to which animals were adapted or maladapted to their environment.[159]

Paleopedogenic studies are useful in interpreting local environmental conditions at fossil localities. For example, Terry conducted a stratigraphic and paleopedogenic analysis of the bone bed at the Conata Picnic Ground site or the "Pig Dig" within the Dillon Pass area of the North Unit.[160] The bones are contained within the lower portion of the Scenic Member of the Brule Formation. The White River Group, for the most part, was deposited within a fluvial environment that changed character as conditions became drier over time. For example, Terry reports that rivers associated with the preceding Chamberlain Pass Formation (i.e., during the early Chadronian NALMA) were typical meandering fluvial systems with multi-story channel deposits, lateral and vertical accretion, point bars, and cut banks. During the time of the deposition of the Chadron Formation the character of fluvial systems changed from channel sand facies within the Ahearn Member to a progressively more overbank mudstone facies system during the Crazy Johnson and Peanut Peak members. The degree to which climate controlled this shift from a channel-dominated system to an overbank facies-dominated system is unknown.[161] Channel systems within the Scenic Member of the Brule Formation are characterized by broad sheet sands, suggesting stream channels were braided to meandering in nature. The absence of stream channel deposits near the Pig Dig precludes interpreting the type of fluvial system associated with the bone bed.

Terry suggested four models for the formation of the Pig Dig: bog/swamp, pedogenic alteration, watering hole, and catastrophic flooding. Analysis and interpretation of the

lateral extent of the bone bed layers favored the watering hole model. Sedimentological analysis suggested the water hole was formed on a floodplain near a stream channel during drought conditions.[162] The green coloration of the bone bed deposits is the result of anaerobic conditions, but Terry was not certain if the anaerobic conditions existed before burial and lithification, or if these conditions were the result of anaerobic decay of organic rich sediments during the development of anaerobic conditions. A study of the taphonomy of the Conata Picnic Ground site (Pig Dig) confirmed Terry's earlier findings, indicating the bone bed is the result of animals trapped and/or killed at a watering hole on a well drained floodplain but some distance from the main channel.[163] Among the remains analyzed for her thesis, Kimberlee Stevens identified a minimum of 8 *Archeotherium* (fossil pigs), 7 *Hyracodon* (ancestral rhinos), 3 *Mesohippus* (fossil horses), 3 *Leptomeryx* (ancient deerlet-sized ruminants), and 1 *Prosciurus* (fossil squirrel).[164] Stevens also noted that the fossil remains provided little evidence of predation or scavenging, which suggested the animals became trapped in the soils adjacent to the water hole and were then rapidly buried, thereby preserving the animal remains. The number of individuals has increased significantly since the time Stevens prepared her thesis.

Another recent MS thesis from SDSMT focused on environmental interpretations from paleosols that contained a fossil assemblage. Sarah Black conducted a site analysis of the Buffalo Alley Bone Bed, which is located in the lower Scenic Member of the Brule Formation.[165] The locality produced over 100 specimens including 80 specimens that could be identified and classified. Black argued that paleopedographic evidence suggests soil conditions were neutral to alkaline, and soils were well-developed compared to other weathering profiles observed within the Scenic Member.[166] Black also noted that the deposits were more typical of Badlands floodplain fossil accumulations. That is the Buffalo Bone Bed assemblage contrasts sharply with the Brian Maebius site in the Tyree Basin or the Pig Dig. The assemblage from the Brian Maebius site accumulated on a floodplain, but the assemblage exhibited strong evidence of carnivore predation or scavenging as a result of lying on the surface for an extended period of time before burial. Conversely, the fossils at the Pig Dig site represent complete, partially articulated skeletal remains that accumulated in or near a watering hole but were quickly buried and gave some evidence of predation or scavenging. In contrast to the above sites, the fossils from the Buffalo Alley Bone Bed site are represented by incomplete, disarticulated and fragmentary specimens.[167] The deposits from the site are mudstone and suggest deposition by a meandering stream, not direct channel deposits. The paleosols observed at the site range from very weak entisols with A/C soil horizons to well developed alfisols with A/Bt/C soil horizons. Another interesting note about the Buffalo Alley assemblage is the presence of coprolites. According to Black, the paleosols from this site do not match any of the four paleosol types defined by Retallack from the Scenic Member near the Pinnacles.[168] Black concluded that based on the presence of coprolites and the low percentage of scavenging, the bones were exposed on the floodplain surface for a short duration before burial.[169]

Quaternary Deposits and Geomorphological Studies

Although the geology and paleontology of the White River Badlands has been investigated for more than 100 years, it was not until the 1960s that researchers gave any serious consideration to Quaternary-aged (Pleistocene and Holocene) deposits and geomorphological studies. Today the White River Badlands stand in stark contrast to the surrounding featureless mixed grass plains of the Unglaciated Missouri Plateau. The extant topography is an expression of a complex history of Quaternary events (primarily erosional) acting on a number of former surfaces. The highest surfaces pre-date the actual formation (erosion) of the Badlands, while others represent terraces created when the Cheyenne and White rivers experienced a series of down cutting events during the Pleistocene. A number of alluvial and colluvial events combined to form the present Badlands surface. Some of the earliest studies regarding Quaternary deposits in the Badlands were conducted by J.C. Harksen of the South Dakota Geological Survey.[170]

Eolian Studies

In 1967 Harksen reported the presence of quaternary-aged loess (wind blown silt) deposits on tables and mesas in the southwestern part of South Dakota. Harksen argued that changes in base levels at the end of the Pliocene triggered an extended period of erosion of the White River Group and stream incising along the Cheyenne and White rivers. He suggested that the White River downcut more than 1,200 feet (ft) compared to only 600 ft for the Platte River.[171] Harksen noted that the White River Badlands were the ideal source for loess sediments during the Quaternary period.

In 1968, Harksen continued his studies of loess deposition in southwestern South Dakota and named the depositional unit "Red Dog Loess" after the type site, Red Dog Table.[172] At the type site, Harksen recorded 58 ft of loess, which was underlain by 30 ft of Quaternary-aged terrace deposits (silts and sands). The terrace deposits in turn lie unconformably on top of the "*Protoceras* channels" of the Poleslide Member of the Brule Formation.[173] Harksen noted that Cuny Table contains evidence of early Quaternary channel deposits as well as a loess cap and sand dunes on the eastern and western ends of the table. Harksen also reported Red Dog Loess deposits on top of Stirk Table, Sheep Mountain Table, Castle Buttes, and upwards of 90 ft of loess on top of Babby Butte. Harksen suggested the Red Dog Loess post dated 675,000 and was late Yarmouth (interglacial) to Illinoian (glacial advance) in age. Although Harksen acknowledged that downcutting of the Cheyenne and White rivers at this time provided source material along the exposed floodplains, he suggested that the White River Badlands were the major source for the Red Dog Loess.[174] He also suggested that the sand dunes on Cuny Table represented lag concentrations of courser-grained sediments after the finer-grained sediments were blown away during the Pleistocene.[175]

Within the last 10 years, the Park has sponsored several research projects that focused on the Holocene geomorphic evolution of the Park. Dr. Glen Fredlund, University of Wisconsin-Milwaukee, and his students initiated the earliest studies in the Park. Fredlund and others have noted for several years that eolian deposits are widespread across the North American Great Plains and are sensitive to climatic change. Prevailing

thought argues that soils develop during mesic conditions while eolian deposits accumulate during xeric conditions. Recent studies suggest that Holocene droughts were of a greater magnitude and more frequent than historic period droughts.

Rawling et al. suggest the apparent lack of synchrony of drought events across the Great Plains has "three potential explanations that are not mutually exclusive: (1) real sub regional variability in climate, (2) non-climatic events reflected in the eolian geomorphic record, and (3) poor resolution in numerical chronology."[176] Rawling et al. studied soil stratigraphy from seven sections of eolian cliff-top deposits (ACT) at Cuny Table, Sheep Mountain Table, Bouquet Table, and Norbeck Pass. All sections examined contained buried soils formed in fluvial, eolian, or colluvial sediments that are overlain by ACT deposits.

The studies demonstrated that the soils beneath the ACT deposits are early Holocene (typically 7,900 years BP or older) at higher elevations (950 meters-Cuny Table and Sheep Mountain Table), and late Holocene (typically 2,900 years BP) at lower elevations (830 meters-Norbeck Pass and Bouquet Table). Buried soils within the ACT deposits exhibit weakly developed A-C or A-AC-C profiles. Organics within the top 5 centimeters (cm) were submitted for soil organic matter (SOM) radiocarbon dates. The sampled soils at these different locations returned roughly similar dates indicating late Holocene soils at 1,300 BP, 2,900 BP, and 3,700 BP.[177] The authors also reported that the correlation between the radiocarbon assays and infrared stimulated luminescence dates was good, thereby providing independent corroboration that the dates of the buried soils are regional indicators of paleoenvironmental conditions.

Fredlund and Rawling also noted that well-developed paleosols are frequently exposed in the terraces of the major creeks and larger tables or mesas, where they form distinct stratigraphic sequences. Geomorphological research, conducted by Fredlund and Rawling, focused on the buried soils contained in Holocene-aged eolian deposits such as large tables (mesas) and stabilized dunes that are common throughout the Badlands.[178] Holocene soils in the cliff-dunes are approximately 3 meters (m) in depth. Research at Sheep Mountain Table produced a series of stacked buried soil horizons, including three Holocene-aged A-C soils underlain by a truncated Bt horizon. Soil organic matter from these soils was dated. Although no recognizable A horizon was observed within the upper 100 cm, charcoal at 90 centimeters below surface (cmbs) was radiocarbon dated to 405 years BP. The first A-C soil measured 100-150 cmbs with a SOM date of 1,310 BP at the top and a date of 2,070 BP at the bottom. The second A-C soil (162-172 cmbs) produced a total SOM date of 2,390 BP, and the third A-C soil (180-190 cmbs) yielded a total SOM date of 3,800 BP.[179]

More recently, David Kuehn conducted a more extensive geoarcheological reconnaissance of the Park.[180] Kuehn's research, which stemmed from a paradigm of contextual archeology, focused on the temporal, landscape, stratigraphic, and paleoenvironmental contexts of the archeological record and site formation processes (and post-depositional events) associated with these sites. Kuehn's work was limited in

scope and intended to lay the groundwork for multiyear archeological and geoarcheological studies. The stated project goals included (1) to identify landforms and depositional sedimentary environments within the Park that have the potential to contain buried, intact, prehistoric materials, (2) to provide archeologists with information regarding the temporal distribution of sites within the above landforms, and (3) to identify some of the archeological research questions that may be impacted by a better understanding of the geomorphic/pedogenic history of the region.

Kuehn examined eight stratigraphic sections at seven locations (five in the North Unit and two in the South Unit) within the Park. Kuehn numbered the profile sections #1-7, and the sections examined occupied four different geomorphic surfaces. Data collected at each section included the following: (1) identification and description of the lithostratigraphic units; (2) identification and description of buried soils; (3) preparation of profile maps for each section; (4) photographic documentation; (5) collection of soil and sediment samples as well as samples for radiometric dating.[181] The four major geomorphic surfaces investigated were labeled as follows: (1) Upper Prairie surface and Badlands Wall; (2) Pleistocene (?) Cheyenne River terraces; (3) early Pleistocene/late Tertiary (?) surface; and (4) the Lower Prairie surface, which is further subdivided into modern floodplains, Holocene terraces, and Holocene alluvial fans.

The Upper Prairie surface and Badlands Wall were examined in the North Unit in areas ranging in elevation from 800 to 820 m north of the road and along the Badlands Wall on the south side of the Wall. The stratigraphic sections studied within the Upper Prairie surface (sections #2, #5, and #6) are all associated with "sod tables," which are composed of reworked alluvial and colluvial sediments (and eolian materials) that have been deposited below, and away from, eroded bedrock remnants.[182] Pleistocene (?) Cheyenne River terraces were examined at the southern edge of Quinn Table at an elevation of 860-870 m. Section #1 is located at a steep cut (15+ m) southwest of the Sage Creek campground.[183] The oldest and highest surfaces in the Park were examined at sections #3 and #4 on the west edge of Sheep Mountain Table and the southeast corner of Cuny Table, respectively. These surfaces (roughly 950 m) are mantled by Quaternary-aged deposits of sand, silt, and several meters of loess.[184] The Lower Prairie surface, which refers to a myriad of surfaces and sedimentary deposits of various ages below the Badlands Wall, was examined at two sections (#7 and #7a) along the South Fork Sage of Creek, each of which includes terrace and alluvial fan environments.[185]

Studies by Kuehn (2003) of Sheep Mountain Table and Cuny Table, as well as large sod tables in the North Unit of the Park demonstrated that the upper 3-4 m of these landforms contain Holocene-aged eolian material (loess and fine-grained sand). These materials generally contain at least three to five buried soils, ranging in age from 12,000 BP (2.5 m below surface) to 1,450 BP (1.1 m below surface). Buried soils and radiometric dates were collected from all of the major geomorphic settings except the Pleistocene (?) Cheyenne River terraces.[186] At Sheep Mountain Table, Kuehn (2003) recorded five different buried soils within the top 2.7 m, and three soils in the top 1.1 m. Bone gelatin from a bison bone located between the second and third buried soils produced a date of

2,080 BP. These A horizon soils were poorly developed, suggesting the soils were developed during a short but relatively stable period of time and that soil development was arrested by longer intervals of unstable conditions that led to renewed eolian deposition. Kuehn demonstrated that the high upland surfaces such as Sheep Mountain Table and Cuny Table contain the "most complete sediment records (spanning the Pleistocene through the Holocene) of any major landform category in the White River Badlands."[187] Based on the results of his work, Kuehn concluded that,

> Badland settings are like no others when it comes to the dynamics, complexity, synchronicity, and overall impact of geomorphic processes on the archeological record. One of the benefits of utilizing a contextual approach to archeological research is the fact that data gathering is not limited to a single scientific discipline…It is this collaboration that will eventually fill in the remaining temporal and spatial gaps created by the badlands dynamic geologic history.[188]

Alluvial Studies

Alluvial studies of the Holocene period have tended to lag behind other studies in the Badlands. In 1974, Harksen identified and dated two Holocene terraces along Bear Creek in Pennington County.[189] Harksen noted that the age of the terraces was much younger than previously thought. One radiocarbon sample (Sample #2) from a buried soil located six feet below the terrace surface produced a date of 2,350 BP. A second sample (Sample #1), located in a depression nearly 16 feet below the terrace surface (and only 7 feet above the Pierre Shale), produced a date of 780 BP. Harksen suggested that after the deposition of charcoal in Sample #2 (which occurred on a well-developed A horizon soil), a period of stream incision occurred between 2,380 and 780 BP. The stream was entrenched about 10 feet before the initiation of stream aggradation. Harksen believes the charcoal sample was deposited shortly after the initiation of aggradation. Terrace infilling continued until the sample was buried beneath 13 feet of alluvial fill. This period of aggradation was followed by a period of equilibrium that allowed an upper, undated paleosol to develop two feet below the terrace surface.[190]

Jean Kowal, one of Fredlund's students, wrote a MS thesis on the "Recent Geomorphic Evolution of Sage Creek in Badlands National Park" in 1997.[191] The sequence of events reported by Kowal are similar in nature and timing to the events reported by Harksen along Bear Creek. The events reported by Kowal for Sage Creek are as follows:

- The Sage Creek valley eroded to the level of the Pierre Shale.
- Cycles of deposition and erosion occurred resulting in a series of fill deposits.
- Fluvial deposition filled the valley to a height of about 7 m (22 ft) above the current stream bed and created a fill unit topped by a floodplain. Radiocarbon dates of 2,230 and 800 BP indicate fluvial deposition occurred between about 2,400 and 800 BP.
- After 800 BP an erosional event was initiated that downcut into the earlier fill deposits. The stream incision caused the creek to abandon the floodplain and created a terrace tread and scarp that became the T2 terrace. The incising stream

continued to meander across the valley and eventually formed a new floodplain about 3.5 m below the T2 terrace.

- More vigorous down cutting and erosion began between 100 and 50 BP that resulted in abandonment of the floodplain and the creation of the T1 terrace. The current stream bed is about 2.5 m below the T1 terrace tread.[192]

Other researches have argued that a change from a period of terrace building to one of terrace erosion constitutes an "alluvial discontinuity." The discontinuities have been linked to changes in climate. A number of synchronous discontinuities have been identified at or about 800, 2,000, 3,050, 4,200, and 6,000 years BP. The work by Kowal confirmed the discontinuities at 800 and 2,000 BP. Kowal presented two conclusions as a result of her work at Sage Creek. "First, the landforms at Sage Creek represent a record of changes in fluvial processes and the timing of those changes. Second, climate change is the most plausible driving force behind the shifting processes that developed the landscape at Sage Creek."[193] Her work formed a baseline for similar studies in the area.

Although NPS-funded research over the last 25-30 years has provided new answers to old questions, many questions remain unanswered and new questions are constantly emerging. The geological and paleontological resources of the White River Badlands provide a unique opportunity to research questions regarding the regression of the Western Interior Seaway; the K-T boundary; volcanic tuffs, magnetostratigraphy, and tectonic activity, Cenozoic paleosols, mammalian evolution, and many other interesting questions. Continued stewardship and preservation of the unique geologic and paleontological resources contained within the Park is imperative to ensure that these resources are available for future generations to observe, enjoy, and study.

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CHAPTER THREE

Prehistoric and Protohistoric Overview of the White River Badlands

CHAPTER 3

PREHISTORIC AND PROTOHISTORIC OVERVIEW OF THE WHITE RIVER BADLANDS

White River Badlands as an Archeological Region

The South Dakota State Plan for Archaeological Resources identifies 24 archeological regions within the state, 10 of which occur on the west side of the Missouri River.[1] The White River Badlands archeological region includes all areas drained by the White River. As defined by Winham and Hannus, the eastern portion of the region also includes areas drained by the Bad and Little White rivers, and the northwest part of the region is drained by the South Fork Cheyenne River. The White River Badlands archeological region, which includes portions of Shannon, Pennington, Jackson, Bennett, Todd, and Mellette counties, is generally considered a sub-region of the Northern Plains. Although several cultural histories of the Northern Plains have been written, few have been prepared from the perspective of the Badlands. Rather, the White River Badlands are considered tangential to events occurring on the High Plains to the north, south, and west, or the Middle Missouri region to the east. By necessity, the prehistoric overview presented below represents a synthesis of previous studies within the White River Badlands archeological region, the Northern Plains region, and to a lesser extent the Middle Missouri region. The information presented in this chapter is primarily based on Hannus et al., but it also draws heavily from books and reports prepared by others.[2] The purpose of the overview is to present a synthesis of the cultural context, time periods, site types, and cultural groups that occupied the study area during the last 12,000 years.

As noted by Hannus et al., despite years of survey and excavation, archeologists have yet to define any "cultures," "phases," or "complexes" for the White River Badlands.[3] As such, habitation of the Badlands is considered to be transitory with groups from a number of geographic areas occupying the region on a seasonal basis. Hannus et al. suggest that groups from the Northwestern Plains, Black Hills, Central Plains, Sandhills, and Middle Missouri occupied the Badlands region at different times and places.[4]

The remainder of the chapter is divided into two major headings: the first presents a summary discussion of previous archeological investigations in the White River Badlands region, and the second presents the prehistoric cultural context of the White River Badlands. The later subsection is organized according to recognized time periods as outlined in Hannus et al.[5]

Previous Investigations in the White River Badlands

This section of the chapter focuses on previous archeological investigations in the White River Badlands region in general and within Badlands National Park in particular. For convenience, this section is divided between archeological studies conducted prior to 1978 (i.e., Badlands National Monument and before) and archeological studies conducted after 1978 when the monument was designated as a National Park. Regardless of when

the investigations occurred, the vast majority of studies have been conducted in order for federal or state agencies to be in compliance with federal regulations that require archeological resources be considered in the planning stages of a federal undertaking. Compliance-related archeological studies, often referred to as Cultural Resource Management (CRM), are generally restricted to the construction footprint of a particular undertaking, rather than the broader, long-term research, design-oriented approach that typifies many archeological endeavors by university professors or museums.

Summary of Archeological Investigations prior to 1978

This section of the report is derived from the following sources: (1) summaries of previous archeological investigations, and (2) extensive review of the files and reports at the South Dakota Archaeological Research Center (SARC) at the Office of the State Archeologist (OSA), in Rapid City.[6] During the second half of the nineteenth century and the first half of the twentieth century, interest in archeological discoveries in the White River Badlands area took a back seat to highly publicized paleontological and geological expeditions. For example, Euro-Americans knew that the Lakota and other Plains Indian tribes had occupied the region on a seasonal basis for a hundred or more years, but very few people considered the nature and duration of prehistoric occupation of the region. One of the first accounts of archeological remains in the Badlands region occurred in 1905 when Shelton reported fire hearths, ceramics, projectile points, lithic debris, burned and butchered bone, and charcoal in the White River Badlands.[7] The Smithsonian Institution conducted a preliminary survey of the proposed Rockyford Dam and Reservoir as part of the Missouri River Basin studies in 1949. The reconnaissance survey identified three prehistoric sites in the vicinity of the proposed Rockyford Reservoir.[8]

The presence of archeological sites within Badlands National Monument, particularly in the North Unit of the Park, was first brought to the attention of the National Park Service (NPS) by Morris Skinner in 1951.[9] While collecting paleontological remains, Skinner observed archeological materials at several localities as well as a possible bison jump site. In 1953, Paul Beaubien of the NPS conducted an archeological survey of the sites reported by Skinner and an assessment of archeological resources within the Monument.[10] Beaubien recorded 42 sites, including two important sites, the Johnny site (39JK4) and the Pinnacles site (39PN9). Beaubien reported no kill sites, but he did report one Paleo-Indian site, Big Foot's Camp, and three large multi-component sites. Although many of the sites reported by Beaubien consisted of one or two flake sites, he did report the presence of prehistoric ceramics at 11 sites.[11] Among the materials recorded by Beaubien were a variety of projectile points, ceramics, lithic tools, charcoal, and bone.

In 1958 prior to development activities, the NPS enlisted Dee Taylor to conduct limited excavation at the Johnny site (39JK4) and the Pinnacles site (39PN9). Taylor was able to define a tentative chronology that followed the established sequence for the Central and Northern Plains.[12] Although Taylor found little evidence that the Badlands were occupied during the Paleo-Indian and Archaic periods, he was able to document materials dating to the Late Plains Archaic (Pelican Lake points), the Plains Woodland tradition (Besant points and ceramics), and the Plains Village complex (Anderson wares and Stanley

Braced Rim wares).[13] No significant additional archeological studies were conducted within Badlands National Monument until 1970.

Between 1970 and 1977, several preconstruction surveys of very limited scope were conducted for the NPS within the North and South Units of the Park. Some of the more significant surveys completed in the North Unit during this time included the Cedar Pass Butte area,[14] survey in the Cedar Pass area by Kay and Mundell,[15] survey in the northeast and Pinnacles entrances by Kay and Mundell,[16] and survey of the Doors and Windows parking area.[17] Britt reported the Millard Ridge site (39JK2), which contained pottery and chipped stone artifacts.[18] The survey of the Cedar Pass area resulted in the identification of an exposed charcoal lens about 18 inches below ground surface near the Cedar Pass Lodge, but no cultural material was observed.[19] Survey of kiosk areas near the Northeast and Pinnacles entrances resulted in the identification of a small lithic scatter (39JK52).[20] During a survey of Buffalo Gap National Grassland, Kay recorded 17 archeological sites in Pennington County near the southern boundary of the North Unit.[21] In addition to the above studies, Anderson visited the park in 1973 in order to assess the condition of several archeological sites.[22] She assessed previously recorded sites (39JK2, 39JK3, 39JK4, 39PN9, 39PN23, and 39PN837), made limited collections, and photo-documented the sites.

The largest and most productive survey (in terms of sites recorded) was a 1,280 acre survey in 1976 of the proposed White River Visitor's Center in the South Unit of the Park. The survey, directed by Carl Falk of the NPS, recorded 27 archeological sites, including 23 prehistoric sites and 4 historic sites.[23] Small lithic scatters of unknown age characterize a majority of the sites recorded during the survey, but Falk et al. reported prehistoric ceramics from two sites. Much of the survey area was covered by heavy grasses resulting in low surface visibility which undoubtedly affected the survey results. Despite these obstacles, the data obtained from the survey corroborated the chronological findings presented by Taylor in 1961.[24] Table 1 presents a summary of selected archeological studies in or near Badlands National Park prior to 1977, and a discussion of the more important studies and findings is presented below.

Table 1. Summary of Pre-1978 Archeological Surveys In or Adjacent to Badlands National Monument

References	Location	Acreage	Sites	Comments
Shelton 1905		Unknown		
Wheeler 1949		Unknown		
Beaubien 1953	Rapid survey of entire Park as it existed in 1953	Unknown	42 sites	North Unit
Taylor 1961	Vicinity of 39JK4 and 39PN9	Not applicable	39JK4 and 39PN9	Site evaluations/ excavations; North Unit
Britt 1970	Millard Ridge/Cedar Pass	0.5 acre	39JK2	Site evaluation survey; North Unit

Anderson 1973	Trip Report	Not applicable	39JK2, 39JK3, 39JK4, 39PN9, 39PN23, and 39PN837	Site visits and survey in vicinity of sites only; North Unit
Calabrese 1974a, 1974b	North Unit: Wall & Cottonwood SW Quads; Northeast and Pinnacles Entrance	38 acres at Pinnacles; 28 acres at Northeast Entrance	39JK52 at Northeast Entrance area	Heavy grass cover, poor visibility. To be disturbed by construction; North Unit
Kay 1974		Unknown		
Nickel 1977	North Unit: Cottonwood SW Quad; Doors and Windows Parking	ca. 50 acres		Excellent visibility due to rain; North Unit
Total Surveys = 10				

Summary of Archeological Investigations after 1978

Over the last 27 years, hundreds of compliance-related CRM studies, both surveys and excavations, have been conducted by or for the NPS and other federal and state agencies for all federal undertakings within and adjacent to the White River Badlands. The first CRM survey within the newly named Badlands National Park was the Sage Creek Rim Road survey conducted in 1978.[25] The purpose of the survey was to inventory and evaluate archeological sites within the right-of-way of proposed roadway improvements. The survey resulted in the recordation of 15 new prehistoric sites (39PN321, 39PN322, and 39PN327-39PN339) and two isolated prehistoric finds. Two sites previously recorded by Beaubien were re-recorded. Ten of the 15 sites were recommended potentially eligible for the National Register, pending further evaluation. In 1979, Bruce Jones of the NPS-Midwest Archeological Center (MWAC) in Lincoln, Nebraska, conducted a re-examination and re-identification of several sites located along the Sage Creek Rim Road.[26]

Since the Lincoln survey in 1978, many of the archeological investigations in or near Badlands National Park have been conducted by the NPS-MWAC or the NPS Denver Service Center (DSC), South Dakota State University, Augustana College, and SARC of the OSA in Rapid City. However, privately-owned CRM companies have also performed numerous surveys on behalf of federal and state agencies. One of the earliest NPS surveys in the South Unit of the Park was conducted on the east end of Cuny Table for a proposed gravel pit operation.[27] Anderson reported two sites (39SH34 and 39SH35) consisting of a series of stone circles, or "tipi rings," on narrow ridges above the Fog Creek drainage. Anderson suggested the tipi rings may be associated with a Siouan occupation.[28] In 1981, Anderson surveyed a proposed bridge alignment for the White River Development Area in the vicinity of two prehistoric sites (39SH14 and 39SH27) that had been previously recorded by Falk in 1976.[29] Also in 1981, Anderson and Bob Alex recorded a burned rock feature (39SH36) eroding from a terrace in the Fog Creek area.[30]

Beginning in 1980 and continuing to the present, Dr. L. Adrien Hannus and his staff (first at South Dakota State University (SDSU) and currently with Augustana College, Sioux Falls) have conducted the most comprehensive and most productive surveys in the Park. In 1980, Hannus and his colleagues at SDSU began a multi-year study known as the White River Badlands Regional Research Project, which culminated in the production of a number of reports. Although most of the work associated with this long-term project occurred on lands adjacent to the South Unit, some work was conducted within Park boundaries along Fog Creek and its many unnamed tributaries. The project included surveys, limited subsurface testing at selected sites, and detailed excavations at the Lange/Ferguson site. The Lange/Ferguson site produced the remains of two butchered mammoths in association with Clovis points dating to 11,800 BP; thus providing evidence of the earliest occupation of the area.[31]

Another important aspect of the project was the discovery and documentation of the West Horse Creek Quarry, which consisted of a two square mile area containing at least 13

artifact concentrations ranging from primary quarry detritus to lithic scatters and workshop debris reflective of various stages of core and biface reduction.[32] The West Horse Creek survey also identified the source (outcrop) of a brown chalcedony flake, similar in appearance to Knife River Flint, found in association with a butchered mammoth from the Lange/Ferguson site as well as a purple chert also used in tool manufacture. The survey of the Fog Creek area was equally productive as it resulted in the identification of 17 previously unrecorded sites within the Park boundaries.[33] Other aspects of the survey project focused on selected portions of the White River Badlands region in Custer, Pennington, Shannon, Jackson, and Bennett counties. One site of particular importance (39SH80) located in the South Unit of the Park produced a late Paleo-Indian projectile point, a Plains Woodland Besant point, and Middle Missouri (?) collared ceramics.[34]

During the 1980s and 1990s, numerous small construction or development projects occurred in the North Unit. Mueller monitored trenching operations near Cedar Pass Lodge, surveyed areas around proposed stock ponds, and surveyed the proposed location of buffalo fence.[35] The later survey produced two sites (39PN538 and 39PN539). DeVore recorded three small prehistoric sites (39JK90-92) and four isolated finds during the survey of a 160-acre land exchange.[36] He also surveyed two sewage lagoons, two 20-acre landfills, and evaluated sites near Cedar Pass.[37] Johnson conducted a number of surveys for small construction or development projects in 1987.[38] Although no new archeological sites were recorded during these surveys, she did confirm the presence of a historic site (39SH130) on top of Sheep Mountain Table overlooking School of Mines Canyon.[39] Johnson also conducted limited evaluation and mitigation of sites 39JK4 (Cedar Pass), 39JK3, and 39JK2.[40] Johnson reports that the Cedar Pass site represents an Initial Middle Missouri camp, 39JK3 is a lithic scatter, and 39JK2 is a short-term camp that produced undiagnostic ceramics.[41] The work at the Johnny Site (39JK4) resulted in two additional reports by Anderson regarding the ceramic component, which she interpreted to be Initial Middle Missouri.[42]

One of the most significant studies in the North Unit occurred in 1991 and 1993 when personnel from NPS-MWAC surveyed the Badlands Loop Road between the Northeast Entrance and the Pinnacles Entrance. The survey corridor varied between 25 m to 400 m in width and was nearly 50 km, or 31 miles, in length. The survey identified 16 new sites (ten sites in Jackson County and six sites in Pennington County), and limited test excavations were conducted at three previously recorded sites (39JK4, 39PN9 and 39PN1135).[43] In 1993, Jones also surveyed an 80-acre block of land at the Pinnacles Ranger Station and a power-line corridor survey from the Northeast Entrance to the Park boundary.[44] NPS-MWAC archeologists have conducted a number of other small surveys primarily in the North Unit, including, but not limited to, surveys of proposed sewage lagoons and sewer lines, a fire cache, VIP Trailer Pad, a water tower site, and additional work in the Fog Creek drainage.[45] The 1999 survey of the proposed Fire Cache and VIP Trailer Pad resulted in the recordation of one historic site (39JK237), an early twentieth century restaurant and bar.[46]

One of the earliest large-scale surveys in the South Unit of Badlands National Park was a 160-acre survey in the Fog Creek area conducted in 1981 by Hannus, et al.[47] The survey resulted in the identification of 17 sites. The Fog Creek drainage was the focus of the several additional large-scale investigations in 1985, 1988, and 1990. In 1985, Chomko investigated two alternatives for the proposed visitor centers in the Fog Creek vicinity.[48] He reported seven sites in Alternative A and five sites in Alternative B. In 1988, two para-professional training sessions were held in the Fog Creek area. The training sessions focused on exposed sites that were eroding rapidly into Fog Creek. Four new sites were recorded and several previously recorded sites were monitored to evaluate integrity, significance, and rates of erosion.[49] The second training session also sought to resolve discrepancies in site numbers assigned during the earlier surveys. That is, rapid erosion in the Fog Creek drainage may have contributed to problems in relocating sites and the possible duplication of site numbers.[50] Johnson summarizes the results of these various studies as well as various artifact and data analyses and radiocarbon dates obtained from the Fog Creek sites.[51] In 1992 and 1993, the White River Visitor's Center was again the focus of archeological survey. The 1992 survey focused on proposed impact areas for the removal of four underground fuel tanks, installation of one aboveground fuel tank, and the relocation of one aboveground propane tank and associated fuel lines.[52] Two sites previously recorded by Falk et al. in 1978 were noted but lacked integrity and were recommended not eligible to the National Register. No sites were recorded for the expansion of the parking lot at the Visitor's Center.[53] Moreover, it was determined that one previously recorded site (39SH16) had been destroyed during the initial construction of the parking lot.[54]

In addition to the aforementioned construction and development projects within Badlands National Park, numerous highway and highway-related surveys were conducted in the vicinity of the Park between 1982 and the present. Excluding the Badlands Loop Road and Sage Creek Rim Road (both in the North Unit), four highways provide access to the Park. State Highway 44, which runs east-west between Interior and Scenic, more or less divides the North Unit from the South Unit. The Bureau of Indian Affairs (BIA) maintains three highways (BIA 27, 2, and 41) that provide access to the South Unit. BIA 27 runs north-south between Scenic and Sharps Corner; BIA 2, which connects BIA 27 and 41, runs east-west and crosses Cuny Table; and BIA 41 runs north-south along the western boundary of the South Unit. The first major highway survey in the area was conducted in 1982 along Highway 44 between Scenic and Interior.[55] The survey resulted in the identification of 44 prehistoric sites including a stratified, multi-component site containing an exposed fire hearth and an associated McKean projectile point. The survey also identified sites associated with Initial Middle Missouri and Extended Coalescent variants.[56] BIA Route 27 (and adjacent lands) had been the focus of several highway studies in the 1980s and 1990s.[57] Church surveyed proposed alignments from Scenic to Rockyford, and Buechler surveyed the proposed alignments between Rockyford and Sharps Corner.[58] Messerli and Fosha surveyed proposed gravel pit areas as well as the proposed South Unit Ranger Station and Visitor's Center.[59] Collectively these surveys resulted in the recordation of 29 prehistoric sites in Shannon County in the vicinity of Badlands National Park.

Other types of linear archeological surveys (e.g., water pipeline surveys and overhead transmission line surveys) have been common in or near the vicinity of the Park, especially during the 1980s and 1990s. Surveys associated with the Oglala Sioux Rural Water Supply System for the Pine Ridge Indian Reservation represent some of the more extensive surveys undertaken in the region.[60] Other CRM-related surveys in the region include, but are not limited to, overhead transmission line surveys,[61] land exchange surveys for Buffalo Gap National Grassland and/or Badlands National Park,[62] four surveys associated with Environmental Engineering/Cost Analysis (EE/CA) studies for removal of unexploded ordnance (UXO) at Badlands Bombing Range,[63] and a survey of 40 locations associated with the reintroduction of black-footed ferrets in the North Unit.[64] Although these surveys have reported a number of prehistoric and historic archeological sites, the majority of sites consist of small lithic scatters with few, if any, diagnostic points or formal tools. Historic archeological sites primarily consist of artifact scatters and/or former buildings associated with early farmsteads and ranching activities.

In 1997, Augustana College of Sioux Falls, South Dakota, entered into a cooperative agreement with the NPS-MWAC to conduct a multi-year archeological inventory of the Park. The agreement outlined various research topics and three seasons of fieldwork. The research topics and field investigations considered the results of geoarcheological investigations conducted by David Kuehn, potential development areas, and visitor disturbance.[65] Geoarcheological information provided by David Kuehn (NPS-MWAC consulting geoarcheologist) identified four major land surfaces within the Park: Upper Prairie Surface and Badlands Wall, Pleistocene Cheyenne River Terraces, early Pleistocene/late Tertiary Surfaces, and Lower Prairie Surface/Sage Creek Basin.[66] The latter geomorphic feature was subdivided in modern floodplains, Holocene terraces, and Holocene alluvial fans. Kuehn stressed that "badland settings are like no other when it comes to the dynamics, complexity, synchronicity, and overall impact of geomorphic processes on the archeological record."[67] The 1998 field season included the pedestrian survey of ca. 4,050 acres north of the Visitor's Center in the vicinity of Quinn Table, an area proposed for controlled burns. Although the prescribed burns did not occur, the survey proceeded with a modification in the field methods and the addition of a survey of a proposed road project and a sewage lagoon.[68] The survey resulted in the re-examination of two previously recorded sites and the recordation of 76 new sites

Fieldwork during the 1999 field season included review of existing collections maintained at the Park, a revisit of two sites (the Pinnacles site (39PN9) and the Johnny site (39JK4)), two compliance-related surveys (one at the Northeast Entrance Station and the other at Sheep Mountain Table), and a large survey in the vicinity of Sage Creek.[69] Collectively, the 1999 field season included the survey of approximately 2,450 acres, the recordation of 87 new sites, and the re-examination of seven previously recorded sites.[70]

The 2000 field season included examination of private collections in collaboration with Mike Fosha of OSA, while test excavations focused on threatened portions at two sites: the Pinnacles site (39PN9) and site 39PN1160.[71] The results of the 2000 test excavations at the two sites, along with a detailed cultural context and a synthesis of the archeological resources within the Park, are presented in Hannus et al.[72] The data presented in the 2003 report is the most comprehensive document to date on the archeology of the White River

Badlands region and Badlands National Park. Much of the prehistoric context presented below draws heavily from the data presented in the above report as well as the numerous reports prepared by Hannus and his colleagues. Recently, Jones reported the results of monitoring construction activities to stabilize a major erosional slump near the Johnny site (39JK4) on the Cedar Pass Road.[73]

To summarize, as of 2002, over 12,000 acres (about 5%) of Badlands National Park have been surveyed for archeological resources. The surveys have resulted in the identification of approximately 260 (as of 2005 SARC has recorded 355 sites) prehistoric and historic sites and 80 isolated finds or activity areas.[74] Of the roughly 260 known sites, 11% are considered historic, about 28% of the prehistoric sites can be assigned to a temporal period or cultural group, and the remaining 61% of the sites are classified as prehistoric or unknown. Of the 70 dateable prehistoric sites, only 13 have been dated to the Archaic period or earlier. These include four sites with Paleo-Indian projectile points, one Early Plains Archaic site, four Middle Plains Archaic (McKean point) sites, and eight Late Plains Archaic sites (Pelican Lake points or radiometric dates).[75] In addition, several Paleo-Indian and Archaic sites/points have been reported adjacent to the Park.[76] The remaining 57 sites date within the last 2,100 years and are assigned to the following cultural groups or periods: Plains Woodland tradition, Avonlea complex (n=5), Besant complex (n=2), Plains Village tradition, and undifferentiated Late Prehistoric or Protohistoric.[77] Kuehn and Hannus et al. also report 14 radiocarbon dates with mean ages of 2,300 to 250 BP (ca. 350 BC to AD 1750) from the Pinnacles site (39PN9) representing Late Plains Archaic, Plains Woodland, and Plains Village occupations.[78] These dates are comparable to the suite of dates obtained from hearths and other features in the Fog Creek area. Six dates from the Fog Creek sites date from ca. 1,600 BP to 750 (ca. AD 350-1200). The sigma value on these dates range from plus or minus 70 years for the earliest date to 250 years for the most recent date.[79] Hannus et al. report four dates from the Sage Creek drainage that range in age from 2,200 to 270 BP, and a suite of ten radiocarbon dates ranging from 1,435 to 12,010 BP.[80] The dates reported by Kuehn were obtained from the four major geomorphic features he analyzed during 1997.[81]

Table 2 presents a summary of selected archeological studies in the vicinity of the Park between 1978 and the present. Table 3 presents a summary of archeological data for sites that are listed or eligible for the National Register of Historic Places (NRHP) within the Park. A review of the archeological GIS database at the NPS-MWAC and the comparable GIS database at SDARC indicates that only two sites have been determined eligible. Because of the sensitive nature of archeological site location information, the Park has requested that NRHP listed and eligible archeological sites are not illustrated or graphically reproduced in the HRS report; thus, the need to include Table 3. It should be noted that the vast majority of sites recorded within the Park have been classified as "Unknown" or "Unevaluated." "Unknown" applies to sites that were recorded over 30 years ago and have not been revisited; thus, it is in not known if these sites still exist. "Unevaluated" applies to extant sites that were recorded by an archeologist, but these sites have not been evaluated for their NRHP status.

Table 2. Summary of Selected 1978 and Post-1978 Archeological Surveys in or Adjacent to Badlands National Park

References	Location	Acreage	Sites	Comments
Lincoln 1978	North Unit: Quinn Table & Quinn Table NE Quads; Sage Creek Rim Road	14 km-long road (est.) and a 100 m-wide corridor (approx. 345 acres)	15 sites: 39PN21-22 (Beaubien prev. discovered); 39PN327-339; and 2 isolated tools	Visibility ranging from 40% to 90%; North Unit
Falk et al.1978	South Unit: Stirk Table and Imlay SW Quads	1,280 acres	23 prehistoric sites; 4 historic sites	Survey of land between 2,600 and 2,650 ft. above MSL; heavy grass cover; South Unit
Jones 1979	Sage Creek Rim Road	Unknown	(see Lincoln 1978)	Resurvey of Lincoln 1978; North Unit
Anderson 1980	South Unit: Cuny Table East Quad	<5 acres	39SH34; 39SH35 Both tipi rings	Emergency evaluation of quarry area; 40% surface visibility; South Unit
Anderson 1981a	White River Development Area	<0.5 acre	39SH14, 39SH27	Bridge replacement survey; South Unit
Anderson 1981b	Upper Fog Creek	unknown	39SH36	Site Visit; South Unit
Mueller 1982	North Unit: Quinn Table & Quinn Table NE Quads; Buffalo Fence	5.75 mi. long (9,250 m) linear survey (200 m wide = 460 acres)	Two sites recorded: 39PN538 and 39PN539	North Unit
Hannus et al. 1984	White River Badlands	–	–	Research Design for Multi-Year Study
Kellar et al. 1984	Pass Creek	Unknown	39JK63 and 39JK68	Test Excavations; North Unit
Lueck and Butterbrodt 1984	Pass Creek, Cuny Table & other locations	Unknown	Multiple sites; 39SH80-Paleo, Besant & Middle Missouri ceramics	North & South Units

References	Location	Acreage	Sites	Comments
Nowak et al. 1984	West Horse Creek Quarry	1,200 acres	39JK37	Survey and test excavations
Nowak and Hannus 1985	White River Badlands	–	–	Overview of SD from Badlands Perspective
Hannus and Winham 1985	White River Badlands	Unknown	Unknown	Surveys near South Unit
Church 1985	BIA 27: Scenic to Rockyford	Unknown	Unknown	South Unit
Chomko 1985	Two Proposed Visitor Centers	Unknown	12 sites	South Unit
Hannus et al. 1986	White River Badlands	Unknown	Unknown	None
DeVore 1986a, 1986b	North Unit: Cottonwood SW Quad; 160-acre land exchange; two 20 acre landfills	160 acres (1/4 of a section) plus some smaller tracts in other locations	Three sites recorded: 39JK90-92; and 4 isolated flakes	Other areas surveyed: two sewage lagoon sites (3-4 acres); two landfill sites (3-4 acres); 39JK4 plus 1 acre SW; parking lots and pull-offs; North Unit
A. Johnson 1987a	North Unit: Wall SW Quad; Thistle Dam Borrow Area	ca. 12 acres	None	Surface examination was adequate (given thick grasses). No cultural materials; North Unit
A. Johnson 1987b, 1987c	North Unit: Interior Quad; Concession Cabin Area & Residence Area	7 acres and 24 acres, respectively	Concession Cabins (b) = 0 sites Residence Area (c) = 0 sites	Visibility poor (in lots with houses) to good (in cabin areas). No cultural materials; North Unit
Johnson 1987d	South Unit: Sheep Mountain Table Quad	approx. 10-25 acres	None	Adequate to good visibility, 2-track road; top of table homesteaded and hay raised for many years; South Unit

References	Location	Acreage	Sites	Comments
Johnson 1987e	Along Castle Trail	Unknown	None	10K Volksmarch; North Unit
Johnson 1987f	Near Cedar Pass	approx. 11 acres	Tested sites 39JK2-39JK4	Noted possible utilization of Medicine Root gravels; North Unit
Johnson 1988	Fog Creek Drainage	Unknown	Monitored Existing Sites	South Unit
Hannus et al. 1989	South Unit: Fog Creek - Stirk Table Quad	approx. 160 acres	23 prehistoric sites	See Johnson 1996 for summary of surveys in Park by Hannus (1981), Chomko (1985), and Johnson (1987 and 1988, monitoring); South Unit
Jones 1990	Fog Creek Drainage	Unknown	Monitored Existing Sites	South Unit
Chevance 1991	Palmer Creek	approx. 3-4 acres	None	Project primarily outside the Park; Palmer Cr. Unit
Buechler 1992	BIA Highway 27	Unknown	None	Project primarily outside the Park; South Unit
Livermont 1992, 1993	South Unit: Imlay SW Quad	Monitoring survey of removal of a fuel tank and of a parking lot expansion	2 previously recorded sites located	South Unit
Jones 1993	North Unit: Wall SE, Cottonwood SW & Interior Quads; Loop Road Survey, 1991 Segment	Approx. 900 acres (JMA estimate); length: 4.54 mi. or 7.3 km, with a corridor ranging from 175-650 m in width	Recorded five known sites: 39JK2-4, JK8, JK107; and four new sites: 39JK187-189 and 39PN1135	Road segment 10-2 and 10-3. Limited subsurface testing on new sites. Visibility generally poor except for eroded areas, rodent burrows; North Unit

References	Location	Acreage	Sites	Comments
Lewis 1994	North Unit: Quinn Table SE Quad; Tyree Basin, Sage Creek Wilderness Area; Black-Footed Ferret Reintroduction Survey	Three prairie dog towns: lower town=359 acres; middle=136 acres; and upper= 528 acres	Four new sites located: 39PN1326-1329; Beaubien's site, 39PN15, in very close proximity	Visibility not specified, but visibility is usually higher on prairie dog colonies; 40 release sites surveyed for cultural resources; North Unit
Buechler 1994	Pinnacles Ranger Station Entrance vicinity	approx. 6 acres	None	Project primarily outside the Park
Banks 1995	South Unit	Unknown	Unknown	Water Pipeline Survey from Sharps Corner to Rockyford; South Unit
Kangas 1995	South Unit	Unknown	Unknown	Water Pipeline Survey Rockyford to Cuny Table; South Unit
Johnson 1996	South Unit: Fog Creek. Stirk Table Quad	Same area as previous studies		South Unit
Jones 1996	North Unit: Wall, Wall SW, Wall SE & Cottonwood SW Quads; Loop Road Survey, 1993 Segments	1,163 acres (per Jones); linear distance: 24 mi. or 38.4 km; corridor 120 m wide	4 previously re-corded sites: 39JK4, 39PN4, 39PN9, and 39PN1135; and 13 new sites: 39JK191-196, 39JK198, 39PN1159-1162 and 39PN1174-1175	Road segments 10-1, 10-3, 10-4, and 10-5; varying visibility. Limited testing of new sites; 39PN9, 39PN1135, and 39PN1160 also; 39JK4 mapped and two vertical profiles excavated.
Buechler 1996	White River Badlands	Unknown	Unknown	Water Pipeline Survey from Rocky Ford to Manderson

References	Location	Acreage	Sites	Comments
Buechler 1997	White River Badlands	Unknown	Unknown	Water Pipeline Survey Cuny & Red Shirt Tables
Jones 1998	2 sewage lagoons	25 acres	None	North Unit
Hannus and Winham 1998	Yr. 2 of multi-year archeological survey	4,050 acres	77 new sites	Various locations North Unit
Jones 1999	Fire Cache, VIP Trailer Pad, & Water Tower	Unknown	39JK237 (historic site)	North Unit
Hannus and Winham 1999	Yr. 3 of multi-year archeological survey	2,472 acres	87 new sites & 6 sites revisited	Various locations North Unit
Hannus et al. 1999	Northeast Entrance Road, 300 ft corridor x .75 mile	27 acres	39JK238 (new) 39JK196 & 39JK138 revisited	North Unit
Stevens and Lorenzini 2001	Sect. 1-3 Badlands Bombing Range; Cuny Table and South Unit	approx.400 acres	14 prehistoric & 2 historic sites 39SH209-39SH219, 39SH226, 39SH234, 39SH239-241	Sectors 1-3 Badlands Bombing Range; South Unit
Stevens and Lorenzini 2003	North of Cuny Table; & between Cuny Table & Sheep Mt. Table	approx. 327 acres	29 prehistoric sites 39SH271-39SH299	Sectors 10-11 Badlands Bombing Range; South Unit

Table 3. Summary of NRHP Eligible Sites in Badlands National Park

Site Number	Site Name	Condition	Site Type	Time Period	NRHP Status
39JK4	Johnny Site	Disturbed & Eroded	Occupation	AD 900-1700	Eligible
39PN10	Rosko Site	Extant	Occupation	AD 1700-1861	Eligible

Prehistoric Cultural Context

The prehistoric cultural context for southwestern South Dakota, which includes the White River Badlands, the Black Hills, and the Pine Ridge, is generally regarded as a subregion of the Northern or Northwestern Plains. The prehistoric context presented below draws heavily on the comprehensive work of Hannus et al., Zimmerman, Johnson and Wood.[82] However, the context section also includes relevant information from books and articles that present a more regional perspective as well as site specific reports and journal articles. The context presented below is intended to be a synthesis of the more important archeological information for the White River Badlands and is not presented as an exhaustive nor comprehensive summary or interpretation of the prehistoric record in this part of the state. Numerous resource materials were reviewed and contributed to this prehistoric context. Chapter 10 *Selected Bibliography* contains a list of all cited references. The majority of these sources are on file at OSA in Rapid City and at the Badlands National Park Headquarters near Interior. The prehistoric context presented below is based on the data and interpretations provided by the various report authors, and it is not intended to adhere to one particular paradigm (e.g., direct historical perspective, cultural ecology, systems theory, optimal foraging theory, processual, or post-processual theories). Rather the context will focus on observable changes in site types, site locations, technological and subsistence changes as well as presenting evidence for socio-cultural, demographic, and socio-political changes. Appendix A presents a table of archeological site information for the sites recorded in, or immediately adjacent to, the Park. These data were obtained from the SARC GIS site files database.

Paleo-Indian Period (10,000-6,000 BC)

The earliest unequivocal evidence for occupation of the Northwestern Plains took place about 10,000 BC during the Paleo-Indian period. Hannus reports that the landscape of the White River Badlands at this time was not dissimilar to the high plains west of the Missouri River and east of the Black Hills.[83] The Paleo-Indian period corresponds to the Late Glacial, Pre-Boreal, and Boreal climatic episodes defined by Bryson et al. (1970).[84] During the Late Glacial and Pre-Boreal episodes, Hannus reports that the Badlands region consisted of an undulating, steppe, tundra-like landscape that supported various grasses and contained numerous watering holes surrounded by marshy wetlands.[85] During this period, Paleo-Indian groups were organized into small, highly mobile, egalitarian bands. The Paleo-Indian period is sub-divided into various cultural complexes, based primarily on typological changes in projectile point morphology. For purposes of this discussion, the cultural complexes include Llano (10,000-9,000 BC); Goshen-Plainview and Folsom (ca. 9,000-8,000 BC); and Plano (8,000-6,000 BC). The latter includes Agate Basin, Hell Gap, Scottsbluff, Dalton-Meserve, and Angostura among others.

The Llano complex is characterized by the distinctive Clovis projectile point. Clovis points are finely crafted points that are lanceolate in shape, very thin in cross-section, have a concave base, exhibit collateral flaking, and have a distinctive basal groove or "flute" (usually on both sides of the blade). Clovis tools, like most other Paleo-Indian artifacts, were manufactured from exotic high-quality lithic materials (mainly chert,

chalcedony, and fine-grained quartzite). The fact that Clovis points and other Paleo-Indian tools often occur hundreds of miles from the raw-material source suggests these people participated in long distance trade networks or interaction spheres. Hayden hypothesized that these trade networks, which may also have included exchange of women, actually served to maintain subsistence spheres in a harsh and unpredictable environment where group survivorship often depended on the ability to infringe on another group's territory in order to obtain various food resources over a short period of time.[86] The exchange of exotic raw materials and other items is thought to have maintained group alliances during times of resource stress.[87]

Although isolated Clovis finds and other Paleo-Indian points are known to occur throughout North America (including portions of Mesoamerica), Clovis and other Paleo-Indian sites are rare. Within southwestern South Dakota, the Lange/Ferguson site and the West Horse Creek Quarry site appear to be the only documented Clovis sites in the area. The Lange Ferguson site, located about 11 miles south of the Park in the White River Badlands, produced a clear association of Clovis points *in situ* with butchered mammoth remains. The West Horse Creek Quarry, located about 10 miles south of Cuny Table, produced debitage and basal fragments from several Clovis points. Archeologists believe the quarry was exploited from the Clovis period into the protohistoric period.[88]

The Clovis complex, which represents a relatively short-lived lifestyle (ca. 10,000-9,000 BC), is associated with the exploitation of extinct Pleistocene fauna, such as mammoths and mastodons. Although their subsistence strategies focused on hunting large migratory Pleistocene fauna, various wild plant resources were gathered. However, patterns of plant use for Paleo-Indian groups are poorly documented. Structural remains during this period were temporary in nature and for the most part are poorly preserved in the archeological record.

By 8,000 BC, changes in climatic patterns triggered environmental changes. Palynological and microfaunal data provide evidence of the dramatic and significant climatic changes (warmer and drier). During the Boreal climatic episode (ca. 7,700 to 6,500 BC), relatively cooler and somewhat drier conditions prevailed. Some researchers have suggested that the climatic/environmental changes during this period triggered a reduction in C3 grasses (the bison's preferred diet) and an increase in C4 grasses. This climatic shift led to a decline in the size and magnitude of bison populations by altering their migration patterns and reducing the bison carrying capacity as C3 grasses continued to decline relative to C4 grasses. Therefore, bison became a less stable and dependable food source for Paleo-Indian populations.[89]

The Clovis complex was followed by the Goshen-Plainview (9,000-8,000 BC) and the Folsom complexes (8,750-8,150 BC). Based on data from the Jim Pitts site in the Black Hills, the Hell Gap site in Wyoming, and the Mill Iron site in Montana, Frison has suggested that the Goshen complex is transitional between the Clovis and Folsom complexes.[90] Artifacts from the stratified Jim Pitts site indicated four complexes (Goshen, Folsom, Agate Basin, and Cody) with the Goshen materials representing the oldest and most extensive occupation. Although the chronological placement of the

Goshen complex remains somewhat problematic, there is little doubt that the complex is a valid Plains Paleo-Indian manifestation. Hannus reports that Goshen-like points are present in collections from the White River Badlands, but no sites per se have been recorded from the area.[91]

The Folsom complex is well documented from the southern Canadian Plains to northern Mexico and from the Great Basin to the Midwest. This widespread complex is defined by the distinctive Folsom point, a medium to small leaf-shaped point, with a concave base, deep channel flutes, and collateral flaking. Folsom points are generally smaller than Clovis points and exhibit a longer and broader flute. Folsom points are associated with the hunting of extinct bison known as *Bison bison antiquus* and *Bison bison occidentalis*. Wilson argues that both bison populations were contemporaneous and represent geoclinal populations, with *B. bison occidentalis* representing the northern Plains variant and *B. bison antiquus* representing the southern Plains variant. Wilson asserts that both chronosubspecies were present in Wyoming (and presumably South Dakota) and both subspecies contributed genes to the modern bison population.[92] Although Folsom people are generally associated with hunting extinct forms of bison, evidence from the Lindenmeier site in extreme northern Colorado produced a variety of plant processing tools.

Folsom points are relatively rare in South Dakota, but some Folsom components have been recorded in the vicinity of the White River Badlands. In addition to the Folsom component at the Jim Pitts site (Black Hills), other Folsom sites (components) in the region include the Brewster site (Agate Basin locality-near southern Black Hills in Wyoming), the Folsom component at the Hell Gap site (east-central Wyoming), the Ray Long site (39FA65-southern Black Hills in South Dakota), and the Folsom Spring site (39SH101) in the White River Badlands. The latter is a partially deflated campsite associated with a fossil spring. The site produced three incomplete Folsom points along with bifaces and a debitage of chert, chalcedony, and quartzite.[93]

The Plano complex, which represents the end of the Paleo-Indian period, dates from roughly 8,500-6,000 BC), and is represented by a wide variety of finely crafted lanceolate-shaped, unfluted projectile points as well as points with parallel-oblique flaking. A list of projectile points attributed to the Plano complex include, but are not limited to, Agate Basin (8,500-8,000 BC), Hell Gap (8,000-7,000 BC), Alberta (Alberta 7,500-6,600 BC), Cody (7,200-6,800 BC), Scottsbluff (7,000-6,000 BC), James Allen (6,000 BC), Angostura (7,050-6,000 BC), Lusk, and Frederick.[94] The diversity of Plano-type points and the widespread occurrence of these points suggest that territorial ranges were both more defined and somewhat more restricted compared to the preceding Llano and Folsom complexes. Although exotic raw materials are still used in the manufacture of Plano points, the fact that more local raw material sources are common supports the notion of smaller and more defined territorial boundaries. The increased number of Plano points from collections in the area and the increased number of sites that date to this time period suggest that populations increased during this period. In any event, these people were well adapted to the Plains environment and although faunal remains indicate a heavy reliance on bison, the hunting of other game such as deer, elk, and antelope is also

common. Plano complex sites are relatively poorly known in the Badlands and Black Hills, but several sites in western Nebraska and eastern Wyoming have been excavated over the years, beginning in the 1930s and 1940s. Within the Park, four sites contain Paleo-Indian artifacts. These include Site 39JK195 (near Loop Road north of Cedar Pass), sites 39SH15 and 39SH80 (near Cuny Table), and site 39SH207 located on Sheep Mountain Table.[95] According to Mike Fosha (personnel communication, 2004), Clovis, Goshen, Folsom, and Dalton points have been reported in private collections from the Sheep Mountain Table–Scenic region and the state archeological site files indicate eight Paleo-Indian sites in the White River Badlands region.

Early and Middle Plains Archaic Period (6,000 – 1,000 BC)

For purposes of this discussion the Plains Archaic period will be subdivided into three subperiods: an Early period (6,000-3,000 BC), a Middle period (3,000-1,000 BC), and a Late period (1,000 BC-AD 200). The Early Plains Archaic period coincides with the onset of the Atlantic (Altithermal) climatic episode (ca. 6,500-2,730 BC), and the Middle Plains Archaic period more or less coincides with the Sub-Boreal climatic episode (2,730–950 BC).[96] The Atlantic episode, which was characterized by significantly warmer and drier conditions, led to dramatic changes in grassland communities, the establishment of the short-grass prairie, and a decrease of foliage. In addition to environmental changes, Pleistocene megafauna became extinct while modern bison and other present-day faunal communities became established. The Sub-Boreal episode saw a southward shift in the mean position of the Arctic frontal zone which brought cooler temperatures and increased moisture back to the Plains, resulting in a climate similar to the present.[97]

Culturally speaking, the transition to the Early Plains Archaic period is rather abrupt and characterized by the presence of large, side-notched points and some corner-notched points. Projectile point types associated with the Early Plains Archaic period are poorly known (or recognized), but include Hawken and Logan Creek side-notched points and bifurcated Oxbow points. Common projectile points during the Middle Plains Archaic period include points of the McKean complex, named after the McKean site on the northwestern edge of the Black Hills. Points associated with the McKean complex include McKean, Duncan, Hanna, Yonkee, and Mallory.[98] The McKean complex dates between 3,000-1,000 BC and coincides with the end of the Sub-Boreal episode and a return to conditions more similar to today's climate, if not cooler and wetter. McKean points and McKean variants are ubiquitous across the Northwestern Plains, suggesting a population increase and/or improved conditions for site preservation.

During the initial stages of the Early Plains Archaic period, these people lived in a similar fashion to preceding Plano populations. However, by the Middle Plains Archaic period, groups exploited a more diverse range of plants and animals. The increased exploitation of wild plants is evidenced by the increase in *manos y metates* (grinding stones and grinding slabs).[99] People formed nomadic and semi-nomadic groups with base camps supporting a number of centralized activities and various smaller camps were used for resource procurement or other specialized activities. Base camps and group size shifted according to the seasonal exploitation of available resources. For example, people tended

to gather in communal hunting groups during the fall when bison herds coalesced. Sites dating to the Middle Plains Archaic period include large numbers of stone circles (perhaps bases for circular lodges or tipis), bison kill sites (i.e., jumps and corrals) and seasonal camps.[100]

The Early Plains Archaic period, between 6,000-3,000 BC, is characterized by the dramatic decrease in archeological sites. The decrease in sites, combined with the extremely warm and dry climatic conditions of the Atlantic episode, led many archeologists to suggest that the High Plains were abandoned during this period. More recently, data from deeply buried sites in alluvial settings and playa lakes suggest that site formation processes (namely extensive down-cutting and erosion in the uplands and deposition in lowlands) contributed to the paucity of sites during the Early Archaic period. That is, sites in upland settings have been eroded or destroyed while sites in lowland settings have been deeply buried by alluvial fill sediments. The fluorescence of the McKean complex during the Middle Plains Archaic seems to be correlated with the return to more favorable climatic conditions that allowed short-grass prairies and gallery forests to become re-established and have resurgence in the bison population.

Although Early Plains Archaic sites are poorly documented for the White River Badlands region, a number of Middle Plains Archaic sites or find spots have been recorded within this portion of the state. Of particular note is Site 39SH561, an exposed hearth with a McKean point, located 3.5 miles south of the Park.[101] Several McKean sites have been recorded within the Park including 39SH36 in the Fog Creek area, 39SH207 on Sheep Mountain Table, 39SH220 northwest of Cedar Pass, and 39PN1544 on Quinn Table. Hannus also notes 15 other sites attributable to the McKean complex that have been recorded within the White River Badlands region.[102]

Late Plains Archaic Period (1,000 BC-AD 200)

The Late Plains Archaic period is characterized by a wide variety of corner-notched projectile points that contrast sharply with the preceding McKean complex points. The most widespread and only named, corner-notched point dated to this period is the Pelican Lake point. Pelican Lake points represent a true corner-notched point with barbed shoulders and diagonal notching. Reeves argues that the Pelican Lake point developed from Hanna points by at least 1,000 BC. For the most part, these points are well made and occur from southern Canada to the Arkansas River in Colorado and from the Rocky Mountains to the Mississippi River.[103] The widespread distribution of the Pelican Lake complex suggests the complex actually represents a large number of regional groups with relatively broad territorial ranges. For example, Reeves has defined nine Pelican Lake subphases.[104] The White River Badlands are included in the Glendo subphase, which also includes eastern Wyoming, northeastern Colorado, western Nebraska, and southwestern South Dakota. Pelican Lake points and other Late Archaic artifacts are well represented at two sites in western Nebraska, namely the upper deposits from the Signal Butte site (Stratum II) and the lowest deposits from Ash Hollow Cave, which is located near the Platte River valley in Garden County.

The trend for cool, moist summers established during the Sub-Boreal episode continued during the Sub-Atlantic episode (ca. 950 BC-AD 280). The cool moist summers during this period allowed for the growth of lush grasslands and increased the grazing potential and carrying capacity for herbivores (bison, elk, antelope, and deer). Both tool assemblages and subsistence data demonstrate continuity with the preceding McKean complex. Bison hunting continued to be the primary subsistence focus with the use of arroyo traps and kills as a common practice. The harvesting of wild plant resources such as seeds and nuts also continued to play an important role as evidenced by the increase in ground stone tools from sites of this time period.

One site (39JK82), located in the White River Badlands, produced radiocarbon dates of 2,050 and 1,970 BP (i.e., between ca. 100 BC and AD 20).[105] Pelican Lake points are frequently reported in surface collections in the Black Hills, and also occur as surface finds in eroded deposits in the Pass Creek and Fog Creek drainages. Several sites with Pelican Lake points occur within the Park. These include Sites 39PN9 and 39PN1160 near the Pinnacles, site 39PN27 in the Sage Creek Wilderness Area, site 39PN1174 east of the Wounded Knee Overlook, site 39JK192 near the Loop Road north of Cedar Pass, and three sites in the Fog Creek area: 39SH57, 39SH58, 39SH68.[106] The state site files document 17 sites in the area with Pelican Lake or Late Archaic components.

Plains Woodland Period (AD 200-1200)

The Plains Woodland period is often subdivided into the Middle Plains Woodland (AD 200-800) and the Late Plains Woodland period, also referred to as the Plains Village tradition (AD 800-1200) and the Middle Missouri tradition (AD 1000-1600). In the Northwestern Plains this time period is commonly known as the Late Prehistoric (AD 200-1700) period. Although the Late Prehistoric period covers the same temporal span, the use of this term tends to focus attention on cultural patterns from the Northwestern Plains, to the exclusion of cultures and people to the east (i.e., Woodland, Plains Village, etc.) that strongly influenced cultural expressions in this part of the Plains. For these reasons, the discussion presented herein will attempt to distinguish the different cultural groups that influenced and occupied southwestern South Dakota during this 1,000 to 1,500 year period. Thus, the discussion begins with what is referred to as the Middle Plains Woodland period (AD 200-800).

The term Plains Woodland refers to various cultural complexes that most scholars believe derived from a Woodland cultural tradition to the east. For the most part, the Plains Woodland tradition is expressed along the Missouri River and its tributaries in the eastern portion of South Dakota. However, examples of Woodland influences (or cultures) to the east have been found in western South Dakota. Manifestations of the Woodland culture include semi-sedentism, cord-marked pottery, trade goods, and burial mounds. Although burial mounds and Woodland villages have not been identified in the Badlands, Plains Woodland ceramics are fairly common in the area. Expansion of Plains Woodland may be related to the expansion of Besant cultures throughout the High Plains. Pollen and macro floral remains of pumpkin and squash were documented in eastern Wyoming from sites that produced Besant-period dates, and Besant points were found at several nearby

sites.[107] Plains Woodland sites also occur west of the White River Badlands in the southern Black Hills.

The two earliest and most prominent cultural complexes are Besant (ca. AD 50 – AD 750) and Avonlea (AD 100 – AD 950). Some authors, such as Johnson, Reeves, and Tibesar, consider the terms Middle Plains Woodland and Besant to be synonymous. However, depending on the end dates for the Late Plains Archaic period, some archeologists (e.g., Frison) include the Besant complex in discussions on the terminal Late Plains Archaic.[108] Data from several sites in the area indicate that Besant and Avonlea sites were contemporaneous. Not only were these complexes contemporaneous, but Avonlea points are intermixed with Besant components and vice versa. The following discussion on the Besant complex is included in the discussion of Woodland cultures because of the apparent development of the Besant complex from a Northern Plains Woodland tradition. Like elsewhere in the eastern United States and southern Canada, the term Woodland is generally associated with the introduction of ceramics, the bow and arrow, increased sedentism, and agriculture. In western South Dakota, these changes occur at different times and places.

The Besant complex is characterized by large, side-notched dart points with straight or slightly concave bases. According to Johnson the Besant complex represents a migratory bison-hunting tradition that existed on the Northern Plains (i.e., southern Alberta, Saskatchewan, and Manitoba; North and South Dakota; Montana; and Wyoming) between AD 100 to 700.[109] The earliest Besant sites, which appear in the southern Canadian Plains are aceramic, and pre-date the appearance of Plains Woodland ceramics. Reeves reported dates of 50 BC, AD 100, and AD 300 for Besant components at the Head-Smashed-In Buffalo Jump in Alberta.[110] Keyser reported comparable dates of A.D 50 and AD 250 from the Donovan and Fresno sites, respectively, along the Milk River in north-central Montana.[111] In Wyoming, Besant occupations are known from three communal kill sites, including the Ruby site. Radiocarbon dates from two of the three sites range between AD 150 and 280. The aforementioned sites are aceramic. However, ceramics of the Northern Woodland Plains tradition have been found in association with Besant artifacts at sites in Montana and North Dakota that date to AD 400 and AD 350, respectively.[112] Johnson argues that the pottery from these sites is identical to ceramics of the Northern Woodland Plains tradition (AD 150 to 900) and easily fits within this temporal range. Moreover, she asserts that ceramics of the Northern Plains Woodland tradition commonly occur at Besant campsites. Despite the co-occurrence of Besant points and pottery at some sites, Reeves states that Besant pottery is rare.[113]

Because the origins and the initial timing of the Besant complex are not well known, archeologists have developed several hypotheses to explain the cultural origins of these people. Based on the association between Besant points and Northern Plains Woodland ceramics, Johnson considers the Besant people to be of a Plains Woodland origin.[114] Kehoe agrees that Besant derives from a Woodland origin, but he believes the Besant complex originated from Algonquian people in Saskatchewan during the Middle Woodland period.[115] Perry provides yet another explanation for the origins of the Besant complex. Perry concludes that southward migrating Athabascans were responsible for

the development of the Besant complex.[116] Perry maintains that the Besant complex represents a remnant population of caribou-hunting Athabascans that adopted their game drive techniques, originally developed for caribou, to the Plains environment and bison as a result of climatic amelioration during the warm, dry Scandic episode (AD 280–870).[117] Although Perry's arguments are rather compelling, the climatic change, or Scandic episode, that supposedly separated the northern and southern Athabascans, and led the southern Athabascans to shift to bison hunting, occurred some 200-300 years after the initial appearance of the Besant complex. The Athabascan population derived from an aceramic tradition, whereas as many sites in Canada and the United States have demonstrated the co-occurrence of Besant points and pottery of the Northern Woodland Plains tradition.[118]

Regardless of its origins, the Besant complex is widely regarded as having the most sophisticated pre-horse, bison-hunting techniques ever documented on the Plains. During the preceding McKean and Pelican Lake complexes, bison kills were restricted to arroyo traps and jump sites. Besant populations incorporated topographic elements into their hunting techniques, but they also introduced the use of artificial corral-and-wing structures. At the Ruby site in east central Wyoming, Frison documented various artificial structures (e.g., drive lanes, wing structures, bison corral, and a religious structure) that were used to herd the bison, and drive them into a compound where they were killed.[119] Evidence from the Ruby site indicates these structures were rejuvenated as needed. Frison concludes, "that the ability to incorporate sophisticated structures into certain features of the natural topography resulted in a highly successful hunting strategy, and as a result, these hunters…could set up operations in a wider variety of bison habitat areas."[120]

Hannus et al. report that Besant sites in the White River Badlands are difficult to determine because of the variability in projectile point forms at this time and because points from the Plains Woodland period onward have not been systematically studied in this part of the state.[121] Besant points are relatively common in surface collections from the Black Hills (c.f. Tratebas) and the Pass Creek area (c.f. Lueck and Butterbrodt) in the White River Badlands.[122] Two Besant sites have been recorded within the Park. Site 39SH80 is north of Cuny Table and south of Cottonwood Creek, and site 39PN1174 is located 1.5 miles east of Big Foot Pass and about 5 miles north of Interior.[123] At least 14 other Besant sites (or components) have been recorded within the region.

To some archeologists, the beginnings of the Plains Woodland period began with the introduction of the bow and arrow and ceramics.[124] Typologically, the shift from dart points to arrow points is recognized by a change in the size and shape of the points. Small, side-notched, triangular and corner-notched points are common. Other technological innovations that occur in the Plains tool kit at this time include the grooved maul, arrow shaft smoothers, straight and expanded base drills, and shell beads of *Olivella* or *Dentalium*.[125] People continued to rely on wild game and wild plants for subsistence. Communal bison kills (i.e., jumps and traps) during the late summer/early fall were more common. The earliest of the small, side-notched arrow points to appear in the Northern Plains is the Avonlea point. Avonlea points first appear around AD 100-

300 at the Head-Smashed-In Buffalo Jump in Alberta; terminal Avonlea levels at the site are dated from AD 900 to AD 950.[126] Kehoe reported Avonlea dates of AD 210-660 at the Gull Lake site in southwestern Saskatchewan, and the Avonlea type site (also in southwestern Saskatchewan) produced a date of AD 450.[127]

Although initial Avonlea sites are contemporaneous with Besant dates (ca. AD 100-450), the Avonlea sites are aceramic. However, these sites do provide evidence of the first communal bison hunts using the bow and arrow. The introduction of the bow and arrow onto the Plains marks a significant change in social relations among primarily hunting groups. Arrow points were smaller in size than dart and spear points and therefore easier to make and replace.[128] Moreover, because the bow and arrow provided increased range and accuracy in hunting, it was easier to carry than a spear and atlatl, and several arrows could be shot by a person in a short amount of time. These features allowed hunters to act more independently at certain times of the year, while still providing for successful communal hunting during the fall months. The simultaneous occurrence of dart points and arrow points at Middle Woodland sites throughout the Plains is not surprising especially given that technological innovations often take many generations to become fully integrated into the material culture. By the onset of the Late Woodland period, the bow and arrow had become the weapon of choice. It is also interesting to note that the use of "expedient tools" (i.e., tools that were made at the site and then discarded) becomes common during the Woodland period; especially compared to earlier Paleo-Indian and Early Archaic periods when hunters carried tools long distances and continually rejuvenated their tools until the use-life was exhausted.

Whether the introduction of Avonlea points reflects a migration of people from the north or an indigenous development from the Pelican Lake complex is not clear. Reeves recognized a transition from Pelican Lake to Avonlea in southern Canada between AD 150 and AD 250 and between AD 400-500 in the Belle Fourche-Powder River region north and west of the Black Hills.[129] A northern origin for this complex is suggested by the range of dates that appear to be as much as 200 years earlier in the northern area of distribution for this point. Reeves suggested a terminal date for the complex of AD 700 in the Saskatchewan Basin (some 200-250 years earlier than data would suggest from Alberta) and AD 900-1000 in the Upper Missouri drainage.

Avonlea points, or more accurately Avonlea-like points, are relatively poorly documented in western South Dakota and eastern Wyoming. In fact both Frison and Greiser et al. report that the cultural relationship between Avonlea points and similarly shaped points on the Northwestern Plains is unclear.[130] Radiocarbon dates from levels producing Avonlea-like points from the Wardell site, near Big Piney in southwestern Wyoming, range from AD 350–950. Also unclear is the relationship between Avonlea and other well-documented, side-notched arrow points such as Prairie Side-Notched and Plains Side-Notched. Equally unclear is the association between Avonlea points and early ceramic wares on the Plains. Avonlea-like points have a broad distribution across the Plains from west of the Middle Missouri River to the Bighorn Basin and the Platte drainage into southern Canada.

In South Dakota, Avonlea points were recorded by Over in 1936 from Ludlow Cave in the northwest corner of South Dakota, and Tratebas suggested that site 39FA35 at the Angostura Reservoir produced a single Avonlea point. Haug reported two Avonlea-like points from the southern foothills of the Black Hills. Research in the White River Badlands produced Avonlea-like points in the Pass Creek and Fog Creek drainages, with radiocarbon dates clustering from AD 450-500. Five sites within the Park have been assigned to the Avonlea complex: 39PN1175 (east of Big Foot Pass) and sites 39SH59, 39SH62, 39SH66, and 39SH72 in the Fog Creek drainage. The classification of site 39SH62 as Avonlea has been questioned by Johnson.[131] The debate between Hannus and Johnson as to what constitutes the Avonlea complex versus Plains Woodland traditions typifies the problems confronted by archeologists in trying to assign cultural affiliation to material remains that are hundreds or even thousands of years old. Below is a brief summary of the fieldwork and results of archeological investigations that have occurred in the Fog Creek drainage of the South Unit over the last 30 years.

Fog Creek Sites

The Fog Creek drainage has been the scene of numerous investigations over the last 25-30 years. Fog Creek, a tributary of White River, is a relatively small spring-fed drainage on the east side of Cuny Table. Johnson and others have reported that alluvial sediments filled the White River valley and its tributaries as a result of glacial outwash during the Pleistocene.[132] Beginning in the early Holocene these alluvial sediments were flushed from the valley, leading to extensive erosion throughout the White River Badlands. Thus, site preservation, site erosion, and site exposure are intimately tied to geomorphological events on a regional as well as a local scale.

The first systematic work in the Fog Creek drainage was in 1978 by Adrienne Anderson (NPS) and Robert Alex (State Archeologist). They recorded a large site (39SH36) in the upper portion of the drainage that contained buried cultural horizons with roasting pits and heat-treated plate chalcedony.[133] Between 1980 and 1983, Augustana College conducted a survey of the White River Badlands, including some investigations in the Fog Creek drainage. This fieldwork resulted in the identification of 17 sites (39SH49, 39SH57-39SH72) and the recordation of the following site types: habitation, quarry/lithic reduction, game trapping or food preparation, burials, and overlook/chipping stations. As reported in 1981 at the time of the survey, the condition of these sites ranged from "integrity destroyed" or "largely destroyed," to "imminent danger" or "integrity threatened by erosion or slumping." A draft report of the studies was prepared in 1989.[134]

Additional investigations were sponsored and conducted by the NPS in the Fog Creek drainage in 1985.[135] As part of an archeological assessment for a proposed visitor's center in the South Unit, the NPS conducted preliminary field investigations of the various alternatives; one alternative included the Fog Creek area. A number of sites were briefly recorded and assigned temporary numbers during the reconnaissance survey.[136] Chomko also instituted a photographic monitoring program to assess the extent, magnitude, and rate of erosion within the drainage. In 1987, the NPS held a one-day training course for park employees. In addition, Robert Alex, Adrienne Anderson, and Ann Johnson visited

the Fog Creek area and collected the following artifacts: two bifaces from Site 39SH62, two bones from Feature A at Site 39SH57, and some pottery and a projectile point tip from Site 39SH133.[137]

In 1988, 1989, and 1991 the NPS conducted additional survey and limited excavation of sites in the Fog Creek drainage. Surveys recorded several new sites and/or features, and three roasting pits were excavated at site 39SH68. Although site forms were completed for newly discovered sites (e.g., 39SH136-39SH138), the rapid rate of erosion within a 10 year period complicated the ability to correlate previous studies with the 1988 work. For example, Anderson and Alex in 1978 assigned a single site number (39SH36) to a geographical area that contained several isolated exposures of cultural material. Conversely, Hannus assigned site numbers to individual features, many of which were destroyed or removed by erosion by the time the NPS inventoried the area in 1988.[138] Johnson reported two significant changes in site boundaries from Hannus' work: "(1) the boundaries for Site 39SH57 were enlarged to encompass the sod table in the central area (i.e., former sites 39SH49, 39SH61, and 39SH64) and (2) the boundaries of Site 39SH68 were enlarged to include 39SH67 (removed by erosion), Sites 39SH69-39SH71, and an unnamed and unnumbered location known as AA-1, Area 2, Feature 1."[139] According to Johnson's report, 17 sites were extant within the Fog Creek drainage as of the 1989 field investigations. These sites are as follows: 39SH36, 39SH57-60, 39SH62, 39SH63, 39SH65, 39SH66, 39SH68 (incorporating former sites 39SH67 and 39SH69-39SH71), 39SH72, 39SH133, 39SH136-39SH138, and 39SH140-39SH141.[140] Excavations at these sites yielded a number of radiocarbon dates, but very few diagnostic artifacts. Johnson reports that the work by Hannus, Chomko, and the NPS produced a suite of 19 radiocarbon dates from nine sites.[141] Diagnostic artifacts and radiometric dates from the nine dated sites (39SH36, 39SH57, 39SK58, 39SH60, 39SH62, 39SH63, 39SH68—including various "Areas" and former sites, 39SH72, and 39SH133) revealed occupation of the area from the Late Archaic (Pelican Lake complex), Besant/Middle Plains Woodland, Late Plains Woodland, Central Plains tradition, Initial Middle Missouri, and Post Contact Coalescent (Arikara) periods.[142] The overwhelming percentage of radiocarbon assays (17 of 19) and diagnostic artifacts date to the Besant/Middle Plains Woodland, with all other periods nearly equally represented except Avonlea and the Central Plains tradition, the latter of which overlaps in time with the end of the Late Plains Woodland period and the beginning of the Initial Middle Missouri period .

Late Archaic occupations are evinced by the presence of three Pelican Lake points at two sites (39SH57 and 39SH58). In addition to the 17 radiocarbon assays, diagnostic projectile points and ceramics demonstrate repeated use of the Fog Creek area by people of the Besant complex and/or the Middle Plains Woodland culture between AD 400 and AD 800. According to Johnson, there are no Avonlea sites or components within the Fog Creek drainage and perhaps the entire White River Badlands. Based on radiocarbon dates and diagnostic projectile points recovered from the 1981 investigations, Hannus et al. maintain that two sites in the Fog Creek area (39SH59 and 39SH62) contain evidence of Avonlea occupation.[143] Johnson, who also conducted investigations at the site, has openly questioned the affiliation of Avonlea sites in the Badlands in general and at site 39SH62 in particular.[144] She believes the points should be classified as Middle or Late

Woodland/Late Prehistoric and states that the ceramics from the site belong to the Middle Plains Woodland tradition. Johnson's interpretation of the cultural affiliation at site 39SH62 is in part predicated on a second radiocarbon date of approximately AD 800, which would place the occupation near the end of the Middle Plains Woodland period.[145] Hannus et al. counter that the points from the site are "indisputable evidence" of a classic Avonlea component, and that one point was removed from hearth fill, that was dated to AD 540 ± 120.[146] Hannus and Nowak believe the Avonlea complex represents a specialized hunting adaptation (primarily via entrapment and impoundment techniques) that was easily facilitated by badlands topography.[147] They conclude that Site 39SH62 may be multi-component based on the radiocarbon dates obtained by the NPS (AD 800) and the ceramics, which they agree should be classified as Middle Plains Woodland.

Late Plains Woodland (ca. AD 800-1200) occupation in the Fog Creek drainage is based on the evidence from site 39SH133. This site produced Late Plains Woodland artifacts (ceramics and projectile points) and a radiocarbon date of AD 1200 ± 250 that may fall between AD 800 and AD 1200 at the two sigma range. In discussing the projectile points from the site, Johnson suggests that the small corner-notched points from the site are distinct from typical Plains Village points that are "longer, more slender, and side-notched."[148] She speculates that with additional research and data it may be possible to define a Late Plains Woodland occupation in western South Dakota based solely on the presence of small corner-notched points. According to Johnson, the Late Plains Woodland ceramics from western South Dakota are "plain with little decoration and the vessels differ from the Middle Plains Woodland by having a more globular form with a slight neck."[149]

In addition to the various Woodland sites in the Fog Creek drainage, several other Woodland period sites are located elsewhere within or near the Park. Two of the more important sites are the Pinnacles site (39PN9) in the North Unit and the Long John site (39JK68), located outside the Park in Jackson County. The Pinnacles site has been excavated at various times over the past 45 years, beginning with Taylor's work in 1958.[150] The site, which appears to be a campsite and a bison jump/kill site, produced ceramics which Taylor suggested share affinities with the "La Roche tradition, Thomas Riggs, and Woodland."[151] A charcoal sample from Occupation Level B produced a date of AD 900 ± 50.[152] Outside the Park, site 39JK68, the Long John site, produced ceramics from two vessels that were collapsed within a hearth that produced a date of AD 750 ± 130.[153] The vessel fragments were reconstructed and one is conical in form with smoothed surface treatment and the other is cord-roughened with a globular form. Other sites assigned to the Woodland period within the Park include: 39PN1135, and the Johnny site (39JK4) at Cedar Pass. Several sites with grit-tempered and cord-roughened ceramics have been recorded in the vicinity of the Park in Pennington, Jackson, and Shannon counties.

Plains Village Tradition (AD 900-1600)

The Plains Village tradition, which begins after AD 900, is characterized by permanent or semi-permanent, horticultural settlements that often contain fortifications. The factors for the transition from Woodland cultures to the Plains Village tradition, and the timing

of this transition, are poorly known in this part of the state. In the eastern part of the state, studies on this transition have focused on the southern portion of the Middle Missouri and areas to the east such as the Great Oasis complex in southwestern Minnesota, northwestern Iowa, and portions of adjoining states. Whatever the causes and timing of the transition, it is clear that Plains Village cultures interacted with, and were influenced by, Mississippian cultures further to the east and south and possibly even Anasazi groups to the southwest. One significant difference with preceding Woodland groups is the importance of corn and other plant domesticates in the diet. These subsistence changes also necessitated changes in settlement patterns (i.e., increased sedentism, proximity to fertile alluvial soils), changes in ceramic technology (e.g., manufacturing ceramics capable of withstanding direct heat during food preparation), and other aspects of the material culture. Burial practices are poorly known for this period, but appear to be decidedly different than the preceding Woodland practice of burial mounds. The aforementioned changes in settlement and subsistence practices, material culture, social relations, inter-group relations, and burial practices associated with the Plains Village tradition had a profound effect on groups living in North and South Dakota, Nebraska, Kansas, and eastern Colorado and Wyoming. Archeological evidence suggests the success of the Plains Village system resulted in a greater American Indian population across the Plains than at any time before or after.[154]

In the western part of the state where rainfall is more problematic, the economic differences between people of the Plains Village tradition and the preceding Woodland period groups may be overstated. That is, evidence from this period in the western part of the state suggests that the economic activities of the Plains Village tradition were not dramatically different from the preceding Woodland groups or the nomadic hunters of the Late Prehistoric period prior to the introduction of the horse. Hunting of large game (bison, elk, deer, bear) mixed with some fishing and collecting wild plants and nuts continued to play an important role in subsistence and settlement practices and the seasonal round. Although no village sites or evidence of agriculture have been found in the Badlands area, several Badlands sites contain pottery believed to date to this period.

Changes in ceramic technology, vessel form, surface treatment, and decoration are the primary tool archeologists use to distinguish between these various cultures. The Plains Village tradition is composed of many cultural complexes that are distinguished, in part, on the basis of different ceramics. These differences are discussed below. It should be noted that projectile points are less time-sensitive during this 700± year period compared to preceding cultural periods, and therefore projectile points are less sensitive indicators of cultural affiliation or chronology during the Plains Village or subsequent periods. Nonetheless, it is during this period that arrow points completely replace dart and spear points, and by approximately AD 1400 the “Plains Side-Notched” point and the “Prairie Side-Notched” point become widespread across the Plains from Montana and Wyoming to Minnesota and Iowa. While most archeologists believe the Plains Side-Notched point diffused from east to west across the Plains, another possible source of the side-notched arrow point is the proto-Shoshone groups that moved eastward out of the Great Basin. The Shoshone manufactured the Desert Side-Notched point, which shares several morphological and technological attributes with the Plains Side-Notched point, and they

are known to have entered southwestern Wyoming by AD 1400. Intermountain ware ceramics, which are a distinctive flat-bottomed, poorly manufactured pottery style associated with the Shoshone, have been found with side-notched points in northeastern Wyoming and southeastern Montana from sites believed to date from AD 1500 to 1750.[155] Whether the Plains Side-Notched point diffused from the east or the west (or both), it was readily adopted into the existing material culture, and the point type became rather ubiquitous across the Plains during the period of AD 1300 to 1600.

The Plains Village pattern is believed to have spread to the Badlands and Plains of western South Dakota via the Middle Missouri River and its tributaries (Bad, Cheyenne, and White). The Missouri River trench has been the focus of extensive archeological studies for the last 60-70 years. As such a chronology has been established for the different cultures that occupied the area.[156] Hannus et al. provide the following dates for the Middle Missouri cultures: Initial Middle Missouri (ca. AD 1000-1300); Extended Middle Missouri (ca. AD 1100-1500); Initial Coalescent (ca. AD 1300-1600); Extended Coalescent (ca. AD 1400/1450-1650); and post-Contact Coalescent (AD 1650-1800).[157] It is important to note that these cultures overlapped both temporally and spatially. Thus, the movement of people as well as the exchange of ideas and material culture among these various groups resulted in both similarities and differences among the cultural groups that occupied the Missouri River trench and the adjacent Plains.

The initial village traditions in South Dakota apparently represent an *in situ* development or transition of pre-existing Woodland groups beginning somewhere between AD 800 and AD 1000. The first of these cultural groups is labeled Initial Middle Missouri and consists of the Great Oasis culture of southwestern Minnesota, northwestern Iowa, northeastern Nebraska, and southeastern South Dakota. Empirical evidence indicates this cultural group developed from a Woodland base with heavy influences from Mississippian cultures to the south and east. Initial Middle Missouri villages commonly occupy a prominent point on the landscape and are often surrounded by ditches or palisades. Houses associated with this phase were rectangular structures and excavated into a pit. The houses contained vertical posts with wattle and daub construction and thatched roofs. Initial Middle Missouri houses usually had a ramped entryway that extended beyond the house. Evidence from Great Oasis sites in Iowa and Minnesota indicate a broad-spectrum hunting and gathering subsistence base along with cultigens such as corn, sunflower, and squash. The material culture associated with these people is more complex than earlier Woodland groups. For example, Great Oasis groups relied on small triangular arrow points, a variety of lithic knives, scrapers, and drills, along with ground stone tools such as shaft abraders, axes, celts, mauls, grinding stones, and nutting stones. Bone tools and fishhooks were also part of the tool kit. Great Oasis pottery is distinctive from preceding Woodland pottery in that the vessels are more globular in shape and exhibit a more finely crushed grit temper and thinner vessel walls. The Great Oasis villagers overlap in both time and space with later Initial Middle Missouri groups. In an effort to explain the coexistence of these different groups, some archeologists have suggested that Great Oasis people were not corn growers, but only corn consumers and that they remained culturally conservative as other cultural changes occurred around them.

A second Initial Middle Missouri cultural group of eastern South Dakota is the Mill Creek culture (formerly called the Over Focus). The spread of Initial Middle Missouri cultures across the state may have been triggered by two factors. First, the spread of these cultures into the Plains region coincides with the Neo-Atlantic climatic episode, a cooler, more moist period that was conducive to the spread of agriculture onto the Plains. Second, Oneota cultures to the east and south were spreading westward and may have exerted pressure on existing groups to move west and north. Along these lines it is interesting to note that more Initial Middle Missouri villages are fortified and/or occupy a defensible position on the landscape. Houses were similar in shape to those of the Great Oasis phase, but are usually deeper and slightly larger with a ramped entrance at the south end. Large storage and refuse pits are a common feature within and outside houses and a large fire hearth is located near the center of the structure. Ceramics attributable to the later phases of the Initial Middle Missouri complex consist of bowls with handles in effigy form and flared and wedge-lipped rims. Surface treatment is typically smoothed over and cord roughened or plain and shoulders in some wares exhibit incised lines. The material culture of these groups is even more complex than the Great Oasis groups with a wider variety of chipped stone, ground stone, and bone tools. The expansion or spread of these cultures into the Plains environment imposed a number of pressures and constraints on these groups in addition to population pressures and perhaps some conflict with ever-expanding Mississippian groups to the east.

Another Plains Village tradition that influenced peoples in western South Dakota, and is contemporaneous with the Initial Middle Missouri and Extended Middle Missouri traditions, is the Central Plains tradition. The Central Plains tradition is composed of four different cultural complexes: Smoky Hill phase of southeastern Nebraska and northeastern Kansas, Upper Republican phase of south-central and southwestern Nebraska and north-central Kansas, the Nebraska phase of eastern Nebraska and western Iowa, and the Lower Loup Itskari phase of central Nebraska.[158] The groups that had the most profound effect on contemporaneous cultures in western South Dakota are the Upper Republican and the Lower Loup Itskari. Hannus et al. date these cultural complexes from AD 1000 to 1350 (Upper Republican) and AD 1100 to 1350 (Lower Loup Itskari).[159] Johnson asserts that Central Plains occupation within the vicinity of the Park is evidenced by a ceramic vessel recovered from 39SH68, 39SH72, and a site from the Angostura Reservoir.[160]

Zimmerman notes that the cultural origins of the Central Plains tradition may be derived from Mississippian cultures along the Arkansas River.[161] Conversely, archeologists have argued for decades that the presence of Middle Missouri occupations in the Badlands region was related to the periodic or seasonal use of the Plains by more sedentary groups from the east. Steinacher and Carlson present three hypotheses that provide plausible explanations for the appearance of Middle Missouri complexes and Central Plains traditions in the Badlands. They are as follows:

1. Camps were occupied on a seasonal basis by earthlodge-dwelling groups to the east that traveled into the area to exploit faunal, floral, lithic or other resources.

2. Camps were occupied by more easterly groups that abandoned their more sedentary lifeways in favor of residence on the High Plains as hunter-gatherers.

3. Camps were occupied by indigenous High Plains groups that adopted material culture elements from groups further to the east as a result of contact.[162]

As noted above, traditionally archeologists argued that the presence of Middle Missouri occupations in the Badlands region was related to the periodic or seasonal use of the Plains by more sedentary groups from the east. This model was easy to accept since numerous nineteenth century historical accounts document the Mandan, Hidatsa, and Arikara moving onto the Plains in the fall of the year to initiate communal buffalo kills prior to the onset of winter. However, more recent data from the Sand Hills area of nearby Nebraska suggest *in situ* groups may have borrowed material culture and other elements from trading partners to the east. Research is continuing in many areas to try to resolve these questions.

Around AD 1200 ± 50, a number of significant events occurred that had profound effects on the cultures within South Dakota and elsewhere on the High Plains. Between AD 1150 and AD 1300 the interior of the United States was influenced by significantly warmer and drier air masses (the Pacific climatic episode) that caused a deterioration of agricultural conditions in marginal environments, such as the Plains. This period of instability was followed by the Neo-Boreal episode. The Neo-Boreal period, often referred to as the "Little Ice Age," represents a period of global cooling and increased precipitation that contributed to a number of environmental, social, and demographic stresses that triggered inter-group hostilities as well as population movement among a number of groups across North America. The deterioration of environmental conditions also coincided with the collapse of Cahokia in the American Bottoms and the outward migration of people, ideas, and material culture to areas to the north and west. Together these events placed additional stresses on the extant populations of South Dakota and the adjacent High Plains.

Although data from a number of sites indicate the Central Plains tradition persisted into the late 1200s, beginning in the early 1300s the survivors of the Central Plains tradition become confined to the Missouri River in northeastern Nebraska and adjacent portions of southeastern South Dakota. Lehmer and Wood refer to the aforementioned events along the Missouri River trench in South Dakota as the "Coalescent tradition."[163] They argue that Coalescent tradition represents an amalgamation or blending of different cultural traits between the Central Plains tradition and the Initial Middle Missouri tradition. The Coalescent tradition, which dates from AD 1300-1650, is divided into an Initial phase from AD 1300-1600 and an Extended phase from AD 1400-1650. The Initial Coalescence refers to the movement of people of the Central Plains tradition (probably Upper Republican groups) out of Nebraska and into the Missouri River trench area of central and southern South Dakota. The material culture of these people suggests they began to move into South Dakota during the middle of the thirteenth century and were well established in the area by AD 1300 and AD 1400. Excavations at a number of Initial

Coalescent sites, primarily in the Big Bend region of the river between Chamberlain and Pierre, demonstrate the borrowing of a number of traits (direct stamping of ceramics, village location and fortification techniques, and elements of house construction) from Initial Middle Missouri populations.

However, by the middle of the fifteenth century (if not earlier), these cultures disappear from the archeological record. An example of population movement and inter-group hostility is the Crow Creek site in southeastern South Dakota. Evidence from the Crow Creek site indicates that at some time during the early fifteenth century, several hundred Central Plains villagers were massacred, presumably by warriors of the Extended Middle Missouri tradition. It is important to note that unlike the Central Plains villages in Nebraska, related villages in South Dakota during the late fourteenth and early fifteenth centuries were fortified with bastions and surrounded by ditches, clearly indicative of inter-group hostility.[164] The continued deterioration of environmental conditions during the "Little Ice Age," increased pressures for arable land, population pressures, and the constant movement and interaction of people with different cultural backgrounds led to a period of relatively rapid cultural change, often marked by inter-group hostilities.

While Initial Coalescent groups were becoming established in southeastern South Dakota, Extended Middle Missouri groups developed in north-central South Dakota and south-central North Dakota. It is originally proposed that Extended Middle Missouri groups represent Initial Middle Missouri groups that were displaced by Initial Coalescent groups and moved northward.[165] Zimmerman notes similarities with Initial Middle Missouri groups in terms of house patterns and village locations, but he also notes differences, especially in terms of ceramic style and decoration.[166] As seen at some Initial Coalescent sites, evidence of inter-group warfare or hostilities has been noted at several Extended Middle Missouri sites.[167] Debate continues over the origins of the Extended Middle Missouri culture. Some archeologists believe these people have the same parent stock as the Initial Middle Missouri groups (i.e., southwest Minnesota, northwestern Iowa, and eastern South Dakota). They argue that these people followed a chain of glacial lakes northward into present-day North Dakota and then subsequently moved southward into northern and central South Dakota during the late 1300s and early 1400s.[168] Others suggest that the Extended Middle Missouri cultural pattern developed directly out of the Initial Middle Missouri cultural pattern and represent displaced Initial Middle Missouri groups.[169]

Just as the Extended Middle Missouri may be an outgrowth of the Initial Middle Missouri, it appears quite likely that the Extended Coalescent is an outgrowth of the Initial Coalescent. Extended Coalescent groups appear to have occupied the central portion of the Middle Missouri trench as well as the White, Cheyenne, and Bad rivers to the west. The material culture between Initial and Extended Coalescent groups is similar, and differences between the two can be attributed to development trends that can be traced back to their roots in the Initial Coalescent period. However, unlike the large more nucleated villages of the Initial Coalescent period, the villages of Extended Coalescent groups are smaller but more numerous and more widespread across the landscape.[170] Although circular earthlodges were the common or ideal house pattern, the Extended

Coalescent period is also marked by a number of other house patterns that are unlike the highly structured circular earthlodges associated with the Initial Coalescent period. Surprisingly, village fortifications are relatively rare, compared to earlier periods, but fortified villages have been noted along the northern and southern frontier of the Extended Coalescent range. The presence of fortification ditches at some Extended Coalescent villages suggests hostilities with Oneota groups (or perhaps proto-Pawnee groups) to the south and Extended Middle Missouri groups to the north.[171] The ceramic tradition of Extended Coalescent groups is easily distinguished from Initial and Extended Middle Missouri ceramics. For example, Extended Coalescent ceramics typically have less temper, exhibit thinner vessel walls, with plain or simple stamped exteriors and straight to curved rims. Deeply curved and flared rims do occur, but are less numerous and of a different shape and configuration to comparable flared rims of the Initial and Extended Middle Missouri traditions.

As noted previously, Initial Middle Missouri ceramics are present in and around the Badlands. Some archeologists have suggested there was a hiatus in the occupation of the Badlands area from AD 1250-1500, i.e., during the Pacific climatic episode when warmer and drier conditions prevailed, followed by the onset of significantly cooler and more moist conditions during the Neo-Boreal (Little Ice Age) episode.[172] Hannus et al. have suggested that the "hiatus model" may need to be reconsidered in light of recent findings by White that environmental conditions during this period of time were not as severe as originally proposed.[173]

Archeological evidence suggests that lithic resources of the Badlands area were exploited during expansion of Extended Coalescence groups onto the Plains, and Johnson maintains that Extended Coalescent sites are the most numerous site type in the region during the Late Prehistoric period.[174] Johnson reports that Extended Coalescent sites or components have been identified at 39PN50 near Fog Creek, south of Fog Creek at the West Horse Creek Quarry site, Angostura Reservoir, and the Pine Ridge area of northwestern Nebraska.[175] Beaubien and Hannus et al. also report Extended Coalescent sites or components have been identified at 39PN10, 39PN11, 39PN32, and 39JK2, within the Park as well as sites 39PN54 and 39PN590 just outside the Park boundaries along Highway 44 in the vicinity of the Badlands Wall and the White River.[176]

Site types represented by the material remains from these sites suggest multiple uses ranging from seasonal hunting camps to semi-permanent occupations where corn agriculture was practiced.[177] Finally, Johnson and Hannus et al. caution that ceramic assemblages that only contain body sherds can not be considered diagnostic and attempts to determine cultural affiliation should be avoided unless rim sherds are present.[178] For example, cord-marked and cord-roughened body surfaces are present during the Middle and Late Woodland, the Initial Middle Missouri, and Central Plains traditions. Likewise, simple stamping is a common body treatment of vessels among Initial and Extended Coalescent, Extended and Terminal Middle Missouri, and Dismal River groups.[179] Johnson and Hannus et al., among others, have suggested several avenues of research that could provide insight into the ceramics and the ceramic bearing occupations in the vicinity of the Badlands. Hannus et al. present a table of post-Woodland ceramic sites

within the Park.[180] The table identifies 29 sites, 15 of which have an "unknown" or at least an uncertain cultural affiliation. Of the 14 remaining sites, 25 distinct components have been identified in the table. These include Initial Middle Missouri (7), Central Plains (2), Extended Middle Missouri (1), Terminal Middle Missouri (1), Extended Coalescent (3), Extended Coalescent/Post-Contact Coalescent (3), Post-Contact Coalescent (4), LaRoche (1), and Dismal River (2).

Post-Contact Coalescent or Protohistoric (AD 1600-1775)

The extensive population movement that typified the Plains region from AD 1300-1600 continued during the protohistoric period. The earliest accounts of European explorers into the Southern Plains was the (in)famous exploration by Francisco Vasquez Coronado in 1541 and his search for the lost cities of gold (*El Dorado*). Coronado and his troops traveled as far as the Arkansas River in central Kansas where they encountered the "Quivira" people, presumably a Caddoan-speaking group, most likely related to the Wichita, or possibly the Pawnee. The year 1541 also saw Hernando DeSoto cross the Mississippi River into Arkansas where he spent the better part of the next two years wandering around Kansas, Oklahoma, and Texas. DeSoto, like Coronado, was interested in finding wealth and fame, and like Coronado and other conquistadors before them, their journeys proved to be failures. Although both explorations lost many men along the way, the whereabouts of many individuals were never accounted for by the historical records. It is likely that many individuals elected to stay with native tribes they had encountered along their journeys. It is from these early encounters that American Indian tribes in the Plains were first confronted by Europeans and European culture.

By the mid to late 1600s, the diffusion of European trade goods (iron axes, hoes, and knives; copper and brass cooking pots and pans; glass trade beads; whetstones; and other common trade items), horses, and ideas spread across the Plains from both the east and the south. By the end of the seventeenth century, European fur traders (primarily French but also English and Scottish) began to make inroads into the Plains at the same time Indian groups east of the Mississippi (especially in the Great Lakes region) were being displaced further and further to the west in an effort to avoid European diseases, warfare (both with other Indian groups and Europeans), and increasing population pressures. Along the Missouri River, contact between agricultural Indian village groups and Europeans resulted in a hybrid culture that is referred in the archeological record as the Post-Contact Coalescent period. This period, which is generally dated from AD 1600 to 1775, is often called the Protohistoric period. The Protohistoric period refers to a time prior to direct contact with Europeans when American Indians had possession of European goods and horses, but historical accounts of these people never existed.

The large village complexes of the Extended Coalescent tradition in South Dakota and the Terminal (Extended) Middle Missouri villages in North Dakota ultimately developed into the historic tribes known as the Arikara in South Dakota and the Mandan and Hidatsa in North Dakota. These groups were the first observed by early European explorers when they entered South Dakota. In South Dakota the diffusion of ideas and material goods occurred prior to the 1700s, but the first documented European contact with the Arikara came in the early 1700s with fur trapping expeditions like La

Verendrye's. By this time, many Siouan and Algonquian groups in the east had been forced or voluntarily relocated to the Upper Midwest, and some of these groups made their presence known to Plains tribes within the next few decades. For example. Siouan-speaking Oneota groups were moving westward and northward from Iowa, Nebraska, and Minnesota at this time, it is possible that Post-Contact Coalescent villages along the Missouri River were fortified against incursions of one or more Siouan groups.

American Indian groups believed to have occupied and/or frequented western South Dakota during the 1600s and early 1700s include the Plains (or Dismal River) Apache, Comanche, Kiowa, Crow, and Shoshone. The appearance of the horse, which both migrated and was traded northward from the Southwest, marks the beginning of the Protohistoric period in western South Dakota. Although horses were introduced into the Plains around 1650, they did not reach the Badlands until approximately 1730.[181] It is at this time that fur trapping and fur trading expeditions also began to push westward into the Badlands area.

Crow (AD 1500-1700)

Archeologists and ethnologists believe that the Siouan-speaking Crow Indians evolved from Hidatsa groups that occupied Extended Middle Missouri villages in North Dakota. Early Crow pottery is widely attributed to the Mandan/Hidatsa ceramic tradition based on its globular shape, distinctive shoulders, flaring rims, and similarities in incised decorative motifs. Based on the presence of ceramics in the Mandan/Hidatsa tradition, early Crow sites (AD 1400s and 1500s) have been reported from northwestern South Dakota, southeastern Montana, and northeastern Wyoming.[182] The early Crow sites in Wyoming have been dated to AD 1420 and 1500 at the Big Goose Creek site, AD 1580 and 1610 at the Piney Creek site, and AD 1720 at the Medicine Lodge Creek site.[183] These dates are consistent with the proposed linguistic separation between Crow and Hidatsa.[184] However, Johnson argues that historic Crows did not make pottery and that the ceramics attributed to the Crow is within the range of Middle Missouri styles.[185] Although the above may be true, it is also possible that the Crow stopped making pottery once they gave up their agricultural roots and adopted a fully nomadic, equestrian lifestyle predicated on the hunting of bison.

If the early separation of the Crows and Hidatsa is accepted, then the movement of Crow groups onto the Plains from the Middle Missouri region coincides with the Neo-Boreal climatic episode and may indicate that the environmental, social, and population stresses forced these groups westward where they adopted a more mobile hunting and gathering lifestyle. The cooler and moister conditions of the Neo-Boreal episode had a deleterious effect on agriculturally-based societies, especially those in marginal environments (like the Mandan and Hidatsa) that lived on the periphery of the maize growing season. Conversely, these same climatic conditions proved beneficial on the Plains where increased precipitation promoted the growth of lush grasses and increased the carrying capacity of buffalo. The increase in bison herds at this time coupled with the arrival of the horse and the various environmental and social stresses occurring to the east permitted many agricultural groups to move onto the Plains and adopt a highly mobile lifestyle focused on the exploitation of bison. By the time of European contact with the

Crow in the early 1800s, the Crow were equestrian bison hunters living along the Yellowstone River and the Bighorn Mountains.

Dismal River (Plains) Apache (AD 1625-1725)

The Dismal River (or Plains) Apache represent a group of Athabascan speakers of the NaDene linguistic group that archeological evidence suggests occupied western Nebraska and adjacent portions of South Dakota, Wyoming, and Colorado for roughly 100 years between AD 1625 and 1725. Based on his work at sites in western Nebraska and northeastern Colorado and Champe's work at Ash Hollow Cave,[186] Gunnerson (1960) maintains the Dismal River phase represents the last manifestations of the Plains Apache tradition in the region.[187] Gunnerson recorded Plains Apache ceramics in association with Plains side-notched and tri-notched points at sites, but no village sites have been recorded for these people. Subsistence data from these sites suggest these people primarily subsisted on bison hunting, practiced limited agriculture, and lived in semi-permanent dwellings along the North Platte River and its principal tributaries. Dismal River components have been recorded from tipi ring sites, rockshelters, and open campsites both on top of buttes and at the base of buttes, in addition to smaller hamlets along river drainages. Archeological and ethnohistorical data suggest the Dismal River Apache developed into the Kiowa-Apache, who are known to have lived in the land between the two Platte rivers in the early 1700s.[188]

Although the Kiowa-Apache were not politically connected to the various Apache groups known from the Southern Plains and the Southwest, linguistic data suggests a separation from Jicarillas and Lipans (Southern Plains) Apaches by 1750 or perhaps somewhat earlier. Brant has speculated that the Dismal River Apache (later to become Kiowa-Apahce) became separated from the southern Apache groups by the incursion of Comanche groups into the area along the Arkansas River of Colorado and Kansas in the early 1700s. After their separation from other Apache groups, the Kiowa-Apache joined the Kiowa at some time during the 1700s, at which time the two groups became linked culturally, economically, and politically.

Comanche (AD 1700-1750)

The Comanche are Shoshonean speakers (one of two Uto-Aztecan linguistic groups on the Plains) whose language is very similar to the Wind River Shoshone (Plains Shoshone) in northwestern Wyoming. The Comanche were first recorded in the Santa Fe-Taos region of New Mexico in 1706 where they were accompanied by Utes.[189] The fact that the Comanche and the Wind River (or Plains) Shoshone speak a mutually intelligible language suggests that these groups diverged during the late protohistoric period, perhaps in the headwaters region of the North and South Platte rivers of southeastern Wyoming and northeastern Colorado.[190] During the early eighteenth century, the Comanche bands were entrenched along the Arkansas River valley in Colorado and Kansas, and by the mid-eighteenth century they had expanded their range to include portions of western Oklahoma, south-central, the Texas panhandle, and eastern New Mexico.

The Comanche, like other protohistoric Plains tribes, were adapted to an equestrian lifestyle based on the exploitation of bison. Little is known about the material culture of

the protohistoric Comanche from an archeological perspective, and what little is known of their material culture is derived primarily from historic burials. During the historic period the material culture of the Comanche, like other tribes on the Southern Plains, appears to be heavily influenced by trade goods from Spain and Mexico. Historically, the material culture of the Comanche was very similar to that of the Kiowa and Kiowa-Apache, but archeologically speaking it is difficult, if not impossible, to distinguish one group from another. As noted, the prehistory of the Comanche is poorly known, but we do know that their territorial range overlapped with many other tribes including the Arapaho, Cheyenne, Kiowa, and Apache. Late Prehistoric sites in the projected ancestral lands of the Comanche (i.e., western Nebraska, northeastern Colorado, and southeastern Wyoming) are most often attributed to the Dismal River (Plains) Apache. In light of the extensive overlap of the aforementioned groups, the broad territorial ranges covered by these nomadic equestrian tribes, and the similarities in material culture, it is possible that many sites previously identified as "Dismal River Apache" may actually belong to other groups such as Kiowa, Comanche, Shoshone, Arapaho, Cheyenne, and Ute.[191]

Kiowa and Kiowa-Apache (AD 1670-1800)

The Kiowa and the Kiowa-Apache represent two distinct linguistic groups that for all intents and purposes joined culturally, politically, and economically. The Kiowa are remotely tied to Tanoan-speaking Pueblo groups of the Southwest, while the Kiowa-Apache, as noted above, were Athabascan speakers. The origin myths of the Kiowa place them along the Yellowstone River in Montana in the late 1600s.[192] At some later time, perhaps as early as the 1690s, the Kiowa migrated south and east before settling in the Black Hills area in the 1730s. Later they migrated into the Arkansas River valley in Colorado and Kansas. From there they subsequently moved further south to western Oklahoma and Texas. At some point in their southern migrations, perhaps in the area between the Platte rivers, the Kiowa joined forces with the Kiowa-Apache.

Historical records tend to support some of the Kiowa migration myth, as they are noted as living in the Black Hills area in the 1730s and in 1742 by the LaVerendrye brothers. Cheyenne traditions place the Kiowa in the northwestern Wyoming (Tongue, Powder, and Little Yellowstone rivers) during the early to mid-eighteenth century.[193] By the late 1700s, the Kiowa (and Kiowa-Apache) were living in the area between the North Platte and Arkansas rivers, but by the 1820s and 1830s, they had moved onto lands south of the Arkansas River in western Oklahoma and Texas, perhaps in response to Lakota Sioux moving into and controlling much of the area between the Arkansas River and the Black Hills. From an archeological perspective, little is known of the Kiowa as a prehistoric manifestation, and like the Comanche, their material culture is primarily known from historic burials and not from occupation sites. Few known Kiowa sites have been excavated, but without historical documentation, it would be difficult to distinguish historic (or protohistoric) Kiowa, Kiowa-Apache, or Comanche sites.[194]

Omaha and Ponca (AD 1600-1800)

Omaha and Ponca tribes represent Siouan-speakers that probably migrated into eastern Nebraska during the late 1600s. These groups were agricultural villagers, probably derived from an Oneota stock that, according to their oral history, migrated to

northeastern Nebraska by AD 1700.[195] For many years archeologists believed that Redbird phase sites in southeastern South Dakota and northeastern Nebraska represented the protohistoric Ponca, given that Redbird sites were located in the heart of the Ponca territory. However, based on more recent data, this interpretation may be in error, and it is now hypothesized that the Redbird sites are related to either Arikara or Pawnee incursions into this part of the state during the 1600s.

Lower Loup/Pawnee and Arikara (AD 1400-1800)

Archeologists believe the Pawnee migrated onto the Plains from the southwest sometime between AD 1200 and 1300. By the middle of the sixteenth century, the Pawnee territory extended from the Niobrara River in Nebraska to the Arkansas River in Kansas. Ceramics attributed to proto-Pawnee occupations have been recovered from northwestern Nebraska and adjacent portions of South Dakota. The Pawnee and the Arikara (also known as the Ree), are Caddoan speakers; the former are linked archeologically to the Upper Republican and Lower Loup phases of central Nebraska and Kansas. Using the direct historical approach, Wedel and other archeologists traced the ancestry of the Pawnee Indians and demonstrated that they developed from the Lower Loup phase, which is dated to the 1600s.[196] The archeological record suggests the Pawnee and Arikara were primarily agriculturalists that migrated up the Missouri River prior to AD 1600, and shortly thereafter the Skidi Pawnee and the Arikara separated. The Arikara were able to produce a large surplus of maize and other domestic crops which they traded to the Kiowa, Kiowa-Apache, Comanche, Arapaho, and Cheyenne for hides, fur, dried meat, horses and guns. Their surplus production and their location along the Missouri allowed the Arikara to gain control of a large trading network during the seventeenth century.[197] During the eighteenth century, as many as 10,000 Arikara may have lived along the Missouri River between Chamberlain and Mobridge. French traders established trade relations with the Arikara by the middle of the 1700s.

The material remains from a known early 1800s Pawnee earthlodge were compared to the material remains of a Lower Loup phase site in Nance and Colfax counties. The similarity in ceramics and other artifacts demonstrated a direct relationship between the two groups. However, Ludwickson notes, "…a break in the direct historic chain of evidence occurs between 1400 and 1600."[198] One interpretation of Pawnee oral history relates that they arrived into Nebraska from the south (possibly Kansas) around 1600 and quickly adopted a Plains oriented material culture from the Mandans and Hidatsas.

Historical accounts of Coronado's expedition into Kansas in 1541 suggest that he met with a delegation of Pawnee either from or living near the village of Quivara. This account would corroborate the Pawnee oral history.[199] Le Seuer's 1701 map of the Missouri and Upper Mississippi valleys depicts several Pawnee villages in the vicinity of the Lower Loup and Platte rivers in central Nebraska. During this period, the Pawnee of eastern and central Nebraska lived in earthlodge villages and practiced an agricultural lifestyle that was routinely supplemented with bison. Pawnee hunting camps (and perhaps trading camps) have been recorded in western Nebraska and the Nebraska Sandhills.

Plains Shoshone (AD 1500-1750)

As noted previously, Shoshonean speakers (Uto-Aztecan family) are known to have migrated into southwestern Wyoming by the 1400s, and the recovery of Intermountain ware ceramics from sites in northeastern Wyoming and southeastern Montana that date to the 1700s (or earlier) attest to the fact that they continued to migrate eastward.[200] Hultkranz and Smith report that the Plains (Prairie) Shoshone ranged as far east as the Black Hills.[201] These Shoshone groups share several traits typical of other Plains tribes including tribal buffalo hunts in the fall, tribal organization with a chief, and the Sun Dance ceremony.[202] The appearance of the shield-bearing warrior motif, certain sun motifs, and other rock art motifs in Wyoming, South Dakota, and other parts of the Plains has been attributed to the eastward movement of the Plains Shoshone as well.

Cheyenne and Arapaho (AD 1750-1800)

Both the Cheyenne and Arapaho are Central Algonquian-speaking groups. According to migration myths and oral traditions, these groups lived in the region north of the Great Lakes and the lakes region of northern Minnesota, respectively, during the late 1600s and early 1700s.[203] Historical maps and accounts demonstrate the westward movement of these groups during the 1700s. By 1794 the French fur trapper Jean-Baptiste Truteau (also Trudeau) reported the Cheyenne were fully developed equestrian bison hunters that lived west of the Missouri River. He also reported the Arapaho were equestrian bison hunters that lived along the headwaters of the South Fork of the Cheyenne River in eastern Wyoming and southwestern South Dakota. The following year, Truteau reported that the Cheyenne (also equestrian bison hunters) lived west of the Arikara villages (i.e., west of the Missouri River) along the Cheyenne River in present-day South Dakota. Other accounts suggest the Cheyenne were still agriculturalists and lived in villages along the Missouri River at this time. Somewhat later in 1805, the Lewis and Clark expedition noted the Cheyenne were a nomadic group living near the Black Hills. Cheyenne oral history suggests that prior to becoming equestrian bison hunters in the Black Hills region, the Cheyenne were horticulturalists living in Minnesota and North Dakota,[204] and Grinnell reports that the Cheyenne began their westward migration during the protohistoric period.[205] Grinnell further reports that the Cheyenne established several sedentary villages along the Missouri River between the Mandans and Arikara before abandoning their agricultural lifestyle for a nomadic existence on the Plains hunting bison.

Archeological evidence for sedentary, horticultural Cheyenne villages along the Missouri River has not been verified, but Hanson suggests that the Biesterfeldt site, a fortified earthlodge village in eastern North Dakota may represent a late eighteenth century Cheyenne occupation.[206] Historically, the horticultural Cheyenne appear to have been driven from their homelands by the Ojibway during the late eighteenth century. If the above are true, then it presents the problem of how nomadic, bison-hunting Cheyenne were living in the Black Hills in 1794. Hanson has suggested that the Cheyenne must have migrated en masse from their homeland in the late 1700s and adopted an equestrian, bison-hunting lifestyle within less than 20 years.[207]

The historical and archeological record of the Arapaho is even sparser than that of the Cheyenne. The Arapaho and the closely related Gros Ventres became geographically, if not culturally, split by the early to mid 1700s, with the Arapaho living near or south of the Missouri River in Montana and the Gros Ventres living north of the Missouri River in the vicinity of the Saskatchewan River. Some scholars believe that these linguistically related groups were semi-sedentary horticulturalists that lived in the Red River region of North Dakota and Minnesota. At this time the origins and population movements of these groups remains obscure, and archeologically, these groups are invisible.[208] That is, the prehistoric origins of the Arapaho and Gros Ventres remain as unknown today as they were 100 years ago when Kroeber noted that "…nothing is known of the origin, history, or migrations of the Arapaho."[209]

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CHAPTER FOUR

Siouan and Other American Indian Occupation of the White River Badlands (AD 1770-1891)

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SIOUAN AND OTHER AMERICAN INDIAN OCCUPATION OF THE WHITE RIVER BADLANDS (AD 1770-1891)

Introduction

The Spanish and Mexican presence in the American Southwest during the sixteenth and seventeenth centuries spread northward, exposing the Plains Indians to European material culture, in particular the horse and gun, but also domestic items like iron hoes, axes, knives, and cooking pots among other items. These items began to influence the lifeways of the Plains Indian tribes prior to the more direct impact of their encounters with Euro-American fur trappers and traders in the late seventeenth and early eighteenth centuries. As noted in the previous chapter, the importation of horses onto the Great Plains, combined with increasing population pressures, increased territoriality, and diminished agricultural supplies, as a result of deteriorating climatic conditions during the Neo-Boreal period, led to increased group movements and increased inter-group hostilities. Meanwhile, the westward expansion of Euro-Americans in Canada and throughout the Great Lakes region during the last quarter of the seventeenth century and the first half of the eighteenth century had repercussions across much, if not all, of the North American continent. It is during this time that many agricultural groups and woodland-oriented hunting and gathering tribes moved onto the Plains and adopted a fully nomadic, equestrian lifestyle predicated on bison and the hunting of other wild game, supplemented by the collection of wild seeds, berries, and nuts. Many American Indian tribes moved to lands west of the Great Lakes in an effort to escape population pressure, European disease, and warfare. At the same time, the allure of the fur trade and the desire to control it led many tribes to capture and enslave or exterminate their rivals and enemies, or any other group that threatened their role in the fur trade or encroached on their tribal boundaries. Participation in the Euro-American fur trade had unexpected negative results on American Indian tribes in terms of the displacement of indigenous populations, but also in terms of the devastation and decimation of entire Indian populations that had no immunities to combat smallpox, flu, measles, and other diseases introduced by Euro-Americans. Given these uncertain times, internal and external social and economic pressures and the deleterious effects of the Little Ice Age on agricultural groups, many tribes decided to become full-time equestrian bison hunters. The physical transition from fully sedentary agricultural groups (or even semi-sedentary hunters and gatherers) to nomadic, equestrian bison hunters appears to have been relatively swift, occurring within the space of a few generations. Identifying the social, religious, and political ramifications of such dramatic economic and cultural transformations are often difficult, if not almost impossible to detect in the archeological record or the documented history of European and American observers. Nevertheless, the following chapter attempts to illustrate the history of American Indian tribes' arrival in the project area and the ways in which they adapted in order to survive here.

This chapter is divided into seven sections. The first discusses the various Siouan groups and how and when they migrated to South Dakota. The second section focuses on the arrival of the Lakota to the White River Badlands, and the third section summarizes events and migrations among non-Lakota groups in the vicinity of the White River Badlands. Sections four, five, and six are organized chronologically, summarizing events that chronicle the deterioration of American Indian relations with military troops, settlers, and federal government representatives between 1840 and 1891. The final section presents a very brief discussion of sacred Lakota sites in or near the Badlands. This final section is based on the recent ethnographic overview prepared for the Badlands National Park by David White.

Literally thousands of books, journal and newspaper articles, and scholarly papers have been written on Plains American Indian tribes and their intertribal relationships as well as those with the United States. The information presented in this literature is almost exclusively presented from the perspective of white American males, and as such often contains inherent biases. The following text attempts to present a more factual perspective of American Indian events and relationships based on the review of a few objective sources that in turn relied on the extensive research and oral interviews of others. Recently, the National Park Service contracted Dr. David White of Applied Cultural Dynamics, Santa Fe, New Mexico to conduct extensive historical and ethnographic research, supplemented by interviews, all of which resulted in a comprehensive and detailed *"Ethnographic Overview and Oral History of the Badlands National Park."*[1] The text that follows relies heavily on Dr. White's lengthy and detailed report, but also takes into consideration the work of other such scholars.

Arrival of Siouan Tribes in South Dakota (AD 1700-1830)

The Siouan linguistic family includes a number of closely related tribes that through historical circumstances became geographically and, in some cases, socially separated, and in some extreme cases became bitter enemies. The Siouan nation originally contained seven council fires: the Dakota or Santee Sioux (which included the Sissetons, Wapakutes, Wapatons, and Mdewakantons); the Nakota or Middle Sioux (which included the Yankton Sioux and the Yanktonai Sioux); and the Lakota (also known as the Teton or Western Sioux). The Lakota, in turn, included seven groups: the Oglala, Hunkpapa, Brule, Minneconjou, Sans Arc, Two Kettle, and Sihasapa or Blackfeet.[2]

The various Santee (Dakota) groups were semi-sedentary agriculturalists that lived in the prairie peninsula area of southwestern Minnesota and northwestern Iowa and extended eastward to the Mississippi River. The Yankton and Yanktonai groups lived in eastern portions of North and South Dakota and at one time adjacent parts of Minnesota. Based on historical accounts written by French Jesuits and fur trappers, and some oral histories, the Dakota Sioux lived at the western end of Lake Superior in present-day northern Minnesota and Wisconsin when they were first encountered by Europeans in the mid 1600s. Robinson reports that in October 1700 Charles Pierre Le Seuer was informed by some Dakota warriors that the Blue Earth River in south-central Minnesota belonged to the Teton (Sioux of the West), Ioway, and Oto."[3] The Dakota also informed Le Seuer that the Lakota (Tetons) had about 1,000 lodges, and neither gathered wild rice nor used

canoes, but instead lived "entirely by the chase on the prairies between the Mississippi and the Missouri, and their lodges were made of buffalo skins and carried with them wherever they went."[4] Jesuit and other accounts from this period suggest that both the Lakota and Dakota Sioux were under heavy pressure from neighboring groups such as the Chippewa, Cree, Miami, Fox, Mascoutins, and Illinois. During the early decades of the eighteenth century, Dakota, and quite likely Lakota, groups slowly began to move (or were forced to move) south and west from the lake country of southern Ontario and Minnesota and onto the Plains of North and South Dakota.[5] These accounts and the linguistic similarities between the Lakota, Dakota (Santee), and Nakota groups suggest a Lakota presence west of the Missouri River by the early 1700s and possibly earlier. Their subsequent adaptation to a nomadic, equestrian lifestyle was a relatively late historical event.[6] Based on Le Seuer's account, the Lakota were already hunting bison and living a nomadic lifestyle in southwestern Minnesota and southeastern South Dakota by 1700.

Recent archeological and ethnohistorical research on the prairie-forest ecotonal boundary of Minnesota and eastern North Dakota has led some scholars to suggest that the adaptation of Lakota groups to the Plains lifestyle has greater time depth than originally postulated.[7] For example, archeological evidence has demonstrated a link between Late Woodland Sandy Lake pottery and the historic Santee (Dakota) in Minnesota. Since this discovery, other Late Woodland Sandy Lake wares have been recovered in the Red and James River valleys of eastern North and South Dakota.[8] According to some scholars, the presence of Dakota ceramics in eastern South Dakota necessarily implies that (1) prehistoric Lakota groups were already living to the west of the Santee (Dakota) during the Late Woodland period and (2) these Late Woodland "Dakota" groups were already adapted to the Plains lifestyle. Unfortunately, it is almost impossible, to ascribe historic cultural affiliation to an archeological population based solely on material remains. What is clear, is that the Sandy Lake ceramics are: (1) distinctly different from other Late Woodland ceramics in the area that are suggestive of Algonquian ancestors, and (2) that they are also different from other Siouan wares such as Oneota ceramics of the Orr phase (related to Ioway) and the Blue Earth phase (related to Oto). Hanson concludes that it may be best to interpret the Sandy Lake material as ancestral to the Dakota (Santee) Sioux, thereby giving the Dakota a presence on the Plains several centuries before European contact.[9] Thus, the question remains unresolved as to whether or not the Lakota were adapted to the Plains lifestyle several centuries before European contact.

Lakota (Teton) in the White River Badlands Region (1760-1840)

Between the 1760s and the early 1800s, Robinson, following Warren's History of the Chippewa, reports that the Chippewa and various Siouan groups were almost constantly at war across Minnesota and Wisconsin.[10] Many French accounts place the Lakota in various parts of Minnesota during the seventeenth century. Hall reports that the Lakota or Teton Sioux were forced to move from the headwaters of the Mississippi by the Chippewa and Cree, both of whom had obtained firearms from the French and English traders in the Great Lakes region.[11] Precisely when the Lakota first moved west of the Missouri River remains a matter of conjecture and dispute, but by the 1760s, and perhaps earlier, the Lakota had reached the Missouri River, where they encountered horse-

mounted Arikara warriors who temporarily halted their westward movement. Smallpox took a heavy toll on the Arikara in the early 1760s, and the Lakota, having acquired the horse from the Arikara, crossed the Missouri River and continued their westward movement.[12] According to a winter count, an Oglala war party (Oglala are one of the seven council fires of the Lakota) led by Standing Bull discovered the Black Hills in 1776.[13] Other Lakota tribes soon followed, and the Lakota began their short-lived dominance of the Plains.

The Lakota quickly adopted an equestrian nomadic lifestyle dependent on buffalo hunting. Although firearms, brought by French and English supported traders, were common on the Plains by the mid-eighteenth century, the bow and arrow, whether tipped with stone (lithic) arrowheads or arrowheads manufactured from glass, metal, and copper, were still the dominant weapon of the hunt. The transition to mounted hunter, as well as the establishment of a warrior class, dramatically changed the lifeways of Plains groups. The introduction of the horse and gun led to the development of a specialized bison/plains adaptation that diffused rapidly across the entire Great Plains. As pressure on herds increased, both bison and Indian populations migrated west across the Plains. At the same time, war parties constantly raided one another's camps for horses, wives, and food caches. Military prowess, that included mobility and numerical strength, was the key to survival and territorial expansion.

During the first decade of the 1800s, Robinson notes that an important political and economic division occurred between the Dakota (Santee) of Minnesota and the Mississippi River and the Lakota (Teton) of the Missouri River and their respective trading partners. The Dakota continued to trade with French, English, and Scottish fur trappers and traders, and therefore continued a greater allegiance to the English during the first decades of the nineteenth century. Conversely, the Lakota exchanged goods and ideas with American traders from St. Louis, who were licensed by William Clark, and thus the Lakota maintained a greater allegiance to the United States. These different allegiances put the Lakota at odds with their Dakota kin as well as the Arikara, Mandan, and Hidatsa groups during the War of 1812.[14] After its conclusion, the Dakota and the Chippewa resumed their mutual hostilities, which continued periodically for many years, while the Lakota continued to fight the Arikara and Crow. In 1822, the Dakota massacred an entire village of Chippewa, and in that same year the Lakota and Cheyenne joined forces against the Crow, the Rees (a group of Arikara), and the Mandans. The Lakota caught the Crow in an ambush, devastating them to such an extent that the tribe never fully recovered.[15] After defeating the Crow, Arikara, and Mandan, the Lakota proceeded to defeat the Cheyenne and the Kiowa, and they usurped the Black Hills from the Kiowa. The Black Hills became so sacred to the Lakota that as time passed the Kiowa were forgotten and these sacred mountains were said to have been given to the Lakota by the Great Holy (Wakan Tanka).[16] The Lakota victories gave them control of the Plains from the Minnesota River in the east to the Yellowstone River and the Big Horn Mountains in Montana in the west, and from the Platte River in the south to almost the Canadian border in the north. Clearly, the Lakota nation was expanding across the Plains during the first half of the nineteenth century.

By the mid-1820s, a number of fur companies had constructed forts at the confluence of the Missouri River and its principal tributaries, including Fort Brasseau at the mouth of the White River by the Rocky Mountain Fur Company. In 1823, a large group of traders from the Missouri Fur Company ascended the Missouri River only to have their passage stopped by the Arikara. The group went downriver to Fort Kiowa, about 10 miles north of Chamberlain, where they split into three groups. One group, led by William Ashley, returned to St. Louis. The two other groups continued; one group of 13 men led by Andrew Henry continued up the Missouri River, while the second group, which included Jedediah Smith and 10 men, traveled across the prairie.[17] Later that summer, a military force led by Colonel Leavenworth returned to the land of the Arikara, and with the help of the Lakota, routed the Arikara.

Jedediah Smith and his party became the first group of Euro-Americans to record their observations of the White River Badlands. They traveled up the White River, perhaps as far as the mouth of Wounded Knee Creek, and spent the night with a group of Brule Sioux before heading northwest across the Badlands, probably passing south of Cuny Table, and then proceeding toward the northeastern portion of the Black Hills.[18] By the close of 1829, fur traders had established seven major wintering houses on the Cheyenne and White Rivers: four on the Cheyenne River and three on the White River. The Oglala Fur Post was established at the confluence of Rapid Creek and the Cheyenne River, near the Badlands. This post burned in 1832, but it was quickly rebuilt and trading continued without interruption. Outposts were built at the forks of the White River, just east of the Badlands; near Butte Cache, just above the mouth of Wounded Knee Creek; and further up (west) the White River on present-day Bordeaux Creek.[19]

In 1825, after the devastating battles between the various Siouan groups and their Indian enemies, Governor William Clark was determined to establish treaties between the various tribal groups and the United States and between the tribes themselves. Clark led a contingent up the Mississippi River, and selected General Henry Atkinson and Doctor Benjamin O'Fallon, his nephew and subagent for tribes within the Missouri River basin, to lead the delegation up the Missouri River. Atkinson's expedition included 476 men, many of whom had fought two years before in the retaliation against the Arikara. The Atkinson expedition went to great lengths to ensure that treaty signatories were actually the recognized leaders and chiefs of the tribes they claimed to represent. At the conclusion of the expedition, Atkinson was able to gain the signatures of over 62 Siouan chiefs on three treaties.[20] The treaties demonstrated to the Indian tribes the extent of US governmental power, and effectively removed all English presence from the western frontier. More importantly, the treaties established more equitable, albeit short-lived, trade relations between the United States and the Indian nations.

At this time in American history, Indian tribes were still considered sovereign nations, but the notion that Indian tribes were sovereign nations was seriously challenged less than six years later. The idea that Indian tribes were sovereign nations was reinforced in two rulings by Supreme Court Justice John Marshal: *Cherokee Nation vs. Georgia* (1831) and *Worcester vs. Georgia* (1832). However, the failure of President Andrew Jackson and Congress to enforce these rulings led to the removal of the Five Civilized Tribes of

the South (Cherokee, Choctaw, Chickasaw, Creek, and Seminole) from Georgia, Florida, North Carolina, and Tennessee and the establishment of Indian Territory in what was to become Kansas and Oklahoma. The government policy towards Indians established inherently contradictory conditions of sovereignty and wardship.[21] The contradictions in American policy became apparent in the aftermath of *Worcester vs. Georgia* when Presidents Jackson and Van Buren refused to uphold treaty guarantees with the Cherokee and other civilized tribes. One consequence of their actions was to confront these tribes with two unsympathetic alternatives: (1) they could remain in the South, at least temporarily, and retain their individual ownership of land but surrender their political identity, or (2) they could be removed across the Mississippi and retain their political identity but surrender ownership of their land.[22] The removal policy, coupled with Americans' greed for land (Manifest Destiny) and wealth (California gold rush), served notice that there was no room for an America that included independent sovereign Indian nations. In fact the notion of a permanent Indian country died in its infancy as American expansionism and racism spread across the Plains. By the beginning of the 1840s, the Lakota were widely recognized by other Indian tribes as well as the federal government as the most dominant and commanding tribe on the Plains. Their territorial range was vast, extending from the Missouri River westward into central Wyoming and Montana, and from the southern plains of North Dakota south to the Arkansas River.

Non-Siouan Tribes in the Vicinity of the Badlands (1750-1850)

Crow (ca. 1750-1850)

Various linguistic studies indicate the split between the Crow and Hidatsa occurred as early as the 1500s to as late as the 1770s.[23] The earlier date seems to be supported on the basis of ceramics recovered from archeological sites in northeastern Wyoming and southeastern Montana, while the later date appears to be unreliable since historical records place the Crow in the Black Hills region of Wyoming by 1740. Whatever time the split between the Crow and Hidatsa occurred, it is likely that the Crow migrated onto the Plains prior to acquiring the horse. However, in 1742, when the Crow were encountered in northeastern Wyoming, near the Black Hills, by the Verendrey brothers, they were nomadic equestrian bison hunters. Traditional Crow territory included lands east of the Rocky Mountains along the headwaters of the Yellowstone, Powder, and Big Horn rivers and extended south and east to the headwaters of the Platte.[24] The Crow encountered the Lakota and Cheyenne near the headwaters of the Cheyenne River and the Platte River in eastern Wyoming. The Crow continued to live in this area until about 1800 at which time they moved further north and west to escape the incursions of the Cheyenne and soon thereafter the Lakota. According to an 1845-1846 Crow winter count, the Crow claimed the Black Hills as their territory for a brief period.[25]

Kiowa and Kiowa/Apache (ca. 1740-1850)

As noted in Chapter 3, the Kiowa moved into the Black Hills area from the Yellowstone region of central Montana by the 1730s, and they were reportedly living in the Black Hills area with their Crow allies when they were first encountered by Spaniards.[26] At that time the Kiowa were known to have traded with the Arikara, Mandan, and Hidatsa tribes along the Missouri River, as well as tribes as far to the Northwest as the Sarsi in British

Columbia.[27] By the 1780s, pressure from the Cheyenne and shortly thereafter the Dakota Sioux forced the Kiowa to move further south onto the Plains, while the Crow moved further west and north.[28] Based on his discussions with elder Kiowa, Mooney concluded that the Kiowa parted with the Crow in the vicinity of Fort Robinson, Nebraska, sometime between 1775 and 1805.[29] By 1805, Lewis and Clark reported through second-hand Indian sources that the Kiowa lived along the North Platte and Loup rives, southeast of the Black Hills. Hughes reports that the Kiowa began to migrate even further to the south after 1803 and only returned to the North Platte area to trade with the Cheyenne and Arapaho. In 1815, the Brule Sioux attacked the Kiowa camp at a trade fair near the mouth of Horse Creek in the western Nebraska panhandle, but in 1821 the Kiowa returned to the trade fair with their new allies the southern Cheyenne and Arapaho.[30] Sometime between 1828 and 1832 the Kiowa moved to the Wichita Mountains of southwestern Oklahoma. The Kiowa primarily remained south of the Arkansas River after the 1830s, but in later years they were known to have traveled northward to trade with their old allies the Crow and the Arikara.[31] It appears that the Kiowa did not occupy the White River Badlands for any length of time, but they undoubtedly traveled through the area on their trading sojourns.

The Kiowa-Apache, Athabascan speakers, became affiliated with the Kiowa in the mid- to late eighteenth century when both tribes lived in the area between the Platte River and the Black Hills. They were reported by Lewis and Clark to be living near the Black Hills in 1805, but shortly thereafter the Cheyenne and later the Lakota forced the Kiowa-Apache from the Black Hills region and the land between the two forks of the Platte River. By this time, the Kiowa-Apache and the Kiowa were living and traveling together, forced by the Lakota and Cheyenne to move southward first across the Platte River and then, by the 1820s to 1830s, to an area south of the Arkansas River.

Omaha and Ponca (ca.1800-1860)

Archeological and historical records suggest that the Siouan-speaking Omaha and Ponca were living together in Big Bend Village on the Missouri River in the early 1700s, but by 1715 they had separated, with the Omaha moving back downstream and the Ponca moving westward toward the Black Hills.[32] Lakota winter counts and records from the Lewis and Clark expedition document a long history of enmity between the Lakota and the Omaha and Ponca tribes. In 1855, Oglala Sioux were joined by Cheyenne and Arapaho warriors to attack the "entire Omaha tribe: near the Loup Fork of the Platte River in central Nebraska."[33] In 1858, the Ponca laid claim to traditional lands between the White River in South Dakota and just south of the Niobrara River in northern Nebraska and from the southern Black Hills to the Missouri and James rivers in South Dakota.[34] This boundary was reaffirmed by Ponca testimony in an Omaha land claim. Thus, this area constitutes the traditional lands of the Omaha and Ponca tribes. Howard reports two Ponca villages in the vicinity of the White River Badlands: one is Big Bend Village on the west side of the Missouri and the other is between the southern Black Hills and the Cheyenne River.[35] The Ponca refer to the Badlands as the "Dusty Hills" and their oral tradition retains many memories of the White River Badlands and the Black Hills.[36]

Pawnee and Arikara (ca. 1750-1850)

Traditions suggest the Pawnee were comprised of four separate bands: Grand, Republican, Tappage, and Wolf or Skidi. As noted in Chapter 3, the Pawnee and the Arikara were at one time closely aligned before the Arikara moved north into the Middle Missouri region, leaving the Pawnee in the vicinity of the Lower Loup and Platte rivers in central Nebraska.[37] Smallpox epidemics were particularly devastating to the Arikara, who suffered three such epidemics prior to 1794. A deadly epidemic between 1780 and1781 decimated the Arikara in South Dakota and many either moved south to live with the Pawnee or north to live amongst the Mandan and Hidatsa. Around 1796, fearing Lakota attacks, the Arikara abandoned their settlements on the Cheyenne River, but by 1804 when Lewis and Clark traveled up the river they had returned.[38]

A 1796 map of the Mississippi and Missouri River valleys places the Grand Pawnee band near the mouth of the Platte River in eastern Nebraska. Based on a French expedition into the area from 1801 to 1803, Wedel maintains the Grand Pawnee were located on the south bank of the Platte River in eastern Nebraska, the Skidi were located some distance up the Loup River from its confluence with the Platte River, and the Republican band was located on the north bank of the Republican River in south-central Nebraska.[39] In 1804, Lewis and Clark reported the Grand Pawnee were some 45 to 50 miles upstream of the mouth of the Platte River, the Skidi band was some 90 miles west on the Loup River, and the Republican band had migrated north and joined the Grand Pawnee.[40] In 1806, Lt. Zebulon Pike recorded a Republican Pawnee village on the south bank of the Republican River in Webster County, and in 1819 Major S.H. Long reported that a village of Grand Pawnee existed at the mouth of Horse Creek and that a Republican band had formed a new village at the mouth of Cottonwood Creek.[41] Throughout this period, the Pawnee continued to hunt bison on the High Plains and trade with tribal groups that lived on the Plains.

In 1823, after attacks by American troops, fur traders, and a large contingent of Lakota warriors, the Arikara were forced to abandon their villages along the Missouri River in South Dakota. Through a series of migrations eventually the Arikara either joined the Pawnee along the Platte, Republican, and Loup rivers in central Nebraska, or they migrated north along the Missouri where they joined Mandan and Hidatsa neighbors. Hyde has suggested that the Arikara, in order to avoid conflict with the Sioux, moved north of the Black Hills, down the Powder River to the North Platte River, down the North Platte to the Platte River, and down the Platte to join the Pawnee.[42] Between 1823 and 1834, the Arikara lived in the Platte Valley between the forks of the Platte River and the headwaters of the North Platte. However, Hyde also reports that a major battle occurred in 1834 between the Arikara and the Oglala Sioux at Ash Hollow near the mouth of the North Platte. The victorious Sioux forced the Arikara to retreat to the aforementioned core area of the Pawnee in central Nebraska. White reports that the Arikara and the Skidi Pawnee split in 1835, at which time the Arikara abandoned their sedentary lifestyle in favor of nomadic bison hunting. Although the Arikara did not return to the Badlands or the Black Hills, they continued to have acrimonious relations with the Lakota well into the 1870s.[43]

Hidatsa and Mandan (1750-1850)

The Hidatsa and Mandan, both Siouan-speaking groups, were entrenched along the Missouri River in present-day North Dakota by 1700, and by the early 1700s, Lakota groups began encroaching on their territory. As early as 1738, La Verendrye brought the Mandan villages into contact with the French fur trappers and traders. Together, the Mandan and the Hidatsa established and maintained a major indigenous trade center that brought together nearly all of the major tribes on the Plains. Their early contact with the French allowed the Hidatsa and Mandan to play a prominent role in trade relations among Plains tribes for many decades. The Hidatsa and Mandan maintained close relationships with the Crow, which frequently put them at odds with the Lakota, Cheyenne, and Arapaho. The Mandan and Hidatsa later welcomed the Arikara after their numbers were decimated by several smallpox epidemics and the 1823 war with American soldiers. Neither the Mandan nor the Hidatsa have any close ties to the White River Badlands, and together they, along with the Arikara, constitute the "Three Affiliated Tribes." Today these three tribes live on the Fort Berthold Reservation in North Dakota.[44]

Plains Shoshone (ca. 1750-1850)

As noted in the previous chapter, Shoshonean groups, later referred to as the Plains or the Eastern Shoshone, migrated into Wyoming sometime after AD 1400. The Shoshone were one of the earlier tribes to acquire the horse, quickly adopting it and communal bison hunting into their nomadic hunting and gathering lifestyle. Archeological evidence (as discussed in Chapter 3) indicates Shoshone groups lived (or had lived) in most parts of Wyoming by the mid-eighteenth century. For example, Frison reports dates of AD 1700 and AD 1720 for the Eagle Creek site in southwestern Montana and the Eden-Farson site in the Green River Basin of southwestern Wyoming, respectively.[45] The Plains Shoshone, like the Kiowa, the Mandan, and Hidatsa, were close allies of the Crow, and bitter enemies of the Lakota. Although the Plains Shoshone made frequent trips onto the Northwest Plains and the Black Hills region during the eighteenth century, for the most part they lived in northwestern Wyoming and southwestern Montana in the Big Horn Mountains and the Big Horn Basin. The Shoshone were frequent traders across the Plains and Great Basin, and although they maintain the sacred traditions of Devils Tower in Wyoming and the Black Hills, there is no evidence that they were familiar with the Whiter River Badlands.[46]

For the most part the Shoshone remained in northwestern Wyoming and adjacent portions of Montana and Idaho during the first half of the nineteenth century. In the 1870s, the Plains Shoshone became known ethnographically as the Wind River Shoshone after they settled on the Wind River Reservation in Wyoming. The five other historic Shoshone groups lived in the Great Basin region and/or northern California. Thus, with the exception of occasional trips to the Plains for trading purposes or to procure bison or other special resources, the Plains Shoshone were not a significant factor in the Badlands region during the nineteenth and twentieth centuries.

Arapaho and Cheyenne (ca. 1790-1850)

Historical accounts, coupled with migration myths, oral history, and limited archeological data, suggest that within roughly 100 years (ca. 1670s – 1790) the Cheyenne and Arapaho

had migrated from southwestern Ontario and northern Minnesota, respectively, to the central Missouri River area of North and South Dakota where they made the transition from a nomadic lifestyle of hunters and gatherers living in a forested environment to semi-sedentary agriculturalists on the Plains. Hughes reports that the Cheyenne lived in southwestern Minnesota in the 1680s, but by the early 1700s some groups had migrated to the Missouri River in North Dakota.[47] While living amongst the Mandan, Hidatsa, and Arikara, the Cheyenne acquired the horse and presumably began hunting bison on the High Plains at least on a seasonal basis, and Hughes notes that at least some Cheyenne groups were penetrating the Black Hills area by the late eighteenth century.[48] At some time after crossing the Missouri, the Cheyenne began to associate with the closely related Suhtai, but, as late as 1830, the Suhtai lived apart from the Cheyenne and considered themselves a distinct tribe. The Suhtai eventually joined the Cheyenne sometime before 1850, but the move was primarily for survival in the face of challenges from the Lakota and the onslaught of American settlers and the United States military.[49]

By the early 1800s, Lewis and Clark reported the Cheyenne, Suhtai, Kiowa, Kiowa-Apache, Arapaho, and Comanche occupied the Black Hills region. During the early 1800s, the Cheyenne presumably wintered in the southern Black Hills and moved north and east in the spring to trade with tribes living along the Missouri River.[50] Although Lewis and Clark noted the presence of some Cheyenne amongst the Arikara in 1804, they observed that their homeland appeared to be along both branches of the Cheyenne River on either side of the Black Hills.[51]

Mooney argued that the Arapaho lived in northeastern Minnesota and moved west with their traditional allies, the Cheyenne, in the late 1600s and early 1700s.[52] Trenholm refutes this notion and maintains the Arapaho lived on the Plains for centuries before they were joined by the Cheyenne.[53] Trenholm reports the Arapaho lived along the South Fork of the Cheyenne River in 1796 while the Cheyenne were camped at the forks of the river further to the east.[54] However, in 1804 and 1805, Lewis and Clark report the Arapaho lived southwest of the Black Hills, while the Cheyenne reportedly lived in the vicinity of the Black Hills.[55] During the first half of the nineteenth century, the Arapaho, for the most part, lived southwest of the Cheyenne. Slightly later, in 1816, the Arapaho reportedly lived along the eastern slopes of the Rocky Mountains near the headwaters of the North and South Platte rivers.[56] Hughes writes that trade fairs were held along tributaries of the North Platte at this time and Cheyenne traders traveled south to exchange European trade goods with Arapaho, Kiowa, and Comanche traders for horses and perhaps beaver pelts and bison skins. The Arapaho, like the Cheyenne and the Lakota, had acrimonious relations with the Crow, while maintaining, for the most part, close relationships with both the Cheyenne and the Lakota.

By 1820, or no later than 1825, it appears that the Cheyenne had abandoned the Black Hills region and moving south to the land between the North and South Platte rivers joined the Arapaho. According to Hughes, it is during this time that groups of Arapaho and Cheyenne either ranged, or moved, further south into parts of Texas, resulting in the northern and southern divisions of each tribe.[57] At this time, the division between the northern and southern Cheyenne became more pronounced. The main body of the

Cheyenne moved further south to the lands along the upper Arkansas River in southeastern Colorado, while some bands remained in the area along the North Platte River in the company of the Lakota. At this time, several forts were constructed in eastern Colorado and southeastern Wyoming (e.g. Bent's Fort, Fort St. Vrain, Fort Platte, Fort Laramie) with the intent of being accessible to the Northern Plains tribes, such as the Lakota, Northern Cheyenne, Arapaho, Crow and others. During the 1830s the Cheyenne and Arapaho frequently moved to lands south of the Arkansas River while others occasionally lived in the area north of the North Platte, with and without the company of Lakota.[58] During the 1840s (and before they were relocated as a result of treaties), most of the Cheyenne and Arapaho lived between the North Platte and the Arkansas rivers and east of the Rocky Mountains. However, some who were affiliated with the Lakota continued to live north of the North Platte in the vicinity of the Black Hills. Treaties and trade continued to move the main groups of the Cheyenne and Arapaho further to the south, leading to a wider geographical gap between the northern and southern division of the Cheyenne and Arapaho.[59]

American Expansionism, Broken Promises and the Beginning of Indian Wars on the Plains (1840-1864)

As noted previously, up to the 1830s, the United States accepted the notion of Indian sovereignty whereby Indian tribes in effect became nations within a nation. This approach to the Indian "problem" was effectively ignored by President Jackson and later President Van Buren when they refused to honor federal treaty commitments to the southeastern tribes, and illegally allowed the states to gain control over Indian relations.[60] The removal of eastern tribes to "Indian Territory" in the West created a paradox for eastern and western tribes. Whereas tribes in the West were superficially still considered sovereign nations, the eastern tribes were forcibly removed from their homelands and placed within what amounted to a large reservation. Unfortunately, by the 1840s it became apparent to all that the notion of "Indian Territory" was not a viable option. American emigrants constantly encroached on Indian lands and their livestock often trampled Indian agricultural fields. Conversely, Indians encroached on settlers' land during hunting or war parties or killed settlers' cattle during times of duress. These situations worsened during the 1840s with the opening of the Oregon Trail (via the Platte Valley in 1841), the Mormon migration in 1847, and the discovery of gold in California in 1848. This was also a time when fur companies continued to enter the region.

It is at this time that Americans first discovered the fossil beds of the White River Badlands; the first fossil discoveries were published in 1846. Subsequently, members from the Missouri Fur Company collected some fossils and sent them back to St. Louis where they were given to a physician who published the discovery in the *American Journal of Science* in 1847. These discoveries and their subsequent publication fueled an interest among paleontologists from the east coast in the fossil beds of the White River Badlands. The birth of American paleontology as a respected scientific discipline was born in the fossils beds of the White River Badlands in the mid-nineteenth century. As discussed in detail in Chapter 2, several fossil collecting expeditions occurred in or near the White River Badlands during the period from the 1850s to the 1870s.

Concurrent with the movement of Indian tribes across the Plains was the migration of thousands of Euro-Americans along the Oregon and Mormon trails. In 1850, Smith reports that 55,000 people and 65,000 livestock traveled and ate their way up the Platte Valley and across Indian country.[61] These emigrants left a path of disturbance, void of wood, grass, and game, 50 miles wide and 300 miles long through the southern reaches of Lakota territory. This environmental destruction, coupled with epidemic diseases such as cholera, smallpox and measles killed thousands of Lakota and other Plains Indians.[62] The encroachment onto Indian lands was further exacerbated by the California gold rush in 1849, the Colorado gold rush in 1858, and culminated in the Montana gold rush from 1862 to 1864. All this activity resulted in continual infringements into Lakota territory, especially their traditional hunting grounds, as settlers demanded extensive supply lines and military protection.

The events along the Oregon Trail, in particular, disrupted a tenuous peace between the various Plains tribes, the American settlers, and the federal government. Relations between settlers and Plains Indians worsened in 1849 and 1850 to such a degree that federal government agencies were prompted to intervene. In 1851, US government officials and representatives of the Lakota, Cheyenne, Arapaho, Crow, Shoshone, Assiniboin, Gros Ventres, Mandans, Hidatsa, and Arikara signed the Laramie Treaty. This treaty was also known as the Fort Laramie Treaty and the Horse Creek Treaty.[63] This treaty attempted to regulate commerce and travel through Indian country by establishing posts (forts) and roads (trails) across Indian country. It also established boundaries for each tribe, despite the fact that most of the tribes that signed the treaty were equestrian hunters that followed bison herds across the Plains. The Indians relied on the fact that it would seem obvious that the tribes needed large territories with plenty of fresh water, grass, and shelter in order to continue their lifeway and provide for their horses and families. By the 1851 treaty, the Lakota were confined to an area north of the Platte River, but after much protesting they were allowed to hunt buffalo south of the river. One of the more troublesome aspects of the treaty was the intention of the US government to hold each tribe responsible for any attacks on American settlers that occurred within their assigned territories. This soon emerged as a major stumbling block in efforts to ensure peace.

For their part, the Indians were to receive annuities for ten years as recompense for the loss of game and other damages that they had incurred from settlers crossing their lands. Initially the treaty stated that the tribes would receive annuities of $50,000 per year for 50 years, but prior to signing the treaty, US officials unilaterally changed the document to read for 10 years.[64] The federal government halted the annuities after only two years. US representative, Commissioner Mitchell, put the treaty aside, proclaiming, 'the previously warring tribes are now behaving toward each other like brothers, and nothing but mismanagement…can ever break it (this treaty).'[65]

As unfolding events attested, however, nothing could have been further from the truth. The 1851 treaty, and a subsequent similar treaty signed by the southern Plains tribes, failed to accomplish any of its goals. The treaties not only compromised the concept of sovereign Indian nations, but they also failed to secure either intertribal or Indian-

American peace. Furthermore, they failed to confine the tribes to their assigned territorial boundaries.[66] The hope of permanent Indian Territory and sovereign Indian nations west of the Missouri was short lived; it was replaced with the ill-conceived plan of confining tribes in Indian reservations. Although some envisioned the reservation system as the best alternative to extermination by soldiers and settlers, in reality,

> Reservations were sovereign remnants of Indian lands on which the federal government treated the Indians as virtually powerless wards. Reservations were paradoxical places where Indians were temporarily segregated in order to prepare them for ultimate integration into the larger society. Riddled with contradictions, reservations were to become the hallmark of American Indian policy in the west.[67]

Between the 1840s and 1860s, American Indian policy in the West resulted in unmitigated disaster that continually exposed government incompetence and corruption. As federal officials sought to limit Indian sovereignty and assert their own control and power, relations between the Indian tribes and the white man continued to deteriorate at an ever increasing rate. This period was marked by widespread violence and Indian uprisings throughout the country from the Seminole and Creek wars in Florida, to the Sauk and Fox wars in Illinois and Wisconsin, to the numerous Indian wars on the Plains. The wars proved both costly and embarrassing, serving little purpose and resulting in no clear resolutions. Continued Indian resistance to federal policies fueled the zeal and ire of government officials who were determined to crush and humiliate the Indians, if not exterminate them altogether.

White argues that Indian Wars of the 1850s and 1860s fall into three categories. The first group pitted the expanding American government against powerful Indian tribes that were also trying to expand their territorial range and regional hegemony. These wars were typified by the Lakota and their allies on the northern Plains and the Comanche and their allies on the southern Plains. The second group of wars centered on American attempts to control or suppress Indian raids on horses, crops and livestock, such as the Navajo and Apache raids in the Southwest. The third group of wars involved smaller and less powerful Indian groups attempting to maintain their independence from American expansionism.[68]

One well-documented event serves to capture how misunderstandings and poor communication led to rising emotions that quickly escalated into skirmishes and full-scale battles. The incident that finally tipped the scales in favor of decades of warfare, bloodshed, and perpetual mistrust occurred in 1854 and is often referred to as the "Mormon Cow Incident" or the "Grattan Massacre." In the summer of 1854, a Mormon wagon train and their scrawny, half-starved cattle were heading west along the "Holy Road" (Oregon Trail) on the North Platte. A stray cow was observed near a Brule camp where it was shot by a visiting Minneconjou, Straight Foretop. Mormon accounts state the Indians had stolen the cow, while Indian winter counts and oral history report the cow was acquired through trade.[69] However the cow arrived at its final resting place, the Mormon owner insisted on bringing the guilty party to trial, and he immediately went to

Fort Laramie to complain to the acting commander, Lieutenant Fleming. Conquering Bear, chief of the Brule, left the next morning to discuss the situation with the Lieutenant and to offer the Mormon gentleman the selection of not one but two of the finest horses in the Brule camp. The stubborn Mormon declined the restitution and continued to insist that the guilty person be brought to trial. Conquering Bear told the Lieutenant that although he was certain that the guilty Minneconjou, who was a guest at the camp, would not surrender; he was willing to return to the camp to try to persuade the guilty individual to turn himself in to the Army.

The next day neither Conquering Bear nor the Minneconjou returned to the fort. Throughout the morning and early afternoon, a young, inexperienced, and overly zealous Second Lieutenant (J.L. Grattan), fresh from West Point, continually badgered Lieutenant Fleming about how the military could not allow the Indians to think they were getting away with anything, and that if the Indians were unwilling to police themselves then it was up to the military to do the policing. Eventually, Fleming gave in to Grattan's request, and allowed him 29 volunteers, and a drunk, half-breed Ioway interpreter, with an intense disdain for the Lakota, to travel to the Brule camp to apprehend the guilty Minneconjou and bring him to the fort to stand trial for his actions.

Immediately upon arriving at the Brule camp, Grattan assembled his men in an offensive position and aimed his cannon at the camp. Conquering Bear tried to diffuse the tense situation and even offered five horses for the Mormon's cow, but Grattan refused the offer and demanded that the guilty party surrender and be taken to the fort to stand trial. When Straight Foretop heard this, he screamed that he would rather die fighting than return to the white man's fort to stand trial. Grattan ordered his men to open fire. Conquering Bear leaped forward to plead once again for a peaceful solution, but the soldiers continued fire. Conquering Bear was mortally wounded, and the guilty Minneconjou, Straight Foretop, was killed instantly. Unfortunately, in Grattan's haste to deploy his men and initiate a military solution to the problem, he neglected to notice that the men of the camp had surrounded his troops while the women and children had been moved from harm's way. The Brule warriors, aided by warriors from the nearby Oglala camp, quickly defeated and killed all of Grattan's troops. This unfortunate event set the tone for the next 35 to 40 years as all the various Lakota bands as well as all the other Plains tribes at one time or another engaged in violent conflicts with American soldiers and settlers.[70]

In 1855, the US Army sought retaliation against the Lakota for the Grattan massacre and extended that war to Lakota allies, like the Cheyenne and Arapaho, in 1857. These wars demonstrated to the Indians that the US Army was both powerful and determined, but little was resolved. In 1855, the US Army demanded that all "friendly Indians" must convene on the south side of the Platte River near Fort Laramie. Any Indians found on the north side of the river were assumed to be "hostiles" and dealt with accordingly. General W.S. Harney led a group of cavalry and infantry on a march throughout Indian lands on the north side of the Platte. Harney and his men encountered a Brule camp led by chief Little Thunder on Blue Water Creek on the edge of the Sandhills near Ash Hollow Cave, Nebraska. The troops opened fire on the unsuspecting camp, killing 86

people (mostly women and children) and capturing over 70 women and children.[71] Harney was infamously referred to thereafter as "Squaw Killer" for his role in the massacre.[72] In order to demonstrate his military power, Harney marched his troops from Fort Laramie to Fort Pierre through the Badlands and the heart of Lakota country on what was to become the Fort Laramie to Fort Pierre Road. The year ended with an uneasy and tenuous truce that lasted for the next several years with only a few minor conflicts. This period of tense, but relative peace, in Indian and American relations soon deteriorated as feelings of mistrust and suspicion gave way to outright fear, loathing, and hatred.

In 1862, two events transpired that affected the course of events for not only the Lakota, but for all tribes on the Plains. The Lakota and other Plains tribes were not responsible for either event, but they all suffered, both directly and indirectly. The first occurrence was the Minnesota Massacre initiated by the Dakota (Santee) against innocent farmers and shopkeepers. The Santee were starving, their crops were failing, and the government agency officials refused to allow them to hunt within their former reservation, yet at the same time they refused the starving Santee any aide or assistance. When the killing and raiding ended, the small bands of Santee warriors left "…nearly 500 settlers [were] killed and at least as many more [were] homeless."[73] This senseless and brutal act brought Indian and white tensions to an unprecedented height and eventually led to full-scale war in 1864. In the aftermath of this 1862 massacre, nearly 2,000 Santee were moved to the Crow Creek Reservation in South Dakota and 300 were sentenced to death by hanging. President Lincoln intervened and only 38 men were convicted of murder and hanged. The arrival of the Santee along the Missouri coincided with additional government troops along the Missouri and Platte rivers.[74]

The second event in 1862 that had a profound impact on the course of future events in the Plains was the discovery of gold in Montana and Idaho. In 1863, John Bozeman prepared a trail from Fort Laramie through the heart of Lakota country to the gold fields of Montana. Once again gold-seeking whites invaded, showing little respect for Lakota property or culture. In addition, thousands of emigrants pushed through the northern Plains on their way to the gold fields of Montana and Idaho. By the spring of 1864, the Hunkpapa had tired of the constant stream of emigrants and soldiers, and they declared their land was off limits to whites. They declared that any white emigrant crossing their land would result in the death of all white emigrants. The federal government, in particular the US Army, was not about to be dictated to by the Indians, who, most whites felt, did not deserve the land they claimed to be their own.

During 1863 and 1864, the US Army deployed troops in the Dakotas under the direction of Generals Sibley and Sully for the sole purpose of exacting revenge on the guilty Santee (or anyone who may be related to the guilty parties).[75] These punitive expeditions, coupled with the establishment of military garrisons at the trading posts of Fort Union and Fort Berthold (along the Missouri River in North Dakota) brought tensions and mistrust to the boiling point. Thus, conditions were set for this powder keg to explode, and explode it did in the summer and fall of 1864.

Deterioration of Lakota and American Relations and War on the Plains (1864-1880)

In July of 1864 the US Army sent troops against the Hunkpapa, and the two sides met at the Battle of Killdeer Mountain. Although the US Army claimed victory, the whites still could not cross or settle Indian lands, so in actuality little was resolved except to confirm that the Hunkpapa were indeed at war against the whites.[76] The second incident in November of 1864, the Sand Creek Massacre, resulted in all out war across the Plains. The Sand Creek Massacre was instigated by two overly zealous and ambitious men, who both felt that the extermination of Indians from Colorado would be their ticket to Washington. Colorado Governor John Evans and Colonel John Chivington, a former Methodist minister, had nothing but contempt for Indians, and Chivington had a strong desire to bait the Indians into a position where he could attack and kill them. In May, a Cheyenne chief, Lean Bear, went to Chivington to demonstrate to the army his peaceful intent and show Chivington the papers he had obtained from the federal government while in Washington. Chivington ordered his men to kill the chief and fire their howitzers at Lean Bear's people.[77]

In a second effort to show his peaceful intentions, Chief Black Kettle, who was present at the murder of Lean Bear, brought his Cheyenne tribe to Sand Creek near Fort Lyon in order to hunt buffalo. On November 29, 1864, while most of the warriors were out hunting buffalo, Chivington ordered his 700 troops (many of them drunk) to open fire on the Cheyenne and burn their village to the ground. When the smoke settled, the soldiers had killed 105 Cheyenne women and children and 28 men. News of the massacre spread rapidly across the Plains, and the war that Evans and Chivington sought quickly engaged people on both sides. White reports that Lakota, Cheyenne, and Arapaho tribes quickly retaliated, by "burning virtually all ranches and stage stations along the South Platte. They also killed a number of innocent men, women, and children."[78] The combined tribes of the Cheyenne, Sioux, and Arapaho attacked Fort Rankin killing 14 soldiers; they raided and burned Julesburg twice and threatened to sever communication along the Platte. The US Army counterattacked and eventually the various tribes retreated to their lands north of the Platte. In 1865, the commander of Fort Laramie committed an atrocity by hanging two innocent Oglala chiefs who had returned a white woman who had been taken captive. This incident incited further Indian attacks and raids on white settlers, ranchers, traders, and soldiers throughout the region.

Later that year in 1865, the US gathered individuals from the Minneconjou, Lower Brule, Two Kettle, Blackfeet, Sans Arc, Hunkpapa, Yankton, Yanktonai, and Oglala tribes at Fort Sully to formulate new treaties with these tribes. As was typical of government officials and soldiers throughout this period of American history, the American Indians that assembled for the treaty council often lacked the authority to speak for their tribe. Those selected to attend the treaty talks rarely represented the tribe as a whole, at best they spoke on behalf of a small group of Indians. To the great satisfaction of government officials, the treaty was finally signed by a number of "paper chiefs." Unfortunately, they overestimated the importance of the signing parties. The chiefs who signed the document on the Missouri River did not represent the tribes further to the west whose lands were subject to another flood of emigrants.

Sitting Bull was one of many principal chiefs who neither signed nor recognized the terms of the treaty, which, according to government officials, allowed the United States to build a road through Indian reservations without repercussion or harassment. The intent was to build the road along the western edge of the reservation rather than through its center. Many of the Oglala chiefs, including Red Cloud and Spotted Tail, did not sign the treaty, as they believed that the unclaimed land west of their reservation was also their land. Therefore, any trail between Fort Laramie and Bozeman was another dagger in the heart of the Lakota nation.[79] Quite naturally, the military and US government considered the unceded land as US property, and the use of that property was not subject to debate with any of the American Indian nations.

In 1866, the US military began construction of a series of forts along the Bozeman Trail, which extended from Fort Laramie into Montana Territory. The Oglala and other Lakota tribes and allies in the region took immediate exception to the road and forts and frequently confronted the soldiers and burned their supplies. In the summer of 1866, Chief Red Cloud, Man Whose Horse They Fear (note: this name is often erroneously reported as Man-Afraid-of-His-Horse) and a number of other chiefs confronted the soldiers at a military stable along the Bozeman Trail.[80] The role which Red Cloud played in the numerous attacks remains unclear. That he was a leader and active participant in shutting down and eventually closing the Bozeman Trail is not disputed, but White reports that numerous other chiefs played an equally important role, if not a greater one.[81] In December 1866, the combined forces of various Lakota tribes lured a detachment of soldiers, led by Captain Fetterman, away from Fort Phil Kearney (near present-day Sheridan, Wyoming) and killed the entire regiment. The incident, recorded as the Fetterman massacre in American history, was recorded in Lakota winter counts as the "Battle of Hundred Slain." This event again demonstrated that the federal government was far from being in control of events on the Plains.[82]

During the spring of 1867, a government-appointed commission met with Red Cloud, Man Whose Horse They Fear, and others to discuss the opening of the Bozeman Trail. The Lakota refused to budge on the issue until the soldiers agreed to dismantle and abandon the series of forts they were trying to build along the trail. The Indians continually kept the soldiers pinned down and civilians refused to hazard traveling across the trail without Army protection. In the summer of 1867 the Cheyenne and Lakota joined forces in launching attacks on Fort Smith and Fort Phil Kearney. These battles, referred to as Wagon Box Fight, ended with both sides declaring victory and nothing resolved, save for the fact that the Bozeman Trail remained closed.

By the fall of 1867, government officials in Washington, along with a large percentage of the nation's population, were convinced that the Indian Wars were too costly, both in lives and expenses, and too many atrocities had been committed on both sides. Moreover, the fact that the Bozeman Trail had effectively been shut down and the Indian tribes remained, for the most part, in control of events on the Plains revealed to Congress that it was time to devise a new treaty. Washington officials wanted to confine the

Indians to their reservations and to have access through the "unceded territory" without threat to their safety. Thus, the stage was set for yet another treaty council.

In the spring of 1868, President Grant ordered General Sherman to close Fort Smith, Fort Kearney, and Fort Reno. Red Cloud and his followers burned the forts immediately upon their abandonment. In April, the Brule signed the treaty and a month later many of the Minneconjou and Oglala signed. Several chiefs, including Red Cloud and Hump of the Minneconjou, had not signed the treaty. However, in October, Red Cloud, Spotted Tail, and several other Lakota chiefs reluctantly agreed to sign the Fort Laramie Treaty. Nonetheless, some Lakota chiefs refused to sign the treaty, and for them this agreement and the Great Sioux Reservation never existed. This treaty defined the "Great Sioux Reservation" as all the land west of the Missouri River and east of the Big Horn Mountains and south to the North Platte River. Essentially the western half of South Dakota as well as large portions of Wyoming, Montana, and North Dakota became part of the Lakota Territory. The US Government promised that no white men could cross or settle in Indian Territory without their permission and the government agreed to pay annuities and rations for 30 years following the treaty. In addition to keeping the Indians confined within their territorial limits, the US Government was intent on shifting them to a sedentary agrarian lifestyle near the agencies rather than allowing them to continue their nomadic lifestyle. The government agreed to provide 160 acres to each family along with the necessary farm implements and seeds, one cow, and one pair of trained oxen. They were also to have schools and stores built in order to distribute food and clothing. In exchange, the Lakota were promised this land forever without unauthorized incursion by outsiders, that is outsiders were supposed to petition the Lakota in order to obtain permission to cross their lands. The only way that reservation land could be validly ceded in the future was through agreement with at least three-fourths of all adult male Indians.[83]

By the time the Fort Laramie treaty was signed in 1868, the US government was covertly, if not overtly, supporting a type of ecological warfare against all the American Indian tribes of the Plains. Several noted officials, including Columbus Delano (Secretary of the Interior under President Grant), General Sheridan, General Sherman, and others were outspoken in their support of the mindless slaughter of thousands and thousands of bison as a practical solution to the "Indian problem." The advocates of bison extermination contributed to a forced agrarian lifestyle for the Lakota and all other American Indians. It was often quoted that the bison hunters had more to do with ending the Indian Wars than anything that the military had accomplished. By the mid-1860s, bison were relatively scarce around Fort Laramie. The transcontinental railroad split the bison herds into a northern and southern herd. Bison were first eliminated from the southern Plains and by 1884 bison were nearly extinct in North America. The "buffalo hunters" had successfully decimated the bison herds, and in less than two decades the Lakota and other Plains Indians saw their subsistence base completely disappear.[84]

The second Fort Laramie treaty eased tensions between the Lakota and the Americans, but it did little to stop Lakota aggression on other Indians, most notably the Pawnee and the Crow. Red Cloud visited Washington in 1870 and convinced President Grant to

allow the Lakota trading rights at Fort Laramie and to establish an Oglala agency on the Cheyenne River, north of Fort Laramie rather than on the Missouri. In 1871, the first Red Cloud agency was established on the North Platte River, just downstream from Fort Laramie, and the first Spotted Tail agency was located near White Clay, Nebraska.[85] In 1873, bison were extremely scarce on the Plains, and the Lakota, like other Plains Indians, found it difficult to procure enough bison to sustain themselves. When a group of Lakota warriors encountered a Pawnee village south of the Platte River, despite its location outside the reservation boundaries, the Sioux took the opportunity to attack, and destroyed the Pawnee village, killing over 50 Pawnee, many of them women and children.[86] Other accounts of the incident state the number of Pawnee killed was over 100.[87] After this defeat, the Pawnee abandoned their Nebraska homeland and moved to Indian Territory in Oklahoma. After this initial incident, the Sioux warriors began raiding the increasing number of settlers living along the Platte River, many of whom were encroaching on Indian lands.

Although the 1868 treaty eased relations between the Lakota and the US government, it had done little to prevent Euro-American incursions into the Lakota treaty lands. Euro-American encroachment became more widespread after Lieutenant Colonel George Armstrong Custer, without permission from the Sioux, led an expedition of soldiers, scientists, engineers, topographers, and gold miners through the Black Hills in 1874 and declared the discovery of gold. The US Government reasoned this breach of the 1868 Treaty acceptable arguing the importance of allowing exploration and the necessity of charting of the Black Hills. However, the treaty stipulated that no white man should enter the Great Sioux Reservation so the argument that it was necessary to "explore" and "chart" this region was completely unfounded.

With the discovery of gold in the Black Hills, there was no stopping the Euro-American gold seekers or the infrastructure necessary to support the miners. The US government demanded that the Lakota either sell or lease the Black Hills. Needless to say, the Lakota refused to sale, lease, or surrender their most sacred of all land. After several failed attempts by the US Government to negotiate the lease or sale of the Black Hills from the Lakota, the US Government, at the direction of the President, abandoned all attempts to control white men's access into the region. The ensuing Black Hills gold rush from 1874 to 1876 saw hundreds of Americans illegally enter Lakota lands for the sole purpose of gold prospecting. Eventually, the US military sent soldiers to protect the miners and settlers that flooded the area. By this time Red Cloud was convinced that the American soldiers would defeat, if not absolutely crush, the Lakota, regardless of Indian numbers, alliances, or stealth. Although Red Cloud pleaded with his people to be peaceful, his words fell on deaf ears as more and more young warriors joined Crazy Horse and Sitting Bull, a Hunkpapa chief.

The Sioux War of 1876 was a direct result of treaty violations by Euro-American settlers and the failure of the US Government to enforce the treaty. The government, enraged at their failure to acquire the Black Hills through purchase, ordered all non-treaty bands and all other bands living outside the reservation boundaries (i.e., the unceded territory of Montana and Wyoming) to return to the reservation and surrender. Crazy Horse, Sitting

Bull, and many other Lakota and Cheyenne chiefs and their followers were living outside the reservation boundaries in the unceded land, still preferring to live a nomadic lifestyle predicated on bison hunting. In order to encourage these "wild bands" to return to the reservation, the government dispatched several thousand soldiers under the direction of General Crook to the unceded lands in Montana and Wyoming for the purpose of capturing (or killing) any Indians they encountered. Crook envisioned a three-pronged attack. He took his men up the Rosebud Creek, approaching from the south; General Terry and General Gibbon were sent along the north side of the Yellowstone River, and Lt. Colonel Custer and his men were to circle in from the north. Roughly 1,000 Lakota and Cheyenne warriors, led by Crazy Horse, first encountered General Crook and his 1,200 men at Rosebud Creek on June 16, 1876, where they fought to a stalemate though the Indians claimed victory in having forced the military to retreat.

The next and more decisive battle, which occurred on June 25, 1876, along the waters of the Greasy Grass or the Little Big Horn River, resulted in the annihilation of Custer and his men. Custer, against strict orders not to attack, divided his men into three groups. Major Reno attacked the camp from the north but was quickly forced to retreat. Captain Benteen's men never engaged the Indians as they were struggling with artillery and supply wagons at the rear. Custer attacked the camp from the south, and his troops were soon surrounded and killed. The victory at Little Big Horn proved to be the high water mark for the Lakota. Their greatest victory also proved to be the beginning of the end for their culture and lifestyle. Outraged by the defeat of Crook at the Rosebud and the annihilation of Custer at Little Big Horn, the US government wasted little time in retaliation. For their part, the US Army brought swift, dramatic, and violent military force on all Indians within the Great Sioux Reservation. Sensing swift and brutal repercussions for their actions, the Indian tribes elected to scatter, some succumbing to surrender and returning to the reservation, and others stubbornly continuing to range outside the reservation. Sitting Bull, Crazy Horse, and their followers fled to Canada, but their freedom was short-lived.

In October 1876, Congress passed an act that in effect forced the Lakota to either sell the Black Hills or starve to death. The act further stated that all rations and annuities would be stopped until the Lakota had returned to the reservation and relinquished claims to the Black Hills. Second, their hunting rights were severely reduced and the wagon roads were cut across the Lakota reservation to provide access to the Black Hills. Facing starvation, and with no means to procure food for the coming winter, the Black Hills were sold. Nevertheless, contrary to the terms of the Fort Laramie Treaty only about 10 percent, rather than the stipulated 75 percent, of adult Indian males approved the sale of the Black Hills (Paha Sapa) to the government. In February 1877, Congress passed the Black Hills Act which seized a swath of land, including the Black Hills, over 50 miles wide and 200 miles in length. At long last the American government had acquired the coveted and sacred Black Hills of the Lakota and reduced the Great Sioux Reservation in size to an area that excluded the Black Hills as well as regions to the north and south. In the winter of 1876-1877, the Army, led by Crow and Pawnee scouts that were bitter enemies of the Lakota and Cheyenne, was in close pursuit of the renegade tribes. Several skirmishes and battles occurred, but eventually the tribes surrendered. First Crazy Horse,

facing starvation and wishing to avoid another major battle, surrendered to the US Army near the Canadian border in Montana in 1877. Several years later, Sitting Bull, who had fled to Canada, surrendered in 1881.

In May 1877, Crazy Horse was taken to the Red Cloud Agency near Fort Robinson, where the commander promised to make Crazy Horse chief of all the Lakota if he would agree to go to Washington and meet with President Hayes. Crazy Horse refused to go, and he also refused to council with the other chiefs and General Crook at Fort Robinson. Red Cloud, who as a young man in 1841 was accused by other Lakota of killing Chief Bull Bear, and Spotted Tail, another prominent chief, became extremely jealous of Crazy Horse and the attention and respect he received from Lakota and whites alike. When Crazy Horse refused to attend the council, General Crook suggested that the Indians needed to gain control over Crazy Horse, and that the US government would be sympathetic toward any chiefs who helped to arrest Crazy Horse.[88] In September, Crazy Horse decided (or was persuaded by his good friend Fast Thunder) to go to Fort Robinson to tell General Crook that he wanted to settle along Beaver Creek (Nebraska). According to military orders received at Camp Robinson, Crazy Horse was to be arrested and sent to Fort Jefferson in the Dry Tortugas. When he arrived at the fort, rather than go to a council meeting, Crazy Horse was arrested. When he realized what was happening, he resisted and a struggle ensued with Little Big Man. Crazy Horse was restrained by several Indians, including Fast Thunder, but Crazy Horse was stabbed twice by a soldier and died within the day. Some say it was accidental, some accounts indicate Crazy Horse was reaching for a pistol to kill the soldiers. Many Lakota accounts state that Crazy Horse was murdered under orders from the jealous chiefs Red Cloud and Spotted Tail.[89] The succeeding years did not bring much hope for the Indians, David White refers to them as the period of 'Land Takings' (1877-1889) and a continuation of Coercive Assimilation (1883-1934).[90]

Failure of the Reservation System, the Ghost Dance Religion, and the End of the Indian Wars (1880-1891)

With the "sale" of the Black Hills to the American government, the flood gates opened and wave after wave of American emigrants crossed Siouan lands on their way to the gold fields in the Black Hills. Large quantities of freight had to be hauled to the miners and settlers, and much of it was brought on lines that followed trails along or near the White River. One of the more prominent early trails was the Brule City-Badlands Trail. Use of this trail dwindled as Brule City struggled for survival, and with the closing of the Brule City Post Office in December of 1881, the trail was largely forgotten.[91] The Chamberlain-Rapid City Trail, which followed the White River and crossed the Cheyenne River near the Badlands and then paralleled Rapid Creek, became one of the more prominent freight trails between the Missouri River and the gold mines of the Black Hills. Early railroad lines and later State Highway 44 would more or less follow this same route.

The decade following the sale of the Black Hills saw the Lakota tribes struggling for survival on the reservation, especially now that bison hunting was no longer practical or acceptable. Unfortunately, for both the Lakota and the Americans the transition to an

agrarian lifestyle was far more difficult than even the most optimistic had envisioned, and ultimately it became clear, even to the government officials, that 160 acres of land in this cool arid climate was not sufficient acreage to provide enough food to sustain a family. Yet as settlers crossed the vast grasslands between the Missouri River and the Black Hills, the overwhelming sentiment was that the Lakota were lazy scoundrels who were too ignorant to learn farming and therefore had no right to all this excess land. The Indians faced pressures from various divergent groups (e.g., military, government bureaucrats, missionaries, and settlers), all of whom either wanted them to become self-sufficient farmers or simply wanted their land for their own benefit. Not surprisingly, all the white critics failed to consider that (1) the Indians did not know how to farm, (2) the soil was poor, (3) the climate was too arid, (4) the growing season too short, and (5) their farms were too small. The US government and others argued that once the Indians settled on their individual lots, the excess land could be consolidated and sold to farmers, ranchers, and speculators.

From 1880 to 1881 the US government made agreements with the Sioux to transfer a large part of the Great Sioux Reservation to public lands. This opened the area for Euro-American settlement and allowed for the development of transportation routes to the Black Hills. Trails such as the Chamberlain-Rapid City and the Chamberlain-Deadwood trails were established and the territorial governor allotted thousands of dollars for their maintenance. Throughout this time, the Americans could not overcome a prevailing attitude that all the land within the Great Sioux Reservation was going to waste. Government and agency officials were more committed than ever to assimilating not only the Lakota, but all tribes. They instituted a "reform" or assimilation policy that had three basic components. First, there was the suppression of Indian culture, religion, family life, community organization, and social structure, by all means. Second, there was the effort to acculturate the Indians into mainstream American Protestant values through education, including the written and unwritten policy of refusing to allow Indians to use traditional names, as well as the policy of taking the children away from their families and sending them to boarding schools far away from their homes to educate them according to the white man's culture. Third, reformers sought a land allotment policy that would sever the Lakota concept of "community" and install a belief in private land ownership. Those lands that were not utilized by a family should be made available to white farmers and ranchers who knew how to make a living off the land and not allow the land to sit idle.[92] To government officials and legislators, the answer was simple, give each Indian his land allotment and whatever was leftover would become surplus land that could be sold to whites.

After a number of failed efforts and several commissions, the proposed amendments were adopted through a bill passed by Congress. The Dawes Act, or General Allotment Act, was passed initially in 1887. One element of the Act was to officially dissolve the Great Sioux Reservation. The Indians refused to approve the first Act, but after modifications, both the Indians and Congress approved the Dawes Act in 1889. This Act divided the Great Sioux Reservation into six smaller reservations (Standing Rock, Cheyenne River, Lower Brule, Crow Creek, Pine Ridge, and Rosebud). The act implicitly signaled that henceforth the US government intended to treat and deal with Indians on an individual

basis and not at the tribal level and most certainly, they would not be treated as sovereign nations. The Dawes Act had profound effects on the Lakota, beyond the loss of their land. First it removed control of the land from the tribe and placed it in the hands of the individual land owner, but more importantly, it separated the Lakota into six different reservations, making it far more difficult for the Lakota to organize and communicate as a single voice or unified force. Not surprisingly, the Dawes Act was poorly received on the reservations, and it was not until the Act was rewritten in 1889, whereby the land allotments were increased to 320 acres and the government promised not to reduce the daily meat ration, that General Crook, who came out of retirement, was able to secure the signatures of three-fourths of the Indian males.[93]

The constant reduction of tribal lands, the reworking of treaty agreements and the flood of new settlers increased tensions and resentment among the populations. To make matters worse, within months of signing the Dawes Act the US government once again went back on its "solemn" word and reduced the "Sioux Appropriation" and, in effect, reduced the individual meat rations by more than forty percent.[94] The winter of 1889-1890 was extremely brutal and hundreds of Lakota starved to death. The harsh winter was followed by a severe drought that ruined crops all across the reservation lands and left in its wake a starving and desperate people who were denied the opportunity to practice their traditional cultural lifeways and religious practices. Throughout 1890, the Lakota received less than half the promised rations, as many officials rationalized that this strong-arm approach would force the resistant Indians to quickly adapt to the American lifestyle. Poor living conditions and malnutrition were pervasive on the reservations and rendering the people vulnerable to disease.

Many Indians saw hope in a revitalization movement known historically as the "Ghost Dance." Wovoka, the prophet or Messiah, who came from among the Paiute of Nevada, had a simple message that formed the core of the Ghost Dance religion. Wovoka, known to whites as Jack Wilson, was a holy man who followed in the footsteps of his father, Tavibo, a Paiute shaman or holy man. When Wovoka was about 12 his father had a vision that God was going to renew the earth, but only for the Indians, as all whites would be wiped out. Tavibo went on to preach the message of his vision, that the renewed earth would be lush and plentiful with game, and that all the Indians who had died before would return to life and be young again. God asked only that the Indians believe in Tavibo's words and perform the sacred dance, "the Dance of the Souls Departed" or the "Ghost Dance."[95] Tavibo died about two years later, and Wovoka was adopted by a white rancher (David Wilson) and given the name Jack Wilson. He was raised as one of David Wilson's sons and from all accounts was a hard-working, solid citizen that mainly worked for his adopted father.

When Jack was about 30 years old he had a vision, nearly identical to his father's. He told some Indians of this, but nothing much came of it for three more years, when Wovoka had a near death experience and God came to him again and reiterated his message. This time God also informed Wovoka that he had been promoted to be his leader and Messiah in the West.[96] Although Wovoka's message was simple, it combined the teachings and knowledge of various religions, including Protestants, Mormons,

Shakers, Dreamers, and Paiute shamans. God told Wovoka that he was going to destroy the current world order and renew the earth as a fresh and happy place for all Indians and their ancestors. He preached of earth renewal, advocated nonviolence, and told the people to always do good deeds, and never lie. So long as the people believed in Wovoka and danced the sacred dance, then it was only a matter of time before the new world order would be put into place. After seeing the third of Wovoka's three miracles, he earned the respect of hundreds of followers and many converts came to learn this special dance and learn from the Messiah in order to take his teachings back to their own tribes, so that they too could dance and have a new beginning. The overwhelming feeling of hopelessness and despair across all Indian reservations in the West fueled the spread of the new Messiah's teachings. For his part, Wovoka invoked the aid of the US Government, for ironically, Wovoka sent hundreds of letters of introduction and instruction via the US postal service to tribal leaders and shaman across the West. The news of the Ghost Dance religion spread like wildfire across the reservations and gained devout followers on a daily basis.[97]

In the fall of 1889, the Lakota appointed a commission visit the Paiute Messiah directly and learned his teachings. The commission consisted of the following: the Oglalas appointed Broken Arm, Flat Iron, Good Thunder, and Yellow Breast; the Minneconjou appointed Kicking Bear; and the Brule appointed Short Bull and one other.[98] Upon the commission's return, tribal members were eager to hear the word from the Indian Messiah, Wovoka. On the Pine Ridge and Rosebud reservations, the Indian agents sent police to arrest Good Thunder, Short Bull, and the others before they could speak to the crowd. At the Cheyenne River Reservation, Kicking Bear began preaching a somewhat different message, one which directly violated Wovoka's teaching of nonviolence. According to some interpretations and accounts, Kicking Bear encouraged the elimination of the white invaders and spoke of a holy shirt that would protect Sioux warriors from the white man's bullets.[99] White challenges the notion that the Lakota followers of the Ghost Dance changed the meaning of Wovoka's message to a message with hostile or violent overtones.[100] Rather, he maintains the Lakota did not change Wovoka's message or how this new religion was to be practiced. Whether or not the Lakota Ghost Dance issued a message of violence against whites may never be known with any degree of certainty. What is known is that (1) most whites (and certainly those who lived at the different agencies) shared the perception that the Ghost Dance was simply a prelude to war, and (2) the Indians' belief that the "holy shirts" would keep them safe from bullets would eventually have catastrophic results.

Regardless of the exact message, it gained popularity among the Lakota, slowly at first, and, as a result, tensions and anxieties rose between the Lakota followers of the Ghost Dance and the white Indian agents and missionaries. White quotes Eastman as stating that the Ghost Dance Religion on the Pine Ridge Reservation began on 'Medicine Root Creek and the edge of the Badlands,' presumably between Kyle and the White River.[101] From there the dancers retreated further into the Badlands as whites became more and more fearful of the Indians' intentions and the religious craze that swept across the tribal members.

In the spring and early summer of 1890, recruitment into this new religious doctrine was still going somewhat slowly for Kicking Bear, Short Bull, and the other leaders. Events quickly changed both the frequency of the dancing as well as the number of participants. As noted previously, the Plains area experienced a severe drought in 1890. Moreover, the government decided to again cut food rations to the reservation and outlaw hunting. Rather than persuading the Indians to resist the Ghost Dance movement and return to their family lots and continue farming, the government actions evoked the exact opposite reaction: scores of people quickly adopted this new religion and joined the groups that were dancing at various locations across the reservations. The Ghost Dance had one other element that made it attractive to the Lakota. Unlike other rituals and ceremonies that were exclusive to certain people, the Ghost Dance was open and available to everyone regardless of age or gender.[102] By October 1890, well over 30 tribes in 12 states vigorously practiced the Ghost Dance Religion.[103]

Among the Minneconjou, Kicking Bear found several recruits, including the great chiefs Hump, Big Foot, and Sitting Bull, and the medicine man Yellow Bird. Sitting Bull was more of a curious observer and should have been considered a casual participant rather than a hard core convert. Nonetheless, the idea that the Messiah was coming to rid the earth of white men and leave a new rejuvenated earth for the Indians and their ancestors was certainly appealing to the downtrodden Lakota, and so the number of dancers continued to grow on all the reservations. Indian agents at the Standing Rock Reservation had Kicking Bear escorted off the reservation, and he returned to the Pine Ridge Reservation where he continued to dance. In mid-November, President Harrison directed the military to take responsibility for suppressing any unrest on the reservations, and shortly thereafter the Bureau of Indian Affairs asked the various agents to supply the government and the military with a list of the "fomenters of disturbances."[104] Because Sitting Bull's name was erroneously added to the list, General Miles naturally assumed he was responsible for the unrest.

In November 1890, Agent McGillycuddy of the Pine Ridge Reservation sent a telegraph to Washington, DC, demanding immediate protection from the Ghost Dance "agitators." On the night of November 19, 1890, the US Army deployed a large number of troops to the reservation. They quickly spread word that everyone was to come to the agency and establish a temporary camp. Those who agreed to come would be provided protection and additional rations, those who did not, were to have rations withheld and would be considered hostiles. From previous experience, the Lakota knew that being considered "hostiles" was tantamount to being forcibly rounded up like cattle and herded to the agency and placed in confinement. Given that most people were starving and winter was soon to arrive, the majority of people surrendered and moved to the agency. However, Kicking Bear, Short Bull, Two Strike, and other chiefs led their followers, primarily people from the Pine Ridge and Brule reservations, deeper into the Badlands. Wherever they went, it was clear that they intended to dance until the Messiah came. In late November, Short Bull had a vision that the Messiah was ready to return to earth in the next few months and that he was ready to meet the dancers at Stronghold Table. Strong Bull sent runners to tell Two Strike (at Wounded Knee), Kicking Bear (at the Cheyenne River Reservation), and Sitting Bull (at Grand River on the Standing Rock Reservation)

of his vision; he requested that everyone join him at the Stronghold on Cuny Table for a Ghost Dance ceremony.

On December 1, 1890, Short Bull and Two Strike met at White River and proceeded together to the Stronghold. For the first time Ghost Dancers from both Rosebud and Pine Ridge Reservations gathered as one group, perhaps as many as 4,000 people, with a single purpose of reaching Stronghold Table to dance until the Messiah arrived.[105] Stronghold Table, located at the northeast corner of Cuny Table, is a natural fortress that measures about one mile from east to west and one half mile from north to south. The Stronghold is detached from the remainder of Cuny Table, except for a narrow strip of land perhaps 20-25 feet wide. The dancers brought the "entire agency's beef herd and many privately-owned cattle and horses."[106] The Stronghold was not only easily defended, but the dancers had ready access to a spring on the west side of the table and cedar trees below the rim that provided plenty of fuel for fires. It was an ideal place to dance unimpeded by the soldiers and government officials and wait for the coming Messiah. A number of small, and sometimes bloody, encounters occurred during the following two to three weeks between Indians, settlers, ranchers, and the military. On December 21, General Brooke sent a peace delegation of about 130 Indians and three wagons of supplies under the leadership of Little Wound, Big Road, and Fast Thunder to Stronghold Table in an effort to get the Ghost Dancers to surrender and return to the Agency.[107] The mission proved somewhat successful, for several days later many of the dancers returned to the agency, leaving only about 250-350 Indians under the leadership of Kicking Bear and Short Bull still on the Stronghold. [108]

By December 11, Sitting Bull had had time to digest the message from Short Bull and although he was somewhat skeptical of this new religion, he asked the Indian agent if he could travel to the Pine Ridge. This was regarded as an act of defiance, and proved to be too much for American officials and they immediately requested that Sitting Bull be arrested. On December 12, General Miles was ordered to "secure the prisoner."[109] After a few more days of futile correspondence, the Indian agent, James McLaughlin, and Colonel Drum agreed that Sitting Bull must be arrested and under no circumstances should he be allowed to escape.[110]

Sitting Bull had decided to move his people to join Short Bull at Stronghold Table, and it was rumored that he intended to make the journey on the morning of December 15. In the early hours of that day, 43 Indian police agents arrived at Sitting Bull's cabin with orders for his arrest. In the event of trouble, Army personnel were nearby, but remained out of sight. The Indian police were more than anxious to arrest Sitting Bull as several among them, primarily Black Feet and Yankontais, held long-standing grudges against him that they wanted to settle. Sitting Bull agreed to go with the Indian police to the Agency, and while he was getting dressed, two policemen were to prepare his horse and bring it to the cabin. For some reason there was a delay in preparing the horse and in the meantime some 150 followers of Sitting Bull arrived in front of his cabin and began shouting and threatening the Indian police agents. Sitting Bull complied with his son's request not to surrender, and resisted the Yanktonai police, refusing to go any further. The Hunkpapa followers of Sitting Bull rushed the police, and one of them shot the

Indian lieutenant in the side. The police surrounding Sitting Bull shot him in the head, and mortally wounded Shave Head. This shooting touched of a brief but fierce battle that resulted in 12-14 dead, seven or eight Hunkpapa and five or six police.[111]

Some 200-300 of Sitting Bull's Hunkpapa followers fled 90 miles south to the Cheyenne River Reservation to join the camp of the Minneconjou led by Chief Hump. When they arrived cold and hungry from three days' journey, they found the camp virtually deserted. Hump and all but 80 or so young dancers had traveled, at the request of General Miles, to Fort Bennett to surrender. Hump not only accepted payment and rations for coming into the fort, but he also accepted the blue uniform of the Indian police. When the Hunkpapas heard this news they knew that it was only a matter of time before Hump would set out to arrest Big Foot and his followers. Big Foot was one of the great chiefs of the Minneconjou, as well as one of the leaders of the Ghost Dance religion. Big Foot was preparing to take his followers to Fort Bennett for their annuities when he received word from several chiefs on the Pine Ridge Reservation that his presence was wanted to resolve a dispute that was brewing. Not wanting his people to go hungry, Big Foot decided to first go to Fort Bennett and from there down to the Pine Ridge Reservation. At this same time, orders were issued to arrest Big Foot and take him and his people to Fort Meade near the Black Hills. On December 21, Big Foot's Indians encountered Colonel Sumner's troops who were on their way to arrest Big Foot and take him to Fort Meade. Big Foot and Colonel Sumner liked and trusted one another, and Big Foot agreed to travel to Camp Cheyenne. Colonel Sumner sent word to General Miles that Big Foot, his followers, and about 30 of the Standing Rock Hunkpapa warriors were in his custody and headed to Camp Cheyenne and then on to Fort Meade.

On December 22, on their way to Camp Cheyenne, Big Foot's Indians passed close to their homes and took refuge in their houses. Rather than risk bloodshed by rounding the Indians up and taking them to Camp Cheyenne, Colonel Sumner allowed them to stay overnight in their houses with the understanding that Big Foot would bring them into Camp Cheyenne the following morning for a council. The following day, Big Foot and his followers failed to go to the military camp as promised. Later that day when Big Foot learned that Colonel Sumner was coming to arrest all the Indians, he decided to make a run for the Stronghold and join Short Bull and Kicking Bear. They fled on the night of December 23. To add to the confusion of the events, Big Foot had become ill and quickly developed pneumonia, thereby reducing their rate of travel. Nonetheless, by mid-day on December 24, Big Foot's group had reached the Badlands Wall and slowly transcended it one wagon at a time at a place that has become known as Big Foot Pass. They crossed the White River and by nightfall made camp along the White River, still over fifty miles from the Pine Ridge Agency, but nonetheless on the reservation.[112] Big Foot had been informed that Short Bull and Kicking Bear had agreed to return to the Pine Ridge Agency on December 29, and they wanted Big Foot to time his travel so they could arrive together. Big Foot was also informed that soldiers were waiting and looking for him in the vicinity of Wounded Knee. Indeed, soldiers from throughout the area were looking for Big Foot.

After General Miles learned from Colonel Sumner that Big Foot had "escaped," the Eighth Cavalry battalion, the Fort Bennett column, a Sixth Cavalry troop, and the Seventh Cavalry from the Pine Ride Agency, via Fort Riley, Kansas, were dispatched in an all-out effort to capture Big Foot before he could join the other Indians at the Stronghold.[113] The Seventh Cavalry, under the direction of Colonel Forsyth and Major Whitside, had traveled quickly and reached Wounded Knee. At this time the Seventh Cavalry included five officers as well as several non-commissioned officers who had been with Custer's divided troops at Little Big Horn.

On December 28 Big Foot's condition worsened and it was his intention to get back to Red Cloud as soon as possible. The Indians broke camp and began traveling southwest over the drainage divide of Porcupine Creek. Around noon, while they stopped for lunch along Porcupine Creek, Big Foot's advanced guards rode into the group with four captured soldiers from the Seventh Cavalry. Big Foot retained two prisoners and sent two soldiers back with a message to Major Whitside that he and his followers were coming to surrender and they were coming in peace.[114] Later that afternoon, Major Whitside and his troops encountered Big Foot and demanded his unconditional surrender, which he granted. Major Whitside placed Big Foot in an ambulance and the entire group, including about 350 Indians (120 men and 230 women and children), headed toward the Seventh Cavalry's camp along Wounded Knee. That evening, the commanding officer of the Seventh Cavalry, Colonel James Forsyth, arrived with his remaining troops, who he deployed around the Indian camp. In addition to over 500 soldiers and officers, Major Whitside reported the Seventh Cavalry had in their possession four rapid-firing Hotchkiss guns that could fire almost one shell per second for a distance of several hundred yards.[115]

On the spring-like morning of December 29, 1890, as the Indians were happily loading their wagons and travois for the final leg of the journey, Colonel Forsyth ordered all weapons to be collected from the Indian camp. Initially, the Indians only surrendered their old and broken guns, while hiding their more sophisticated weapons. Colonel Forsyth was enraged when he saw the dearth of weapons collected by his troops and ordered a search of the entire camp. A second search produced many other weapons (such as knives, axes, hatchets, and tent pegs) but only 40 additional rifles were taken to Colonel Forsyth at the council.[116] During the search, tensions began to rise and mistrust and apprehension between Indians and soldiers increased dramatically. As tensions mounted, Yellow Bird, an older medicine man and firm believer in the Ghost Dance, began chanting and dancing, inciting others to join him. At this time it is important to remember that many of the Lakota Ghost Dance followers believed that wearing special ghost shirts would protect them from the bullets of the white man. At some point, a rifle was confiscated, and a scuffle ensued. Some say a shot was fired as an Indian was overpowered, fighting to retain his weapon; others report that an Indian demanded payment for a rifle that he had just purchased and in the ensuing struggle a shot was fired.[117] In any event, the single shot triggered further scuffles and troops surrounding the Indian camp opened fire with the Hotchkiss guns as well as their regular Army-issue weapons. Indians who tried to flee to their tipis or hide in the nearby gullies were hunted down and killed, and the shooting only ceased when hundreds of people had been killed.

According to some accounts, many of the green recruits of the Seventh Cavalry began shouting "Remember the Little Big Horn, Remember Custer." [118]

The events that occurred that day have become known as the Wounded Knee Massacre and have been recounted many times by various survivors and observers of this tragic event. The investigation presented the military side of the events during the court martial of Colonel Forsyth, who was court-martialed not because the troops under his command were responsible for the massacre, but because he deployed his troops in such a manner that when the fighting broke out the American troops may have accidentally shot and killed some of their own troops. Needless to say, Indian survivors tell a story that at times varies considerably from the official military record. Journalists and other observers that witnessed the massacre also reported their perspective of how this tragic event transpired.

Accounts of the precise events and the death toll vary considerably, but it is likely that the soldiers killed between 150 and 300 Sioux men, women, and children, the great majority of whom were unarmed bystanders.[119] Smith places the number of Sioux killed at the massacre between 170 to 190, or nearly two-thirds of the entire camp.[120] Thirty-one US soldiers were killed in the action and 33 were wounded, many of the slain or wounded were injured as a result of "friendly fire." Thus, one out of every eight soldiers was shot by their own troops.[121] The unprovoked massacre of hundreds of unarmed women and children by US troops at Wounded Knee in December 1890 marked the end of Sioux resistance. During Colonel Forsyth's first court-martial hearing he was exonerated and a second hearing more or less supported the rulings of the previous court. Oddly enough the US military never referred to the incident at Wounded Knee as a massacre.

On January 1, 1891, a burial party left from the Pine Ridge Agency to gather the frozen bodies of these Indians who had been left in the blizzard the night of the massacre. Dr. Charles Eastman, a Santee Sioux and the Agency Physician had this to say of the burial party:

> Fully three miles from the scene of the massacre we found the body of a woman completely covered with a blanket of snow, and from this point we found them (bodies) scattered along as they had been relentlessly hunted down and slaughtered while fleeing for their lives. Some of our people discovered relatives or friends among the dead…When we reached the spot where the Indian camp had stood…we saw the frozen bodies lying close together or piled one upon another.[122]

News of the massacre spread quickly to Pine Ridge and thousands of Indians gathered their belongings, scattering to more remote locations in order to escape potential harm. A group of about 150 Oglala and Brule warriors collected their weapons and headed back to Wounded Knee to face the soldiers and gather the wounded. These warriors had a brief skirmish with some soldiers and were able to save about 25 Minneconjou survivors before riding off to safety. Kicking Bear and Short Bull had nearly reached the Agency

to surrender when news of the massacre came to them. Kicking Bear and Short Bull retreated, fleeing about 15 miles down White Clay Creek where they camped and regrouped. Two Strike and his followers attacked the Agency and tried unsuccessfully to set it on fire before they too fled to White Clay Creek. Utter and Smith report several small skirmishes occurred across the reservation over the following 10-12 days. [123] During one skirmish, the Seventh Cavalry was surrounded and had to be saved by the Ninth Cavalry. According to Utter, military (and civilian) casualties during this 10-12 day period were limited to four dead and five wounded, and he reports the Indians had similar losses.[124] Kicking Bear, Short Bull, Two Strike and their followers, surrounded by an ever-tightening noose of soldiers and lacking supplies for survival, surrendered to General Miles on January 15, 1891, at the Pine Ridge Agency. The Great Sioux Wars had finally ended together with the hopes and dreams of the Lakota. Manifest Destiny and the onslaught of the American Industrial Age had finally overrun the Lakota, the last of the Indian tribes to be subjugated by the American government. As Black Elk wrote in his later years,

> I did not know then how much was ended. As I look back from the high hill of my old age, I can still see the butchered women and children lying heaped and scattered all along the crooked gulch plain as when I saw with eyes still young. And I can see that something else died there in the bloody mud and was covered by the blizzard. A people's dream died there. It was a beautiful dream.…[Now] the nation's hoop is broken and scattered. There is no center any longer, and the sacred tree is dead.[125]

With the culmination of the Great Sioux Wars and Indian resistance, the United States government had transformed not only the Indian nations into small groups of dependent wards, but in the process had also transformed the government into a large bureaucratic network, led by the US military and the unusually large Bureau of Indian Affairs. Together, these two bureaucratic arms of the federal government dictated the terms and conditions under which thousands of individuals would live their lives. White argues that the United States government perverted the promise of one powerful and dominant sovereign nation protecting other weaker, but also sovereign nations, into a

> mandate for bureaucrats appointed by one government to oversee the personal lives of individual members of those weaker nations.…In reducing the Indians to wardship (status), the federal government had enhanced its own power. Congress could, according to the courts, dictate the fates of thousands of people in the American West and control tens of millions of acres of Indian land.[126]

At long last after decades of struggle and strife and at a cost of tens of thousands of lives (many of them innocent women and children on both sides), millions of dollars (money spent to purchase Indian lands and pay for rations, annuities, and other items), and broken treaties too numerous to count, the United States had finally realized their quest for Manifest Density. The Badlands, the Black Hills, and adjacent Plains were transformed into farms and ranches, but in their footprints lay the shattered dreams of many "sovereign nations." From this point, much of the history of the Badlands is the history

of Euro-American settlers and ranchers and their interactions with the increasingly powerful federal government.

Sacred Sites in the Vicinity of the Badlands

As noted previously in this chapter, the following section is derived from the ethnographic overview of Badlands National Park prepared by Dr. David White. White reports that whether or not the *Mako Sica* (Badlands) is considered to be a sacred site is "open to interpretation."[127] Historically, the Badlands were more often used for refuge and retreat (or occasional hunting and gathering), than as a primary occupation area. That said, there are several important locations in or near the Badlands that may be considered sacred. White reports that some so-called "tipi ring" sites may actually represent the ruins of eagle trap locations, and vision quest sites are common in various places throughout the Badlands.[128] The ubiquitous fossils of the Badlands reportedly have traditional cultural importance to the Lakota and other Plains tribes. The Lakota believe the fossils in the Badlands are associated with monsters although the fossil remains of mammoth and titanotherium are believed to be the remains of the mythic *Tatanka*, and therefore would be considered sacred.[129]

According to White, possible sacred locations in the vicinity of the Badlands include the following:

- Cedar Pass (an area that used to support 30 to 40 foot cedar (juniper) trees),
- the spring at Cliff Shelf (an important area to gather plants for food or medicinal use),
- Sage Creek,
- Medicine Hill (near Porcupine and said to be very *waken* or holy, or sacred),
- Porcupine Butte (one of the last locations for the Ghost Dance in November 1890 and perhaps the location where the Sacred Pipe was given to the Lakota),
- Medicine Root Creek (a location used by Little Wound and his people for the Ghost Dance in the fall of 1890),
- Eagle Nest Butte (seven miles south of Wanblee in the northeast corner of the Pine Ridge Reservation, also several locations—Buzzard Butte, Saddle Butte, and Snake Butte—near Eagle Nest Butte are recognized as sacred places and vision quest sites),
- Sheep Mountain Table (a sacred place among the Oglala, second only to Stronghold Table within the Park),
- Indian Creek (reportedly a sacred burial area west of Sheep Mountain Table),
- Cedar Butte (there are no less than six Cedar Buttes in South Dakota, including one just south of Sheep Mountain Table, one near the White River between Cuny Table and Stirk Table, and one north of I-90 between Cactus Flat and Kadoka),
- Big Foot Trail (a portion of which traverses the Badlands), Big Foot Pass (located in the North Unit of the Park), and other locations identified along Big Foot Trail that occur within the Park: Cedar (or Big Foot) Spring, Redwater Creek (south of Conata), Medicine Root Creek (near Kyle), American Horse Creek, and Porcupine Creek,

- and Cuny Table Stronghold (discussed in detail below).[130]

Stronghold Table is actually part, albeit a nearly detached part, of Cuny Table. The Stronghold is often described as an almost inaccessible tract of land that is connected to Cuny Table by a "narrow land bridge, scarcely wider than a wagon."[131] This large tract of land was apparently used for Ghost Dancing as well as a refuge for Ghost Dancers. Mooney reports people fleeing to the Stronghold in the fall of 1890. Black Elk also mentioned people fleeing to Stronghold during the fall of 1890.[132] Accounts of dancing at Stronghold are somewhat sketchy, but it seems that the followers of Short Bull, Kicking Bear, Two Strike, and Crow Dog were present at the Stronghold throughout most, if not all, of December. As noted previously, some dancers, under the leadership of Two Strike and some other chiefs, were persuaded to return to Pine Ridge in early December at the request of General Brooke, while Short Bull and Kicking Bear remained on the Stronghold, continuing to dance for a few more weeks until they agreed to go to the Pine Ridge Agency on December 29, 1890, and surrender.[133]

Historical accounts by Standing Bear and Charles Eastman claim that people fled to the Stronghold after the Wounded Knee Massacre, where they stayed until persuaded to surrender by a group of Lakota chiefs. Lautenschlager also reports that Ghost Dancers were at Stronghold Table following the Wounded Knee incident.[134] White disputes this information regarding the timing of activity at the Stronghold because Colonel Offley, under orders, preemptively occupied the Stronghold after the Wounded Knee Massacre. As stated previously, after the Wounded Knee Massacre, Short Bull, Kicking Bear, Two Strike, Little Wound, Big Road, No Water, and Red Cloud went to a refuge along White Clay Creek, near present day Oglala.[135] The location of the "Lakota's Last Stand" referred to as the Onogazi (or O-ona-gazhee) has come to refer to two places: one is the Stronghold at Cuny Table, the other is the retreat near Oglala where people fled after the Wounded Knee Massacre. White reports the term Onogazi means "place of shelter" and therefore is likely to have been applied to several locations. White reports that some references to Onogazi clearly refer to the Cuny Table Stronghold while others seem to refer to an area closer to Oglala near White Clay Creek.[136] To complicate matters, maps from the United States Geological Survey (USGS) incorrectly label a free-standing mesa north of Cuny Table as Stronghold Table. NPS maps and other maps from the early twentieth century label this mesa as "Galligo Table." Today, some refer to the Stronghold location on Cuny Table as the *Wasichu's* (whiteman's) Stronghold. Others state that there were always two Stronghold locations, one was a free-standing table that was harder to get to and was for the protection of women, children, and the elderly; while the other, more visible location was for the warriors. [137] Hall and others maintain that the USGS label of Stronghold Table is simply incorrect and that this location should be called Galligo Table, as it is referred to locally.[138] White concludes his discussion of Lakota sacred sites with a cautionary note that any "discussion of the stronghold is a very sensitive topic, and any NPS interpretation for the public should be developed in close coordination with the Lakota people."[139]

[1] David White, *Mako Washte: An Ethnographic Overview and Oral History of the Badlands National Park,* (Santa Fe, National Park Service, 2001).

[2] Jeffrey R. Hanson, "The Late High Plains Hunters," in *Archeology on the Great Plains*, (Lawrence, KS: University of Kansas Press, 1998), 465-466; David T. Hughes, "Cultural Affiliations of Native Americans: To the Region Encompassing Scottsbluff National Monument and Agate Fossil Beds National Monument in Northwestern Nebraska," Lincoln, NE, Midwest Region, National Park Service, 1998: 30.
[3] Doane Robinson, *A History of the Dakota or Sioux Indians*, (Minneapolis, MN: Ross and Haines, Inc., 1904), 43.
[4] Ibid., 45-46.
[5] Ibid., 43-47; Hughes, "Cultural Affiliations," 30-32.
[6] Jeffrey R. Hanson, "The Late High Plains Hunters," in *Archeology on the Great Plains*, (Lawrence,KS: University of Kansas Press, 1998), 466.
[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] Robinson, *A History of the Dakota*, 30-37.
[11] Philip S. Hall, *Reflections of the Badlands*, (Freeman, SD: Pine Hill Press, Inc., 1997), 1-2.
[12] Ibid., 2.
[13] Ibid.
[14] Robinson, *A History of the Dakota*, 79-80.
[15] Ibid., 141.
[16] Rex Alan Smith, *Moon of the Popping Trees: The Tragedy at Wounded Knee and the End of the Indian Wars*, (Lincoln, NE: University of Nebraska Press, 1975), 8.
[17] Robinson, *A History of the Dakota*, 141.
[18] Philip S. Hall, *Reflections of the Badlands*, 6.
[19] Ibid., 7-8.
[20] Robinson, *A History of the Dakota*, 153.
[21] Richard White, *It's Your Misfortune and None of My Own: A New History of the American West*, (Norman, OK: Oklahoma University Press, 1991), 86-87.
[22] Ibid., 87.
[23] Hughes, "Cultural Affiliations," 38.
[24] White, *Mako Washte*,50.
[25] Ibid.
[26] Hughes, "Cultural Affiliations," 23.
[27] Ibid.
[28] Ibid.
[29] James Mooney, "Calendar History of the Kiowa Indians," *American Ethnology*, (Washington, DC: Government Printing Office, 1898), 155.
[30] Hughes, "Cultural Affiliations," 24.
[31] Ibid.
[32] White, *Mako Washte*, 66-67.
[33] Ibid., 67.
[34] Hughes, "Cultural Affiliations," 43.
[35] James Howard, *Known Village Sites of the Ponca*, (Plains Anthropologist 1970),131.
[36] White, *Mako Washte*, 67.
[37] Hughes, "Cultural Affiliations," 40-41.
[38] White, *Mako Washte*, 43.
[39] Waldo R. Wedel, *An Introduction to Pawnee Archaeology*, (Lincoln, NE: J&L Reprint Company, 1977), 16.
[40] Hughes, "Cultural Affiliations," 42.
[41] Wedel, *An Introduction to Pawnee*, 17-18.
[42] George E. Hyde, *Red Cloud's Folk: A History of the Oglala Sioux Indians*, (University of Oklahoma Press, 1957), 38.
[43] White, *Mako Washte*, 42-44.
[44] Ibid., 51-52, 64.
[45] George Frison, *Prehistoric Hunters of the High Plains* (New York: Academic Press, 1978), 61-66.
[46] White, *Mako Washte*, 68.

[47] Hughes, "Cultural Affiliations, 25, Figure 6.
[48] Ibid., 26.
[49] Ibid., 24.
[50] Ibid., 26.
[51] Ibid.
[52] Mooney, "Calendar History," 953-954.
[53] V.C. Trenholm, *The Arapahoes: Our People*, (Norman, OK: University of Oklahoma Press, 1986), 33.
[54] Hughes, "Cultural Affiliations," 27.
[55] White, *Mako Washte*, 42.
[56] Hughes, "Cultural Affiliations," 28.
[57] Ibid., 28.
[58] Ibid., 29.
[59] Ibid.
[60] White, *It's Your Misfortune*, 86.
[61] Rex Alan Smith, *Moon of the Popping Trees: The Tragedy at Wounded Knee and the End of the Indian Wars*, (Lincoln, NE: University of Nebraska Press, 1975), 11-12.
[62] Ibid.
[63] White, *It's Your Misfortune*, 90.
[64] White, *Mako Washte*, 77.
[65] Smith, *Moon of the Popping Trees*, 13.
[66] White, *It's Your Misfortune*, 90.
[67] Ibid., 92.
[68] Ibid., 94.
[69] White, *Mako Washte*, 79.
[70] Smith, *Moon of the Popping Trees*, 15-24.
[71] Ibid., 28-31.
[72]White, *Mako Washte*, 79.
[73] Smith, *Moon of the Popping Trees*, 35.
[74] White, *Mako Washte*, 79.
[75] Ray H. Mattison, "The Indian Reservation System on the Upper Missouri: 1865-1890," *Nebraska History* 1955, 142.
[76] Smith, *Moon of the Popping Trees*, 37.
[77] White, *It's Your Misfortune*, 96.
[78] Ibid., 96.
[79] Smith, *Moon of the Popping Trees*, 40-41.
[80]White, *Mako Washte*, 80.
[81] Ibid., 82.
[82] Ibid., 81.
[83] Smith, *Moon of the Popping Trees*, 51.
[84] White, *Mako Washte*, 99.
[85] Ibid., 84; Mattison, "The Indian Reservation System," 156-157.
[86] Smith, *Moon of the Popping Trees*, 53.
[87] White, *It's Your Misfortune*, 98.
[88] Edward Kadlecek and Mabell Kadlecek, *To Kill an Eagle: Indian Views on the Last Days of Crazy Horse*, 7th printing, (Boulder, CO: Johnson Books, 1981), 50.
[89] Ibid., 52-53; White, *Mako Washte*, 93; White, *Mako Washte*, 91
[90] Ibid., 91.
[91] Hall, *Reflections of the Badlands*, 30-36.
[92] White, *It's Your Misfortune*, 109-111.
[93] Ibid., 109-111.
[94] Smith, *Moon of the Popping Trees*, 62.
[95] Ibid., 65-66; Jack Utter, *Wounded Knee and The Ghost Dance Tragedy*, Memorial edition, (Lake Ann, MI: National Woodlands Publishing Company, 1991), 3
[96] Smith, *Moon of the Popping Trees*, 68; Utter, *Wounded Knee*, 4.
[97] Smith, *Moon of the Popping Trees*, 68-70; Utter, *Wounded Knee*, 6.

[98] Smith, Moon of the Popping Trees, 71.
[99] Ibid., 75.
[100] White, *Mako Washte,* 215-217.
[101] Ibid., 215.
[102]Utter, *Wounded Knee,* 13.
[103] Ibid., 14.
[104] Ibid., 15.
[105] Smith, *Moon of the Popping Trees*, 134-135; Hall, *Reflections of the Badlands,* 60.
[106] Ibid., 61.
[107] Ibid., 70.
[108] Ibid.; Smith, *Moon of the Popping Trees,* 172-176.
[109]Utter, *Wounded Knee, 16.*
[110] Smith, *Moon of the Popping Trees*, 150-153.
[111] Utter, *Wounded Knee*, 16-17; Smith, *Moon of the Popping Trees*, 158-159; Hall, *Reflections of the Badlands*, 67.
[112] Ibid.
[113] Utter, *Wounded Knee,* 20.
[114] Ibid., 20; Smith, *Moon of the Popping Trees*, 177.
[115] Ibid., 180.
[116] Utter, *Wounded Knee*, 21-22; Smith, *Moon of the Popping Trees*, 177.
[117] Utter, *Wounded Knee*, 21-22; Smith, *Moon of the Popping Trees*, 190-191.
[118] Utter, *Wounded Knee,* 24.
[119] Ibid., 25.
[120] Smith, *Moon of the Popping Trees*, 196.
[121] Ibid., 25.
[122] Utter, *Wounded Knee,* 25.
[123] Ibid., 26; Smith, *Moon of the Popping Trees,* 201-204.
[124] Utter, *Wounded Knee,* 26.
[125] John G. Neihardt, *Black Elk Speaks: Being the Life Story of a Holy Man of the Oglala Sioux,* (University of Nebraska Press, 1979).
[126] White, *It's Your Misfortune,* 117.
[127] Ibid., 237.
[128] Ibid., 238.
[129] Ibid., 239.
[130] Ibid., 241-244.
[131] Ibid., 244.
[132] Ibid.
[133] Virginia I. Kain Lautenschlager, *A History of Cuny Table: 1890-1983,* (Rapid City, SD: Pioneer Baptist Press, 1983), 7.
[134] Ibid., 13-15.
[135] Ibid., 245.
[136] Ibid., 245-246.
[137] Ibid., 246.
[138] Hall, *Reflections of the Badlands,* 10.
[139] White, *Mako Washte,* 246.

CHAPTER FIVE

Native American/Euro-American Relations on the Upper Missouri from 1744 to the 1820s and in the Badlands Area from 1822 to 1910

CHAPTER 5

NATIVE AMERICAN/EURO-AMERICAN RELATIONS ON THE UPPER MISSOURI FROM 1744 TO THE 1820s AND IN THE BADLANDS AREA FROM 1822 TO 1910

Initial Explorations and Trade in the Upper Missouri Region by Imperial Powers (1744-1803)

The fur trade spearheaded the advancement of the French and English colonial frontiers from the Atlantic seaboard westward into the northern reaches of the North American continent after the early 1600s. Europe's insatiable demand for beaver pelts for hats and other furs encouraged heavy investments by entrepreneurs and merchants in the North American fur trade. The rugged backcountry traders and trappers that formed the backbone of the industry often were the first whites to enter the wilderness country and the first to establish relations with its Native American populations. In exchange for their valuable furs, Indians received European manufactured goods that eased the hardship of every day life, such as blankets and metal pots, guns and knives and other tools and weapons as well as a variety of personal vanities and trinkets. The Indians benefited from the trade briefly before deadly European diseases, warfare, and displacement irrevocably altered their political, economic, and cultural traditions. For Euro-Americans the trade proved extremely lucrative but provided much more than economic gain. Accounts by fur traders and trappers of the land and its natural resources helped pave the way for their eventual domination of the upper North American continent from coast to coast, including the Upper Missouri region of the Trans-Mississippi West.

The French were the initial European force to advance the fur trade west of the Atlantic seaboard. By the mid-1630s, fur traders from French Canada—the name of eastern Canada during its tenure of French rule—had explored and founded posts in the Great Lakes basin, and by the early 1680s, they were in the Upper Mississippi Valley. It was at this time that French explorer Roberts Cavelier, Sieur de La Salle journeyed down the Mississippi to its mouth and claimed the surrounding wildness for his country. La Salle's "Louisiana Territory" stretched from the crest of the Appalachian Mountains southward to the Gulf of Mexico and west to the Rocky Mountains. A renewal of open warfare with its British colonial rivals and unfavorable relations with Indian Nations in eastern Canada, however, kept France's attention away from its holdings in the Great Lakes and west of the Upper Mississippi River for the next several decades.[1]

After reaching a tentative peace agreement with the British in 1713, France entered into a renewed period of exploration and expansion on the North American continent. The French frontier west of the Great Lakes quickly became a major focus of their efforts. There, the French hoped to challenge Britain's Hudson's Bay Company trading operations with the Assiniboine and Cree. A former soldier and one of the most noted and successful fur traders in the Canadian frontier, Pierre Gaultier de Varnnes, Sieur de La Verendrye, played a prominent role in the French assault. By the early 1740s, La

Verendrye, with the aid of his sons and others, had founded a string of posts from Lake Superior westward along a chain of rivers and lakes to Lake Winnipeg. They circumvented the British invasion into the area, having established harmonious relations with the Assiniboine and Cree.[2]

In common with those of other astute fur traders of the day, La Verendrye's ambitions went beyond establishing his wealth in the fur trade. During his early years with the Assiniboine and Cree, La Verendrye became intrigued by their lore and legends of a great western river in the land of their distant trading partners to the south, the Mandan Indians, semi-sedentary horticulturalists, who lived in villages along the river. He eventually convinced the Governor of New France to back him in a venture to explore the river and the surrounding lands for a western passage to the Pacific Ocean. In October of 1738, La Verendrye and a force of over 50 men, a mix of whites and Indians, set out from Lake Winnipeg on their southward journey. Before the end of the year, the expedition became the first Euro-Americans to reach the Upper Missouri River, arriving at a Mandan village near the mouth of the Heart River in what became the state of North Dakota. Troubles back at Lake Winnipeg, however, obliged La Verendrye to leave the Mandans without further exploration of the region.[3]

A few years later, with his resolve to discover a route to the Pacific still strong, de La Verendrye sent his sons Francois and Louis-Joseph on a second excursion to the upper Missouri. In 1742, after a few months stay with the Mandans and their close village neighbors, the Hidatsa, the second La Verendrye expedition started on what became a year-long journey of exploration. While the geographic extent of their travels will forever remain unknown, the La Verendrye brothers clearly penetrated deep into the central region of present-day South Dakota, visiting an Arikara village near the mouth of the Bad River on the west bank of the Missouri. The expedition explored as far west as the Black Hills and may have even ventured into the northeastern corner of the future state of Wyoming.[4]

The La Verendrye expeditions failed to impress New France officials, primarily because their show of beaver pelts from the Upper Missouri region was much poorer, both in quality and quantity, than that of the Great Lakes region. Of even greater disappointment, explorations by the La Verendryes confirmed that the Missouri River did not flow west towards the great western sea, but rather east and south towards the Gulf of Mexico. In 1744, La Verendrye was ordered back to eastern Canada, marking the end of New France's support for formal exploration of the Upper Missouri for good. The region saw sporadic visits by independent French Canadian trappers in the ensuing years.[5]

In the early 1760s, the last of a series of wars between the French and English over their North American colonies and territories brought major changes to the political dynamics of the European nations in North America. The Treaty of Paris, which ended the conflict, forced the French to cede eastern Canada and all of its territory east of the Mississippi to the English. With little chance of establishing authority over its claim to lands east of the Mississippi, France transferred the vast western half of the Louisiana Territory to England's other long-time nemesis in the New World—Spain.[6]

Spanish officials accepted France's gift of Louisiana primarily for defensive purposes rather than economic reasons. The Spanish feared that if England gained a foothold in the territory, the English would soon invade Spain's frontier population centers in New Mexico and Texas. Most wary of an English invasion from the southeast, Spain concentrated its efforts on establishing a strong presence in the lower Mississippi and lower Missouri valleys.[7] The Spanish neglect of upper Louisiana, however, soon played into the hands of British-Canadian interests. As of the mid-1780s, the Hudson Bay Company and the British North West Company had established direct and brisk trading ties with Mandan and Hidatsa tribes, who resided on the Upper Missouri at the mouth of the Knife River in present-day North Dakota.[8]

Early in the following decade, Spain finally took action to thwart the English presence in upper Louisiana. Lacking both the manpower and resources to wage a military campaign, the Spanish Lieutenant Governor of Louisiana decided to take a more commercial-based approach to securing the region. In 1793, he granted a 10-year monopoly to trade with Indian tribes of the upper Missouri to a group of merchants at the lower river port of St. Louis. In return for this privilege, the St. Louis merchants agreed to convince the Mandan and Hidatsa to cease trade with the British and pledge their allegiance to Spain.[9]

Operating under the corporate guise of a company commonly known as the Missouri Company, the St. Louis merchants sponsored a series of trading expeditions up the Missouri over the next few years. In 1794 Canadian Jean Baptiste Truteau (also Trudeau) led the first of these expeditions, but only ascended the river as far as an Arikara village at the mouth of the Grand River (in present-day northern South Dakota). He evidently explored the area around the Black Hills and, although highly speculative, it is possible that Truteau set eyes on the White River Badlands as well. Truteau's successor at the Missouri Company, James McKay, commanded a slightly more successful expedition in terms of challenging British control of the fur trade. After reaching the Mandan-Hidatsa villages in 1796, one member of his force, John Evans, single-handedly secured a British trading post on the Upper Missouri and raised the Spanish flag over the facility before heading back down the river.[10]

By the time that Evans and McKay returned to St. Louis in 1797, the Missouri Company had folded. Although short-lived and limited in geographic scope, the company's ventures provided some prophetic insights as to the favor or disfavor of some Native Americans towards whites venturing up the Missouri. In regards to the latter, both Truteau and McKay recorded unpleasant encounters with the Arikara as well as with hunting parties of Lakota Sioux in the vicinity of the mouth of the White River on Missouri, and the country northeast of the White River Badlands.[11] In his writing, Truteau specially warned "all voyagers who undertake to gain access to the Nations of the upper Missouri ought to avoid meeting this [Sioux] tribe, as much for the safety of their goods as for their lives even."[12]

Opening of the American Fur Trade Era on the Upper Missouri and Trading Activities in the Vicinity of the White River Badlands (1803-1866)

The true opening of the Upper Missouri to the fur trader did not occur until after the United States purchased the Louisiana Territory in 1803 and the subsequent exploration of the territory by the Louis and Clark expedition in 1804-06. The expedition left no doubt that the Upper Missouri was rich in prospects for the fur trade. Lewis and Clark discovered an abundance of beaver and otter at the mouth of Yellowstone River in the eastern plains of Montana and "more than any other country" at the headwaters of the Missouri where the plains meet the mountains. Additionally, massive herds of bison were observed throughout the Northern Plains region.[13]

Numerous St. Louis-based fur traders and trading outfits began planning excursions up the Missouri River in the wake of the Lewis and Clark expedition. Manuel Lisa, one of the most experienced of the St. Louis traders and an exceptionally skilled and shrewd businessman, led the most ambitious of these ventures. In 1807, in the company of some twenty-five men, Lisa ascended the Missouri to the Yellowstone and initiated a combined trading and trapper strategy that came to characterize his operations. Lisa had some of his men erect a post for the trade with the local Native America tribes, in this case the Crow, while others were set out to trap and harvest furs on their own. Lisa's initial operation on the Yellowstone and its tributaries proved extremely fruitful, but a subsequent attempt to trap and trade at the headwaters of the Missouri met with hostile resistance from the Blackfeet Indians. Lisa was forced to retract his primary field of operation to the Mandan, Hidatsa, and Arikara.[14]

The outbreak of war with Great Britain in 1812 abruptly curtailed fur trade activities in the Upper Missouri. The British actively enlisted the aid of Dakota Sioux to help oust American traders from the region, while British blockades at New Orleans effectively obstructed the shipment of furs to east coast and European markets. Lisa retired to Council Bluffs for the duration of the three-year war.

By 1820, the Upper Missouri River trade had revived and entered into its most prosperous era. Over the next few years, American trading houses began to seriously exploit the resources in future South Dakota for the first time, including the country in the vicinity of the White River Badlands. Three posts appeared at the mouth of the White River during the early 1820s, each established by separate firms all competing for the trade with the Lakota and Dakota Sioux. These posts and their builders included Fort Recovery, established by Manuel Lisa's old firm, the Missouri River Fur Company; Fort Brasseau, built by the Rocky Mountain Fur Company, a newly organized St. Louis-based firm headed by General William H. Ashley; and Fort Kiowa, built by the American Fur Company. Unlike its competitors, the American Fur Company had been in business for several years with its major field of operation centered in the Great Lakes and upper Mississippi regions. In 1822, it opened a Western Division in St. Louis for the purpose of expanding its sphere of influence up the Missouri as well as into the lower Mississippi and Illinois River valleys.[15]

Trade at the White River forts was quickly eclipsed by a trading post, Fort Tecumseh, established many miles upstream at a more strategic location, the mouth of the Bad River. Fort Tecumseh, completed in 1822 by the Columbia Fur Company, represented the interests of a group of Canadian traders who had been displaced by the merger of North West Company into the Hudson's Bay Company. This well-seasoned group selected the mouth of the Bad River for their main fort because it was the nearest shipping point on the Missouri to the Black Hills and the Upper Platte Valley, areas which both supported massive buffalo herds.[16]

By the mid-1820s, buffalo had become the mainstay of the Upper Missouri River's trading system. These large woolly animals were most prized for their hides that, when properly processed, turned into luxurious robes. Additionally, buffalo tongues proved a delicacy favored by Americans and Europeans alike, while buffalo bones were used in the making of tallow. American Indians played a major role in the buffalo trade, procuring and processing the robes. Harvesting the animals typically occurred during late fall and winter when their hides were at their thickest. American Indians transported their cache of robes to posts on the Missouri River, or to so-called "wintering houses," small outposts on the river's tributaries. The trading companies typically maintained their posts and wintering houses well stocked with blankets, tobacco, metal pots, hoes, knives, and other goods favored by American Indians. Trade goods were often by the American Indians themselves during the previous trading season.[17] As described in Chapter 4, by the late 1820s, Fort Tecumseh traders established seven major wintering houses on the two major rivers draining the White River Badlands, the Cheyenne and the White.

The American Fur Company and the Columbia Fur Company dominated the Upper Missouri trade by the mid-1820s. The former primarily served the horticulturalists above the Cheyenne River, the Mandan, Hidatsa and Arikara, while Columbia Fur Company controlled trade with the nomadic Lakota and Yankton Dakota Sioux. Competition between the two firms remained fierce until 1827 when the American Fur Company maneuvered an amicable take-over of Columbia Fur. Fort Tecumseh immediately became one of the major trading and distribution centers for American Fur's Western Division.[18]

In 1832, the American Fur Company abandoned Fort Tecumseh and built a replacement facility just a few miles upstream. They named the fort in honor of Pierre Chouteau, Jr., a prestigious St. Louis trader associated with the firm—Bernard, Pratte, and Company—that had managed American Fur's Western Division since 1827. As described by South Dakota historian Herbert Schell, Chouteau was the "guiding spirit" for the Western Division. His greatest contribution to American history was the introduction of steamboat travel to the Upper Missouri in 1831.[19]

Although the fur trade as the old traders had known it was in decline by the late 1830s, the market for buffalo robes and furs continued into the middle 1860s. The American Fur Company and its successors procured most of the business. Bernard, Pratte, and Company and its successors, still popularly known as the American Fur Company after the former acquired the company's Western Department in 1834, remained the largest

trading company on the Upper Missouri.[20] Chouteau oversaw the company's operation until it finally sold its posts and inventory 23 years later.

Fur trading on the Upper Missouri in the 1840s and 1850s probably worked much like it had in previous decades, with American Indians bringing buffalo robes and furs to posts on the river and wintering houses on its tributaries. Although the numbers of robes and furs obviously fell, profits remained quite high. Pierre Chouteau, Jr., and Company used its post at Fort Pierre until 1855, when it sold the fort to the US Army.[21] The last use of Ogallala Post and Butte Cache as wintering houses in the Badlands vicinity is unknown. Yet as late as 1849, Pierre Chouteau, Jr., and Company was still moving goods overland from Fort Pierre to another of its posts on the North Platte River via an old Indian trail that traversed the western edge of the Badlands; an alternate and more difficult route that probably involved Cedar Pass may have been used occasionally by traders.[22]

The last in the line of major trading companies to trade hides and furs on the Upper Missouri was the Northwest Fur Company. A late-comer to the Upper Missouri region, the company formed in March 1865. Its operations in the Dakota Territory were short-lived. The company dissolved in 1869, but as early as the fall of 1865, it abandoned trading operations in the northern Nebraska and southern Dakota Territories. After acquiring Fort Benton far up the Missouri in the Montana Territory in 1866, it placed the majority of its resources outside of the Dakota Territory.[23]

For the brief time that the Northwest Fur Company worked in western Dakota Territory, its traders were able to obtain a fair number of buffalo robes. At Fort Sully, the military post on the Missouri River established in 1863 where the Northwest Fur Company maintained a store, they delivered between 4,000 and 5,000 buffalo robes and an unspecified amount of "small" fur in 1865. Although the number may seem large, it represents just one-fourth of the robes shipped from Fort Pierre (not far upstream) just 14 years earlier.[24]

The Lakota and other American Indians still brought in most of the robes, trading them for items that the Northwest Fur Company kept stocked, including salt pork, beef, flour, bread, corn, beans, coffee, tobacco, rice, syrup, and sugar. In these later years, if not earlier, the trade also included Indian-made artifacts. At Fort Union farther up the Missouri, but presumably at Fort Sully as well, the company accepted moccasins, parfleches, tallow, and sinew in trade.[25]

Establishment of and Euro-American Expansion into the Dakota Territory (1858-1865)

Negotiations for, and signing of, the Yankton Treaty of 1858 might be considered the beginning of a complicated and evolving series of new relationships between Euro-Americans and the Lakota in the Badlands. Those relationships changed during the following half century from one of near-equal combatants to one of American Indian subjection, with fear and lack of trust characterizing the relationship between the two parties throughout most of the period.

In fact, the Yankton Treaty was actually an agreement between the US government and the Yankton Dakota Indians, another Sioux Indian group only distantly related to the Teton Sioux. The agreement was the first of its kind in what later became the Dakota Territory, and allowed for the original configuration of the territory. Signed on April 19, 1858, the treaty provided for a small reservation in the southwest corner of the Minnesota Territory (now southeast South Dakota) and annuity payments totaling $1.6 million, to be given over a 50-year period. The Yankton ceded a large piece of land roughly between the Big Sioux River on the east and the Missouri River on the west and south, and north to a line between Fort Pierre and future Watertown. What shortly became the Dakota Territory was "officially" open to settlement in July 1859, and two years later the territory was carved out of the Washington and former Minnesota Territories.[26]

While the treaty did not involve the Lakota, who at that time were confined to the west side of the Missouri River, it opened the East River for Euro-American settlement, thus pushing the line of intense contact between the two groups farther west. At the time, the treaty was of little concern to the Lakota, particularly the Oglala and Lower Brule, who were engaged in skirmishes with the US Army in the Nebraska Territory at Ft. Laramie on the North Platte River (see previous chapter).

Nor were the Lakota concerned about the current area of interest, the Badlands and adjacent Black Hills. There were few conflicts because the Lakota believed the area was their exclusive territory. An Indian/trader/military trail passed through a corner of the Badlands, but by the late 1850s few if any traders used it. The US Army had even surveyed the route and called it the Fort Pierre–Fort Laramie Road in 1855, but used it that one year, abandoning it when they closed Fort Pierre in 1857. For several years thereafter, the military had no interest in the Badlands and Black Hills area, concentrating its efforts to the south and west along the Oregon and Bozeman Trails.[27]

From the late 1850s until about 1862, there were no permanent Euro-American residents and almost no travelers in the Badlands area.[28] Traveling parties of Indians, Euro-Americans, and mixed-bloods passed through the area, but presumably only on rare occasion. Those small Euro-American parties that chose to explore or visit the area reportedly did so with considerable fear as large encampments of Lakota were often seen in the Badlands area.[29] These fears no doubt stemmed from regular reports of Siouan attacks farther south along the North Platte River.

Euro-American settlers in the East River portion of Dakota Territory found their new living conditions to be more difficult than expected. Commercial centers, such as Yankton, did not have a broad enough surrounding agricultural base to adequately support many businesses. Additionally, beginning in August 1862, there was a protracted period of Indian threat as the Santee Sioux left their reserve in Minnesota following the Minnesota Massacre, and moved to the Dakota Territory to avoid military troops.[30] When prospectors discovered gold in Montana and Idaho in 1862 and 1863, many East River settlers saw this turn of events as a way to improve their circumstances, either by heading west themselves or supplying the gold seekers with food, goods, and

transportation. A roadblock in the form of unceded Indian territory existed, however. Any northern route to the gold fields would have to pass directly through Lakota treaty lands, and no such road existed.

Far from ceded lands and seemingly lacking attractive and profitable resources, the Badlands and Black Hills were insulated from the increasingly frequent military conflicts between various Siouan tribes and the US Army. The Badlands could have been the scene of a contentious battle in 1865, when plans were developed to construct three overland roads between the Missouri River and Montana, one of which was to skirt the Black Hills on the north, another on the south, and a third to follow the Missouri River from Fort Randall. The first two never made it as far as a complete survey, because the Lakota rebuffed survey crews traveling without military escort. The third road, begun at Sioux City, ended at Fort Randall, still in ceded Indian (Dakota) territory. The Badlands, Black Hills, and most other parts of western Dakota Territory continued more or less as a sanctuary from Euro-American peoples. The Lakota apparently did not challenge river travel along the Missouri, leaving the river as the only reliable transportation route through that part of the Dakota Territory.[31] River traffic brought no noticeable changes to the Badlands area status quo.

Laramie Treaty of 1868 and Its Consequences (1868-1876)

The Laramie Treaty of 1868 marked a departure from the foregoing US government and Lakota relations, setting the Lakota on a path to sedentism. Ratified on February 16, 1869, the treaty established the Great Sioux Reservation, which covered the territory between the Missouri River and the Dakota Territory's west edge and between the Nebraska line and the present-day North-South Dakota line. This was an area that the Lakota and other American Indian tribes had occupied for years with little Euro-American interest.[32] The Lakota proved victorious in closing the Bozeman Trail and a handful of associated military outposts, and they also had the Powder River area of Wyoming and Montana recognized as Indian hunting ground. Yet, the treaty called for the establishment of several agencies at which the Lakota were encouraged to live.[33] This provision and others were aimed at settling individual families on 160-acre allotments away from any lands valued by large populations of Euro-Americans.[34] As of the early 1870s, the two agencies nearest to the Badlands area were the second Whetstone Agency, located in Nebraska not far from present-day Pine Ridge, for followers of Chief Spotted Tail of the Brule, and the second Red Cloud Agency, located near present-day Crawford, Nebraska (near Fort Robinson), for followers of the Chief Red Cloud of the Oglala Sioux.[35]

Activities pursued or encouraged by the US government at the new agencies primarily were geared toward dismantling the Indian's traditional nomadic hunting lifeway. The Lakota were not permitted to hunt buffalo outside their reservation boundaries, and the dwindling buffalo population inside the reservation was not large enough to sustain the Lakota. Beginning in the summer of 1869, taking over from the US Army, a small number of government workers distributed rations, consisting of beef, corn or meal, flour, sugar, coffee, salt, bacon, soap, and clothing.[36] Beef rations, furnished on the hoof, were

brought to the agencies by Nebraska and Kansas cattle companies, including the Bosler Cattle Company, Jack Morrow and W.A. Paxton, and Hampton B. Denman.[37] In addition to the ration provision of the Laramie Treaty, the treaty also required children to attend school. The Episcopalian Church operated a school at the Whetstone Agency by 1873, and boasted an enrollment of 156 students within four years. It did not open a comparable school at the Red Cloud Agency and apparently neither did the government, suggesting that the school attendance provision was irregularly enforced.[38] Initially, the allotment provision was not enforced, although those who lived near the agencies must have begun to be acquainted with the concept.

The establishment of agencies for the Oglala and Brule enabled Christian churches to proselytize to a somewhat captive audience. The US government had formally identified the Episcopalian Church as *the* church to serve the Pine Ridge Agency. The Episcopalians established its Christ Church at the Whetstone Agency in 1873, and the preacher periodically visited the second Red Cloud Agency, too.[39] In the early years, missionaries made few converts and effected little change in other aspects of the Siouan lifeways.[40]

The new Indian agencies put other non-government Euro-Americans in contact with the Lakota on a more regular basis. In many circumstances, Euro-American men married one or more Lakota women and chose to live with them at or near the agencies.[41] These men may have come from a variety of places and backgrounds, but most worked in a frontier business involving a fairly solitary life. Occupations included Indian traders, ex-cavalry, cattle herders, and woodcutters.[42] In general, the men provided some services of use to the Sioux outside of their family obligations. Mixed-blood families frequently offered advice about how to deal with Euro-Americans, translated Lakota to English and vice versa, and provided loans or gifts to families less able to take care of themselves.[43] Certainly, these marriages were critical to the inclination of mixed-blood families to settle near the agencies rather than pursue the traditional nomadic hunting lifeway.

Despite these numerous programs, the US government's plan to tie the Lakota to specific locations as an early step toward assimilation was generally unsuccessful. Less than half of the Sioux settled near the agencies, and those who did were often of mixed descent, and were frequently more docile than their full-blooded counterparts.[44] The latter remained dedicated to a nomadic lifestyle of hunting buffalo and other game, a lifeway not possible in a comparatively small area adjacent to an agency. As buffalo became more scarce, families had to travel more widely to obtain sustenance and spiritual well-being, even as early as 1873.[45]

After a brief period of relatively few violent confrontations between the Lakota and Euro-Americans, a new crisis loomed, involving Euro-American incursions into the Black Hills, and resulting in the Sioux Wars of 1876. As early as March 1872, the US Army began warning Euro-Americans that the Black Hills were off-limits to non-military exploration, prospecting, setting, and the like. The Black Hills were the heart and soul of the Great Sioux Reservation and of supreme spiritual value.[46] Although there had been no actual gold discovery at that time, the unsubstantiated but believable reports of gold

found in and near the Black Hills made miners confident of the metal's presence. "Insistent and increasing agitation" prompted another military warning to would-be trespassers.[47]

At this same time, the US government realized that the provision of the Laramie Treaty that allowed the various Lakota tribes to wander freely, even into the Powder River country west of the Great Sioux Reservation, was not the solution it had been seeking. Agency personnel had not been able to usurp the power of Lakota chiefs Red Cloud and Spotted Tail with its rations program at the agencies.[48] Anticipating a conflict ahead and at the same time actually hastening it, General Sheridan, commander of the military's Division of the Missouri, decided that the Army needed to establish a large post in the Black Hills. In June 1874, Lieutenant Custer was ordered to make an expedition to that country. Leading a large contingent of US cavalry and infantry, Indian scouts, scientists, newspapermen, and prospectors, Custer concluded the expedition with no report of a preferred location for the military post. Instead, the most notable and immediate "report" was that gold had been found in French Creek toward the south end of the Hills near present-day Custer.[49]

The resulting rush of Euro-American trespassers in late 1874 and 1875 overwhelmed both the military and the Lakota. Troops stationed at Forts Randall, Sully, and Laramie were sent to oust miners where they had been reported, and scouted areas such as Wounded Knee and Porcupine Tail Creeks where they might be passing. While removing many trespassers from the Great Sioux Reservation, the military rarely detained or otherwise punished them, other than by destroying their wagons and contents in a few cases. Presumably, the more determined prospective miners still entered the Black Hills, perhaps following a slightly different route. The Lakota set up road blocks on two roads which led to the hills from the south; their success is not documented.[50]

When a grand council of tens of thousands of Lakota and their allies convened near the second Red Cloud Agency in October 1875, US negotiators wanted to either lease or buy the Black Hills and expected the northern bands of the Lakota to relinquish any claim to the "Wyoming Big Horn country" in the bargain. Both Lakota and US parties left in anger and frustration without an agreement. The US Army thereafter refused to actively work to keep Euro-Americans from entering the Black Hills, although it also did not provide any military protection for trespassers.[51]

By the spring of 1876, the Black Hills community of Custer boasted a population of 6,000, with another 4,000 people spread elsewhere across the Black Hills. Many miners traveling from eastern points reached the Black Hills via Wyoming, while others headed west through the Great Sioux Reservation from Fort Pierre. One promoter had plans for a more direct route to the Black Hills for those traveling up the Missouri River. Charlie Collins' proposed the Brule City (near Chamberlain)—Badlands Trail. The trail, which presumably followed the White River for much of its course, was used only a handful of times in 1875 and 1876, initially because the US Army evicted users and later because the Lakota did.[52] One party even planned to run a stage route over the trail, but the report that six miners from Iowa had been killed by Lakota warriors "somewhere in the

Badlands" ended any real interest in the trail.[53] Almost certainly the Badlands clash between Lakota and miners was one of several during those frantic days of the initial Black Hills gold rush. Even into 1877, small numbers of Indians raided Black Hills settlements, prompting Lawrence County at the north end of the Hills to offer a bounty on any Lakota found in the county, brought in dead or alive.[54]

The refuge of the Great Sioux Reservation had been shattered, leaving the Lakota angry and vengeful. Retiring mainly to the Big Horn and Powder River country, the Indians were prepared for a major military confrontation. The resulting Sioux Wars of 1876 in what is now eastern Montana (see previous chapter) ultimately ended not only their claim to the Black Hills, but also to all lands to the north and south.

The Great Sioux Reservation, 1877-1889

The reduced Great Sioux Reservation, whose west border was set at the 103rd meridian (roughly even with the west edge of the present-day Pine Ridge Reservation) during post-surrender negotiations in 1877, was still quite large, but the Sioux could not really take full advantage of the breadth of the land. Individual families were now forced to live near one of the new agencies. Specifically, in spring 1878 the Oglalas were sent to the fourth Red Cloud Agency, now the Pine Ridge Agency, and Spotted Tail's bands of Brule were sent to the Rosebud Agency.[55] There were 7,300 Oglala and 500 Cheyenne Indians assigned to the Pine Ridge site and 4,000 Upper Brule to the Rosebud site.[56] Expected to settle at the new, permanent agencies, the Sioux did so, more or less, although hunting parties, visiting, and generalized travel were not uncommon. The Lakota also checked for trespassers, turning them away if possible or demanding payment for use of their land.[57]

US military presence on the reservation faded as face-to-face contact grew between the Indians and Euro-American government workers, businessmen, missionaries, settlers, and travelers. The most obvious change was the strong control and authority wielded by agency superintendents beginning in the late 1870s. This control reached all aspects of Lakota society from subsistence, housing, education, language, governance, and religion, to personal freedom. Agency officials employed a range of mechanisms to hasten Sioux acculturation. Considered cruel by today's standard, they also were generally ineffective in the short term in forcing Lakota assimilation and acculturation.

Prohibited from hunting for game wherever it might be found, "…the Sioux subsisted almost entirely on government dole…."[58] In fact, there were practically no buffalo left to hunt, and the last the Lakota killed was in November 1883.[59] Indian farming was almost entirely non-existent, a situation attributed to both the Lakota's disinclination toward the work and environmental adversities (such as aridity, poor soil, and short growing season). Initially, the Sioux resisted becoming farmers because of the stigma of subservience, a fear of a reduction in rations, and "wanderlust." Then, in the late 1880s and into 1890, all farming in western South Dakota was plagued by drought, grasshoppers, and hail; most years ended in crop failure.[60]

Two good economic opportunities did present themselves for a small number of Lakota, however. In 1884, some Pine Ridge Indians went into the freighting business, delivering goods from the Missouri River to the Pine Ridge and Rosebud Agencies and to the Black Hills they had once controlled. This offered the Lakota the chance for regular travel (simulating their former nomadic existence), plus independence and cash for items not provided as rations.[61] Those Indians who worked off the reservation had more frequent contact with Euro-Americans, although perhaps not of any more congenial nature.

The other opportunity for work that some Sioux accepted was livestock production. This activity actually was encouraged on two fronts, by Euro-American cattlemen who married Lakota women and by agency government personnel who found the work to be well-suited to the reservation environment. Although the record is unclear, it seems that some cattle, probably in small numbers during the late 1870s and early 1880s, ranged on the south end of the Great Sioux Reservation near Pine Ridge. These herds, along with cattle herds distributed directly to the Sioux by the government, grew to be quite large during the ensuing 25 years.[62]

The new order on the reservation meant that traditional Indian chiefs were stripped of their power, and influenced by means of a handful of effective methods. First, rations were distributed to families rather than through the chiefs and in some cases were withheld if the chiefs countermanded the agency superintendent. Second, "non-progressive" chiefs, such as Red Cloud and Spotted Tail, were displaced by either "progressive" chiefs or others who rose to prominence under encouragement from the agency superintendent. Third, Indian police, primarily former warriors, were organized at the behest of the superintendent, and meted out punishment without particular attention to the chiefs' wishes. Lastly, families were strongly encouraged to spread out across the landscape on their land allotments. The tribal encampment or grand circle no longer met seasonally and chiefs could not readily communicate with the scattered family units.[63]

Under the threat of withheld rations, the Lakota sent their school-aged children to out-of-state boarding schools, most notably the Carlisle Indian Industrial School in Pennsylvania, and, beginning in 1880, to reservation day-schools run by the government.[64] In both situations, they were raised without regard to their Sioux heritage. Teaching, accomplished solely in English, was strongly "devoted to industrial training, agriculture, and housekeeping,"[65] and discipline on the reservation was measured out by corporal punishment, confinement in jail, and military-like drills.[66]

The first six-day schools, established in 1880 and 1881, were set-up in scattered camps within 40 miles of the Pine Ridge Agency; attendance at each school varied between 12 and 20 students, and by 1882 about 200 children were enrolled. In late 1883, a government-run boarding school opened at the agency. Within two years, 600 Indian children attended schools on the Pine Ridge district of the reservation, although they were "from bands opposed to Red Cloud and…against Red Cloud's advice."[67]

Regarding their spiritual lives, the Sioux were forced to abandon dancing and other "pagan customs." The superintendent of the Pine Ridge Agency forbade the Sun Dance

after 1881.[68] Catholic and Protestant missionaries of all denominations were allowed, even encouraged after that date, to open multiple chapels across the entire reservation.[69] They promoted a belief in Christ to the exclusion of Spirits and multiple deities that had formerly been the core of the Lakota belief system. Between 1880 and 1887, the Episcopalian Church built a total of nine chapels in the Pine Ridge district alone.[70] Although the Catholic Church did not have the personnel and funding for construction early on, one priest preached to the Oglala in 1884, baptizing a relatively small number of them.[71] There is some disagreement about the effectiveness of these early conversion efforts. One source stated that the Lakota were generally indifferent to the new religions that the Euro-Americans promoted,[72] while another found that the missionaries "made good progress."[73] The latter source noted the special relationship between missionaries and Lakota church attendees, writing that "…the church was about the only place on the reservation where the Indian found himself actually treated as an equal by white men."[74]

Contact with Euro-Americans living adjacent to the reservation often proved counter to the wishes of government personnel. Crimes committed against individuals or the group as a whole included the sale of whiskey, rape, and the stealing of wood, horse, and cattle. The Indian police reportedly did evict criminals, but these crimes were rarely prosecuted, especially since agency personnel had no policing authority off-reservation.[75]

The October 1876 agreement by which the Black Hills were removed from the Great Sioux Reservation (ratified by Congress in February 1877) allowed for up to three roads to be built across the reservation. The Dakota Territory appropriated $3,000 each for road survey and improvement. [76] The Fort Pierre–Deadwood Road became the most heavily used of the three. The Merchants Transportation Company, which a Yankton mercantile had organized in April 1876, employed 300 men in its freight and passenger business on the Fort Pierre route by 1880. The Northwestern Express and Transportation Company was a heavy user of the second road, between Bismarck and Deadwood. Receiving much of its freight via the Northern Pacific Railway, it provided passenger, freight, and mail service from April 1877 until late 1880. After that time, the route was rarely used because rail service, in the form of the Chicago & North Western Railroad, had reached Fort Pierre, and the Fort Pierre road was considerably shorter than the Bismarck road. [77]

The third road, the Chamberlain to Rapid City road, also served the Black Hills, but primarily in 1882 and not at all after 1886**.** That road passed through the Badlands, rather than north of them as the other two did, and it was disagreements with the Lakota that ultimately forced abandonment of the route by major freighters. The Chamberlain Road followed the course of the White River for about 50 miles of its total 219-mile length. It offered the advantage over the Fort Pierre route by having fewer hills and more pasture and water, but the disadvantage of being 40 miles longer. Because the Chamberlain Road cut through the Great Sioux Reservation, its development was dependent on a use agreement with the Sioux. Officials with the Chicago, Milwaukee, & St. Paul Railway negotiated that agreement in 1881, after their Assistant Chief Engineer F.W. Kimball had surveyed the best rail route between the Missouri River and the Black Hills during the previous summer. The Chamberlain Road was built on that surveyed rail route.

Freighter Fred Evans made several improvements to the Chamberlain Road between its namesake and the west edge of the reservation, including construction of six way stations. He completed the work by the spring of 1882. Although heavily used by Evans and other freighters that year, disagreements with Lakota ended significant use of the route by the end of the freighting season. Freighters who did not stay within the negotiated 200-foot right-of-way through the reservation ran the risk of losing their oxen to the Sioux due to trespass. Smaller freighting outfits used the road and its way stations between 1883 and 1886, occupying the stations, including one in the Badlands at the future site of (old) Interior. All freighters abandoned the road when in 1886 the Fremont, Elkhorn & Missouri Valley Railroad reached Rapid City from the south without passing through the Great Sioux Reservation.[78]

As early as the late 1870s when the Lakota were moving to their respective agencies, stockmen were herding cattle to Dakota Territory from Texas and Kansas. Although interested in supplying Black Hills communities with beef, cattlemen were more attracted by the good grasslands that lay from the Black Hills to the eastern boundary of the Great Sioux Reservation, and their value for fattening their herds for sale elsewhere. The new range was almost fully stocked by 1880; in fact, members of the Black Hills Livestock Association reported about 264,000 head in the winter of 1881-1882.[79]

As the range filled with cattle, stockmen viewed the large, mostly "unused" Great Sioux Reservation with interest. "The constant search by the cattle industry for new pasturage was an important factor in the agitation for reduction of the Great Sioux Reservation during the eighties."[80] Additionally, the Great Sioux Reservation formed a wide barrier between the Black Hills and the rest of the Dakota Territory, much to the inconvenience of Black Hills residents. As noted above, a few well-used wagon roads—from Fort Pierre, Bismarck, and Chamberlain—crossed the reservation, but there was no rail transportation. The only railroad to serve the Black Hills was the Fremont, Elkhorn & Missouri Valley (later Chicago & North Western).[81] The reservation barrier also frustrated East River businessmen. Because agricultural land east of the Missouri River was being quickly claimed, and shortly would be completely occupied, entrepreneurs looked to the Black Hills and points between for opportunities for continued business expansion.[82]

The wheels had been set in motion for a reduction of the Great Sioux Reservation as early as 1882 when the Edmunds Commission crafted an agreement to create five smaller reservations while allowing heads of Lakota households 320-acre allotments. Never legally approved by the Lakota, the agreement was dropped.[83] The US Congress continued to seek measures to secure reservation reduction, and ultimately accomplished it by the passage of three acts in 1887-1889. The first was the General Allotment Act or Dawes Act of 1887. Intended to be applied to all Indian reservations, the Act awarded 160-acre allotments and subsequently disposed of unallotted parcels. The Sioux Act of 1888, which was designed to break up the Great Sioux Reservation, created six smaller reservations, and *then* was to allot lands on each smaller reservation "at a leisurely pace." Other provisions included establishment of a permanent $1 million fund for education and "advancement," plus the mechanics and price for homesteading ceded lands.

Actually the reverse of the process outlined by the Dawes Act passed just months before, the 1888 proposal failed to be approved by three-fourths of the Lakota adult men. One year later, Congress authorized the Crook Commission, lead by General George Crook who had been a Sioux fighter years before, to negotiate a decidedly more generous agreement with the Sioux and thereby obtain the needed signatures. Crook made several promises to the Sioux in an attempt to address some of their "deeply rooted suspicion[s]." Ultimately, the required majority of the Sioux approved the terms of the Sioux Act of 1889.[84]

The promises not included in the act, and promises included in the Act but then broken or unfulfilled, proved to be fuel for the Ghost Dance fire that would soon sweep the Sioux reservations (see previous chapter). Among the promises were no cut in rations, yet just two weeks later such a cut took place. The commission also had led the Sioux to believe that there would be more preferences for Indian hires at the agencies, construction of grist mills, removal of the ban on certain dances, increase in the education appropriation, and prompt availability of interest on the $3 million permanent fund.[85] It seems that none of these promises were acted on for at least two years.

The Pine Ridge Reservation Sioux and Their Neighbors (1890-1910)

On February 10, 1890, President Harrison opened the ceded Indian territory. Aside from the possibility of free travel and large tracts of unclaimed rangeland, the opening of the former Great Sioux Reservation had little immediate effect on railroad transportation, homesteading, and other anticipated Euro-American occupations. The Chicago & North Western and Chicago, Milwaukee, & St. Paul Railways did not extend their lines west of the Missouri River until 1905 and 1907, respectively.[86] Until land surveys could be made, new settlers, of which there were understandably few, lived as squatters. Most of the initial Euro-American settlers never made it as far as the Badlands area.

Off-reservation interactions between the Lakota and new settlers in the ceded territory, and particularly along the White River, were a far cry from the hostilities that characterized Indian and American relations just 15 years earlier. One White River rancher diary gives some clues to the relationship of the Lakota and their new neighbors in 1890 and 1891. Euro-American settlers, more properly identified as cattlemen rather than homesteaders, were scattered along the river sometime in clumps of three or four ranches along a short stretch of the river. The new arrivals would see the Lakota, often from some distance, simply observing them with curiosity but caution. Unable to communicate directly because of the language barrier, conversations were short and primitive. Because the Pine Ridge Agency was a relatively close supply/trading post and for a brief time the nearest post office, Euro-American settlers traveled through the new reservation on several occasions, and often stayed with Lakota families for shelter along the way. Again, visits were short and generally amiable.[87]

This relationship changed for a short period at the end of 1890. In the fall and winter of 1890 to 1891, the Pine Ridge superintendent called for federal troops in anticipation of a

Lakota uprising. The flight of 6,000 Lakota to the Badlands, the death of Sitting Bull at the Standing Rock Reservation, and the rising number of Ghost Dancers on the Pine Ridge Reservation, led many Euro-Americans in the Badlands/Black Hills area to become alarmed, suspicious, and afraid. They armed themselves, either with their own rifles or with those sent by the South Dakota governor, for a confrontation with the Sioux headed to the Pine Ridge Reservation for the Ghost Dance. Many Euro-Americans barricaded themselves in defensible buildings, while others, recognizing some of the more sensational reportings as fiction, were cautious, but elected to continue with their ranching chores as the Ghost Dance drama unfolded.[88]

The massacre of Chief Big Foot and his Minneconjou followers at Wounded Knee held the settlers' interest and pity, but only briefly.[89] Afterwards, some travelers "…especially on the Pine Ridge Reservation, reported that the Indians were restless and seemingly ready for an outbreak in the spring,"[90] but one resident on the White River reported no such restlessness. In early 1891, White River settlers saw isolated Indian families traveling downriver as hunting parties, or looking to "trade" at the small Euro-American store at the Lodge post office. These Indians they greeted as briefly and sincerely as they had other Lakota prior to the debacle.[91]

Following the Wounded Knee Massacre, the Lakota at the Pine Ridge Reservation gradually began to embrace several of the more palatable changes agency personnel had been pushing for years. At the same time, the agency personnel perhaps became more realistic about the options available to the Lakota for survival, and they tolerated some practices that incorporated Lakota traditions and interests with government directives.

An example of the compromise relates to health care. The health of the Lakota had become of grave concern to Euro-Americans, and well it should have. Tuberculosis killed almost one-fifth of the population on the Pine Ridge Reservation between 1896 and 1906. Sedentism and the permanent housing in which the Sioux were made to live had exacerbated the spread of the disease. In 1896, the government hired Dr. James R. Walker to work at the Indian Service hospital. Walker's efforts focused on the treatment of tuberculosis. This he accomplished in part by employing psychological methods he learned by observing Lakota medicine men, while instructing the Indians in ways to prevent the spread of the disease.[92]

In addition to medicine men continuing to care for the Sioux people, another aspect of Lakota culture that remained intact during the first 20 years of the Pine Ridge Reservation was the collection of wild plants. Some Lakota people were allowed to travel off-reservation to gather plants in traditional collecting areas. On at least two occasions in 1903, the Pine Ridge Agency superintendent signed weeks-long passes to small groups who wished to collect plants in the Black Hills. The Lakota used this opportunity to also hunt antelope and small game, although not with the express permission of the superintendent. Although the 1903 passes ended in tragedy in Wyoming, passes for traditional plant gathering, for both spiritual and medicinal purposes, may not have been uncommon at the turn of the twentieth century.[93]

Reservation churches expanded their programs considerably during this period. While the Episcopalians had initiated much of their church building prior to 1890, the Catholic missionaries began work in the following two decades. The Catholic Church had long been eager to work with the Lakota on the Pine Ridge Reservation. In September 1877, Red Cloud specifically requested that the Jesuit assist his people in the new life the chief knew was ahead of them. However, it was not until 1888 that the church completed the Holy Rosary Mission, a boarding school built on White Clay Creek at Calico. The school quickly became an alternative to government-run schools. The church building at the mission was not completed until 1898. Within the following 12 years, another nine Catholic churches were built or occupied at communities across the reservation, namely, Allen, Kyle, Manderson, No Water, Pine Ridge Agency, Potato Creek, Slim Buttes, Wanblee, and Wounded Knee.[94] The Presbyterian Church also established a mission on the Pine Ridge reservation, but specifics in the period to 1910 are unknown.[95]

The small communities that developed along the White River in the 1890s, of which there were several, came to serve both Lakota and Euro-American customers regularly. One example was Black. First occupied in 1882 as a way station on the Chamberlain–Rapid City Road, the site was abandoned in 1886. In the spring of 1890, way station tenders George and Louis Johnson returned as settlers. Other Johnson family members joined them there, and the place grew to include a post office in 1891. Black came to be an early shopping center for the Sioux who lived in the Wanblee and Potato Creek areas of the Pine Ridge Reservation. The Indians also received their mail there. The Black name was changed to (old) Interior in 1894.[96]

As formal land surveys of the former Great Sioux Reservation were completed, and more importantly the Chicago, Milwaukee, and St. Paul and Chicago & North Western Railways were extended through the Badlands in 1907, contact between Euro-American homesteaders and Lakota Indians on the north end of the Pine Ridge Reservation became even more frequent and routine. Livestock was often the common denominator in those relationships. The settlers' livestock regularly crossed the White River to the reservation side because of the superior grass, but often were retrieved in short order. Some cattle and horses belonging to larger operations such as the U+ Cattle Company and the 73 Company were intentionally grazed on the reservation, apparently under a fee arrangement. In those circumstances, the amount of contact between Euro-Americans and Indians is uncertain, but presumably it was minimal due to the type of work. Contact may have been limited to overnight stays.[97]

The problem of large numbers of cattle drifting onto the Pine Ridge Reservation from places as far away as Montana during winters in the 1890s was partially addressed beginning in 1897 by charging a grazing fee. The problem of many unbranded (therefore unidentifiable) cattle on the range continued. In 1902, the reservation held a roundup, with all unbranded cattle becoming the possession of a volunteer crew of Lakota. After 1902, the Lakota fenced the north edge of the Pine Ridge Reservation using Indian labor, and hired Lakota fence riders for repairs.[98]

At the same time the first "settlers" moved to the White River and began cattle operations, the Lakota began to embrace the business of cattle raising, and they turned out to be quite skilled; "…the Pine Ridge Dakota became steeped in the life of the cowboy…" during this period.[99] In just over 25 years, from 1885 to 1912, the Lakota cattle herds quadrupled in size.[100] "As ranchers, Lakotas gained more of the roping, riding, and wrestling skills that they would…display in [rodeo] competition."[101] Fairs, including rodeos, began to be organized and gained in popularity during the period from 1905 to 1910.[102] In addition to their large cattle herds, the Lakota retained the tradition of owning many horses.[103] They continued to raise good-quality horses in large numbers until World War I. Some that they raised were sold to the US Army at very good prices.[104] Finally, to support their large herds, the Lakota were actively engaged in hay production.[105]

Over the years, a few mixed-blood families developed livestock operations of state-wide significance. For example, the Open Buckle Ranch at the north end of the reservation at one time covered tens of thousands of acres both on- and off-reservation. Gus and Jessie Craven, he a cattleman of Irish heritage and she a "part Indian" native of Denver, raised a large herd of cattle that garnered top dollar in Midwestern markets before World War I. They apparently supplemented the family's income by working for the Indian Service as farmer and teacher at Kyle.[106]

Cattle raising supplanted crop and vegetable production as the focus of Lakota agricultural pursuits. The government hired "boss farmers," who instructed the Lakota on proper agricultural practices, and one can only assume they also focused on cattle. Located near the larger communities including Pine Ridge, Allen, Manderson, Kyle, and Porcupine, the Euro-American farmers no doubt were integral to helping the Lakota make their operations work on their small allotments.[107]

While there was widespread recognition that small allotments were not suitable for farming or even livestock raising, the US government moved forward with its mission to allot lands on the Pine Ridge Reservation. Each head of a Lakota family received 640 acres, and his wife and children over 18 years of age (as of July 29, 1904) received 320 acres. Younger children received 160-acre allotments. The first allotments on the Pine Ridge Reservation date to 1904, and within a few years even the non-progressive Lakota were selecting their parcels. Most eligible Lakota had chosen their tracts by 1916.[108] Although the Sioux were allowed to lease their allotments under special circumstances, leases to Euro-American cattlemen during these earliest years of the Pine Ridge Reservation were very rare.[109] Most Sioux apparently used the grass on the allotments for their own herds.

By 1910, the Lakota on the Pine Ridge Reservation were 30 years removed from their nomadic life on the Northern Plains. Their reservation lands were in the process of being allotted and many families had embraced the business of cattle raising which they had learned from government employees and off-reservation cattlemen. Within a short time, rations would be reduced to minimal amounts.[110] Their children regularly attended school, where they became steeped in Euro-American culture in everything from English

to hygiene, cleanliness, obedience, and agriculture. More and more Lakota attended church at one of almost two dozen Episcopalian, Catholic, and Presbyterian churches across the reservation. Some traditions continued in the home, such as speaking Lakota, seeking the help of medicine men, and collecting wild plants for religious or ceremonial purposes, but these formed a fairly small part of the emerging Lakota culture. Meanwhile, two railroads had penetrated the Badlands area, immediately north of the reservation. Homesteaders were staking claims there, and finding out first-hand how ill-suited the land was to farming on small plots. Most gave little thought to the events that had transpired before their arrival. The Lakota, for their part, were considered curiosities, cautious neighbors, and expert horsemen on the rare occasions when the new settlers saw them.

[1] Schell, *History of South Dakota,* 24-25.
[2] Ibid., 25-26.
[3] Ibid., 26-27; Sheire, *Badlands Historical Basic Data Study,* 18.
[4] Schell, *History of South Dakota,* 27-28.
[5] Ibid., 28-29; W. Raymond Wood, "An Introduction to the History of the Fur Trade on the Northern Plains," *North Dakota History: Journal of the Northern Plains* 61, no. 3 (1994): 2.
[6] Schell, *History of South Dakota,* 30*;* Karolevitz, *Challenge, The South Dakota Story,* 18.
[7] David J. Weber, "The Spanish-Mexican Rim," in *The Oxford History of the American West,* eds. Clyde A. Milner, II, Carol A. O'Connor, and Martha A. Sandweiss (New York: Oxford University Press, 1994): 60.
[8] Wood, "The Fur Trade on the Northern Plains," 2.
[9] Schell, *History of South Dakota*, 31-32.
[10] Ibid., 32-35; Sheire, *Badlands Historical Basic Data Study,* 19-20; Karolevitz, *Challenge, The South Dakota Story,* 20.
[11] Schell, *History of South Dakota*, 34-35.
[12] Ibid., 24, quotes in A. P. Nasatir, ed., *Before Lewis and Clark—Documents Illustrating the History of the Missouri, 1785-1804* (St. Louis: St. Louis Historical Society Documents Foundations, 1952): I, 218.
[13] David J. Wishart, *The Fur Trade of the American West: 1807-1840* (Lincoln: University of Nebraska Press, 1979): 18-20.
[14] Ibid., 42-45; Schell, *History of South Dakota,* 51-52.
[15] Schell, *History of South Dakota*, 52-53; Wishart, *The Fur Trade of the American West*, 48.
[16] Schell, *History of South Dakota*, 53-54; Wishart, *The Fur Trade of the American West,* 50; Sheire, *Badlands Historical Basic Data Study*, 23-4.
[17] Wishart, *The Fur Trade of the American West,* 10, 81.
[18] Ibid., 54; Schell, *History of South Dakota*.
[19] Schell, *History of South Dakota*, 54-55.
[20] Donald Jackson, *Voyages of the Steamboat Yellow Stone* (Norman: University of Oklahoma Press, 1985), 111.
[21] "Chouteau Trading Post," at Chouteau Trading Post & The Museum of Stone Age Tools website, http://www.stoneagetools.net (accessed December 13, 2005).
[22] Hall, *Reflections of the Badlands*, 8-9.
[23] William E. Lass, "The History and Significance of the Northwest Fur Company, 1865-1869," *North Dakota History* 61, no. 3 (1994): 21-2, 30-31.
[24] Ibid., 28; "Chouteau Trading Post."
[25] Lass, "Northwest Fur Company ," 23, 27-8.
[26] Schell, *History of South Dakota*, 70-2, 77.
[27] Ibid., 66-7; Sheire, *Badlands Historical Basic Data Study*, 56, 58; Hall, *Reflections of the Badlands*, 8; Robert G. Athearn, *Forts of the Upper Missouri* (Lincoln: University of Nebraska Press, 1967), 50.
[28] Shuler, *A Revelation Called the Badlands*, 14-15.
[29] Fielding B. Meeks, "Journal of a Trip to Nebraska Territory in 1853," MS on file at Smithsonian Institution, cited in Sheire, *Badlands Historical Basic Data* Study, 94, 113, 121, 124.

[30] Schell, *History of South Dakota*, 78-80, 84.
[31] Ibid., 80-2.
[32] Ibid., 88-9.
[33] Mattison, "Indian Reservation System," 145.
[34] Utley, *Last Days of the Sioux Nation*, 41.
[35] Mattison, "Indian Reservation System," 157-8.
[36] Ibid., 146-7.
[37] Ibid., 148; Bob Lee and Dick Williams, *Last Grass Frontier: The South Dakota Stock Grower Heritage* (Sturgis, SD: Black Hills Publishers, 1964), 28-9.
[38] Dakota Territory Centennial Commission, *Dakota Panorama*, 182-3; Nancy J.Hulston, "Federal Children: Indian Education and the Red Cloud-McGillicuddy Conflict," *South Dakota History* 25, no. 2 (1995): 84.
[39] Dakota Territory Centennial Commission, *Dakota Panorama*, 183; "History of Red Cloud," at Red Cloud Indian School website, http://redcloudschool.org (accessed December 9, 2005).
[40] Utley, *Last Days of the Sioux Nation*, 21.
[41] See, for example, Lee and Williams, *Last Grass Frontier*, 23; JoAllyn Archambault, "A Man of Two Worlds: Joseph Archambault," *North Dakota History* 68, no. 2 (2001): 24. There reportedly were 100 such men at Whetstone: Richmond Lee Clow, "The Brule Indian Agencies: 1868-1878," *South Dakota Department of History Report and Historical Collections* 36 (1972), 165.
[42] Archambault, "A Man of Two Worlds," 24; Lee and Williams, *Last Grass Frontier*, 23, 41; Nellie Cuny, interview with Mitzi Rossillon, tape recording, 27 January 2005.
[43] Archambault, "A Man of Two Worlds," 25.
[44] Schell, *History of South Dakota*, 91, 126.
[45] Smith, *Moon of the Popping Trees*, 53.
[46] Schell, *History of South Dakota*, 125.
[47] Ibid.; Karolevitz, *Challenge: The South Dakota Story*, 102; John D. McDermott, "The Military Problem and the Black Hills, 1874-1875," *South Dakota History* 31, nos. 3-4 (2001): 189.
[48] Utley, *Last Days of the Sioux Nation*, 21.
[49] Schell, *History of South Dakota*, 126-8.
[50] Ibid., 129-132; McDermott, "The Military Problem and the Black Hills," 198, 201-2; Hall, *Reflections of the Badlands*, 30.
[51] Schell, *History of South Dakota*, 129-32.
[52] Ibid., 141, 143; Hall, *Reflections of the Badlands*, 31-2.
[53] Hall, *Reflections of the Badlands*, 32.
[54] Schell, *History of South Dakota*, 143-4.
[55] Ibid., 139.
[56] Utley, *Last Days of the Sioux Nation*, 20.
[57] Hall, *Reflections of the Badlands*, 40-44, 79.
[58] Utley, *Last Days of the Sioux Nation*, 23.
[59] Macgregor, *Warriors Without Weapons*, 32.
[60] Utley, *Last Days of the Sioux Nation*, 23-4.
[61] Ibid., 26.
[62] Ibid., 25; Lee and Williams, *Last Grass Frontier*, 23.
[63] Utley, *Last Days of the Sioux Nation*, 26-29.
[64] Macgregor, *Warriors Without Weapons*, 35, 37; Hulston, "Federal Children," 85, 90.
[65] Macgregor, *Warriors Without Weapons*, 36.
[66] Ibid.
[67] Hulston, "Federal Children," 85-7, 91-2; quote, reproduced on p. 92, is from Agency Superintendent McGillicuddy in his correspondence to Commissioner of Indian Affairs John DC Atkins, 15 September 1885.
[68] Macgregor, *Warriors Without Weapons*, 32.
[69] Utley, *Last Days of the Sioux Nation*, 33; Robert W. Galler, Jr., "A Triad of Alliances: The Roots of Holy Rosary Indian Mission," *South Dakota History* 28, no. 3 (1998): 157.
[70] Dakota Territory Centennial Commission, *Dakota Panorama*, 183.

[71] Galler, "A Triad of Alliances," 158.
[72] Macgregor, *Warriors Without Weapons*, 37.
[73] Utley, *Last Days of the Sioux Nation*, 33.
[74] Ibid., 34.
[75] Mattison, "Indian Reservation System on the Upper Missouri," 163; Mark R. Ellis, "Reservation *Akicitas*: The Pine Ridge Indian Police, 1879-1885," *South Dakota History* 29, no. 3 (1999): 187.
[76] Hall, *Reflection of the Badlands*, 32.
[77] Schell, *History of South Dakota*, 154-5.
[78] Hall, *Reflections of the* Badlands, 37-45, 79-80.
[79] Schell, *History of South Dakota*, 156, 243.
[80] Ibid., 247.
[81] Karolevitz, *Challenge: The South Dakota Story*, 126, 132, 192.
[82] Paula M. Nelson, *After the West Was Won: Homesteaders and Town Builders in Western South Dakota, 1900-1917* (Iowa City: University of Iowa Press, 1986), 9.
[83] Purcha, *The Great Father*, 213.
[84] Ibid., 214-5; Utley, *Last Days of the Sioux Nation*, 51, 53.
[85] Utley, *Last Days of the Sioux Nation*, 54-6.
[86] Karolevitz, *Challenge: The South Dakota Story*, 132.
[87] Schell, *History of South Dakota*, 247; Charles Lowell Green, "The Administration of the Public Domain in South Dakota," *South Dakota Department of History Collections* 20 (1940), 162; Thomas R. Buecker, editor, "'The even tenor of our way is pursued undisturbed': Henry P. Smith's Diary during the Ghost Dance Movement, 1890-1891," *South Dakota History* 34, no. 3 (2004): 202-3, 206-7, 230-2; Hall, *Reflections of the Badlands*, 103, 132.
[88] Buecker, "Henry P. Smith's Diary," 209-213; Karolevitz, *Challenge: the South Dakota Story*, 198-200; Hall, *Reflections of the Badlands*, 58-64.
[89] Buecker, "Henry P. Smith's Diary," 224.
[90] Utley, *Last Days of the Sioux Nation*, 284-5.
[91] Buecker, "Henry P. Smith's Diary," 226-232.
[92] Don Southerton, "James R. Walker's Campaign against Tuberculosis on the Pine Ridge Indian Reservation," *South Dakota History* 34, no. 2 (2004): 107, 113, 117-8.
[93] Lee R. Boyer, "Conflict over Hunting Rights: Lightning Creek, 1903," *South Dakota History* 23, no. 4 (1993): 302-3, 312.
[94] Galler, "A Triad of Alliances," 156; "Spiritual Life" and "History of Red Cloud," at Red Cloud Indian School website, http://redcloudschool.org, (accessed December 9, 2005).
[95] Big Foot Historical Society, R*eservation Roundup* (Shannon County, SD: n.d.), 11.
[96] Hall, *Reflections of the Badlands*, 84-5, 103-5, 110.
[97] Ray S. Paulsen, untitled manuscript, 2, on file, attached to transcription of John Paulsen interview, Oral History Collection, Badlands National Park, Interior, SD.
[98] Macgregor, *Warriors Without Weapons*, 37; Hall, *Reflections on the Badlands*, 137-8, 140.
[99] Macgregor, *Warriors Without Weapons*, 38.
[100] Ibid.
[101] Allison Fuss, "Cowboys on the Reservation: The Growth of Rodeo as a Lakota National Pastime," *South Dakota History* 29, no. 3 (1999): 214.
[102] Ibid. 215, 217.
[103] Ellis, "Reservation *Akicitas*," 193.
[104] MacGregor, *Warriors Without Weapons*, 39; Hall, *Reflections on the Badlands*, 151.
[105] Maude Olney, "Light on the Badlands," *South Dakota Department of History Report and Historical Collections* 33 (1966), 499.
[106] Nauman, *Vanishing Trails Expedition*, 43-4.
[107] Big Foot Historical Society, *Reservation Roundup*, 11, 15.
[108] Macgregor, *Warriors Without Weapons*, 38; Boyer, "Conflict over Hunting Rights," 319-20; Big Foot Historical Society, *Reservation Roundup*, 11.
[109] Green, "Public Domain in South Dakota," 36; Macgregor, *Warriors Without Weapons*, 39.
[110] Macgregor, *Warriors Without Weapons*, 39.

CHAPTER SIX

Development and Patterns of Euro-American Settlement in the White River Badlands (AD 1880s-1960s)

CHAPTER 6

DEVELOPMENT AND PATTERNS OF EURO-AMERICAN SETTLEMENT IN THE WHITE RIVER BADLANDS (AD 1880s-1960s)

Introduction

In general, the patterns of Euro-American settlement and development in the American West are broad and well-documented and describe a linked succession of improvements in terms of access, available transportation, land openings, and other economic opportunities. Throughout the region individual geographic areas developed specific settlement histories that reflect local variations in geography, climate, political conditions, and American Indian relations. In the White River Badlands area, several of these factors combined to create a pattern of Euro-American settlement that was relatively late and scattered, and, in some facets, unusually ephemeral. In many ways, it was a unique and compelling scenario.

Portions of the Northern Plains region (the future states of North and South Dakota) were among the last areas of the contiguous United States to see substantial Euro-American settlement; this despite the fact that Americans were aware of the area prior to the Lewis and Clark expedition from 1804-1806. The reasons for this delay were multiple and varied; the area's harsh climate was a contributing factor, as was its remoteness and relative lack of practical, year-round transportation alternatives. In that portion of the region west of the Missouri River, the difficulties of climate were compounded by aridity and relatively poor soil. Cultural issues also played an extremely significant role, since large portions of the area were designated as reservation lands for the indigenous peoples who had lived in the region for centuries. The American Indian presence provided both a legal barrier to significant Euro-American activity in reservation areas, and resulted in the potential for conflict when such uses did take place.

While the physical and environmental obstacles to Euro-American settlement in the Dakotas remained, some of the social and cultural barriers gradually began to disappear during the last half of the nineteenth century. Railways began penetrating eastern Dakota Territory as early as the 1860s, and substantial Euro-American settlement invariably accompanied the construction of new railroad lines. As settlement increased, it brought with it increased pressure for the opening of additional reservation lands for Euro-American use, and many reservations were reduced in size. Increased Euro-American development of former reservation land was encouraged both by the railroads and by the federal government, which enacted a series of homestead laws to draw settlers to the area with the promise of free land.

All of the above events happened in the White River Badlands, though not until the early twentieth century. While the Black Hills gold rush of the 1870s became the focus of much Euro-American attention, the Badlands area remained part of the Great Sioux

Reservation and was largely bypassed. Late nineteenth-century Euro-American ranching operations likewise largely bypassed the area, and it was not until the first decade of the twentieth century that the situation changed dramatically. The Badlands area was opened to white settlement and use, and two railway lines were immediately built across the region. This brought the Badlands much of the same Euro-American settlement and economic activities that had taken place elsewhere in Dakota during previous decades.

The homestead-era settlement history of much of the western Dakotas is relatively brief, and that is particularly true of the White River Badlands. The climate and soils of most of the region proved to be wholly unsuitable for agriculture, and the tenure of most Euro-American settlers on the land was brief. Most settlers moved away from the region in less than two decades, and land ownership became characterized by a few large, consolidated holdings and sparse settlement. Land not privately owned reverted to federal ownership, such as Buffalo Gap National Grassland or Badlands National Monument.

The remainder of this chapter will discuss this settlement evolution in more detail. The first sections will outline pre-settlement (nineteenth century) Euro-American interest in the region, and the limited activities in the area that ensued. Later sections will explore the opening of the region to Euro-American use, the construction of railroads through the area, and the homestead boom that followed. Finally, this chapter will examine the decline of the homestead economy, and briefly discuss the less-intensive Euro-American uses that followed, and that continue today.

Pre-Settlement Euro-American Activity and Interest in the White River Badlands and Western Dakota (to ca. 1885)

In broadest terms, Euro-American settlement patterns in the future Midwestern and Western United States were usually predicated on the development of travel corridors through (or to) a previously-unsettled region. The arrival of a substantial level of settlement depends on the viability and durability of the travel corridor on which it is based. In the overall history of the region, travel routes generally functioned in an east-west direction and extended incrementally westward as time passed, but countless vagaries of area geography resulted in local travel patterns that were far more complex and less structured than broader generalizations might imply.

In Dakota Territory, the path of the Missouri River was arguably the most important single geographic feature, and consequently it became a focus of early Euro-American travel and commerce in the region. The Lewis and Clark expedition used the river as their travel route through Dakota from 1804-06, and for the next four decades the river was the primary focus for the limited Euro-American activity in the region. Commercial activities, such as the fur trade, relied on the river as a means of contact with the more-settled east, but the Missouri's short navigation season and frequently changing river channels limited river traffic in the early years and consequently contributed to the limited Euro-American presence in the Dakotas.[1]

By the 1840s, land-based east-west travel through the Great Plains was undertaken by Euro-Americans on a regular basis, but these travel routes (e.g., Oregon Trail and the Overland Trail) were almost exclusively to the south of what would become Dakota Territory. In much of Dakota, the Missouri actually served as a barrier to east-west travel, since it followed a north-south course through the region and crossing it was both a seasonal and a hazardous undertaking. As Dakota lands east of the river began to be settled during the pre-Civil War decade, the river gradually began to be seen as an outer boundary for that settlement. Some Euro-Americans traveled through the region, and the best-known example is the Fort Pierre–Fort Laramie Trail, which saw heaviest use in the 1840s and 1850s. That route passed through the west-central portion of the Badlands, whereas other travel corridors during this period stayed to the east of the area.[2]

The geographical barrier posed by the Missouri River, though, was only one of several reasons why Euro-American settlement in western Dakota was slow to develop. The local geography of the region played a significant role; broken, arid, and relatively infertile, the land was simply less appealing as a target for agricultural settlement. A second factor was the more inhospitable nature of the land still farther west (Wyoming, and eastern Montana), which lessened the impetus for the development of travel routes through the area. Political and cultural issues, however, were far more prominent and immediate. As noted in Chapters 4 and 5, virtually all of southwestern Dakota Territory remained Lakota land into the 1870s; this greatly restricted Euro-American usage of the land, and barred nearly all white settlement. Reservation boundaries shrank gradually in the last decades of the nineteenth century, making western Dakota more accessible to Euro-Americans, but the area's extreme remoteness and other difficulties discouraged substantial white settlement.[3]

The piecemeal cession of Lakota lands in western Dakota began in 1876, when the Black Hills and far western Dakota Territory were removed from the Great Sioux Reservation, largely as a result of the Black Hills gold rush and the resultant influx of whites to the area. This resulted in a situation where Dakota Territory was home to two distinct areas of Euro-American settlement (East River and the Black Hills); the two regions were separated by a political barrier of Indian-controlled land. The White River Badlands formed the heart of this area.

The rapid Euro-American settlement of the Black Hills and far western Dakota in the 1870s indirectly resulted in a greatly increased interest in the White River Badlands area, as well as the land surrounding the Reservation between the Missouri River and the Black Hills. Much of this attention was a consequence of the new demand for travel routes between eastern Dakota and the mining districts of the Black Hills. Perhaps the greatest perceived need was for a railway line traversing southern Dakota Territory from east to west. By the late 1870s, a number of railroads had been completed in Dakota's "East River" region, and there was substantial interest in the construction of a line westward to the Black Hills. The Great Sioux Reservation remained a barrier that stalled construction at the Missouri River. The region's two major railroads–the Chicago & North Western (the North Western), and the Chicago, Milwaukee & St. Paul (the "Milwaukee Road")–were both greatly interested in constructing east-west lines to the Black Hills, and in 1880

both completed routes westward to the Missouri. The North Western's route extended as far as Pierre, and the Milwaukee served Chamberlain, but neither line was able to progress farther west for the remainder of the nineteenth century.[4]

The Black Hills region was too important an area to go without a railroad for long, and the 1880s saw the construction of a new east-west line across northern Nebraska followed by an extension northward across the eastern edge of the Black Hills. This line, the Fremont, Elkhorn & Missouri Valley (FE&MV), was an affiliate of the Chicago & North Western; its line from Chadron, Nebraska to Belle Fourche, South Dakota, was completed during 1885 and 1886 and provided western Dakota Territory with its first reliable, year-round transportation connections. For the remainder of the century, the FE&MV was also the nearest railhead for the White River Badlands area.[5]

The lack of an east-west railway route across western Dakota Territory did not, however, imply a complete lack of Euro-American travel across the area, especially in the years during and after the Black Hills gold rush. The most prominent such route was the so-called Fort Pierre–Deadwood Trail, which served as an important freighting route during the first years of the Black Hills boom. (The Trail followed a route significantly to the north of the White River Badlands area.) Because the Trail followed a long route through rugged, unpopulated terrain, the Trail was never widely successful, and it faded into obscurity following the completion of the FE&MV. A second freighting route also operated in the early 1880s from the Milwaukee railhead at Chamberlain to the Black Hills. This trail, which passed directly through the White River Badlands, utilized a roadhouse in the vicinity of present-day Interior. This route largely disappeared after construction of the FE&MV's rail line.[6]

Permanent European Settlement in the White River Badlands: Nineteenth Century Ranching (ca. 1885-1906)

The influx of Euro-Americans into the Black Hills region during the 1870s and beyond served as an initial catalyst for the beginnings of permanent white settlement in the White River Badlands and surrounding areas. This was particularly true along the western fringes of the Badlands area, which was nearer the Black Hills and—more importantly—the new railway line that served it. While the FE&MV was largely constructed in response to the Black Hills gold rush, its existence helped encourage settlement and economic growth throughout far western Dakota, in areas wholly unaffected by the Deadwood mining boom. For most of the region, that economic growth was manifested in the form of cattle and sheep ranching.

The remote and arid country of the northwestern Great Plains (i.e., what is now the western Dakotas, and Montana and Wyoming east of the Continental Divide) was used by open range ranchers in the decade following the Civil War, and this use expanded greatly in the 1880s and beyond, as Indian hostilities lessened and reservation boundaries were reduced. The area was seen as a good summer range for livestock that were wintered further south, and soon became home to an increasing number of year-round operations, as well. Both seasonal and permanent ranch activities were eased by the arrival of railways to the region, which simplified the movement of livestock. The

construction of the Union Pacific Railroad across Nebraska and southern Wyoming from 1867-1868 was a boon to Great Plains ranching, as was the completion of the Northern Pacific through North Dakota and Montana in 1883. While these lines were of only limited value to the few ranchers who had arrived in the Black Hills area in the 1870s and 1880s, the completion of the FE&MV to Rapid City and Belle Fourche marked the beginning of a ranch boom in the area. For a time in the 1890s, Belle Fourche was the busiest livestock shipment point in the nation.[7]

Prior to the 1889 treaty that removed much of the Badlands country from the Sioux Reservation; Euro-American ranching activity in southwestern Dakota was largely limited to the narrow strip of land between the Black Hills and the old reservation boundary. This area included a mix of rolling hills and bottomlands, country that was well-suited to open-range ranching. A few Euro-Americans began developing small ranches in the area during the late 1870s and early 1880s, settling first in the eastern fringes of the Black Hills. Buffalo Gap, perhaps the best-known town in that area, was well-established by 1880. Later arrivals, encouraged in part by the construction of the railroad, began to slowly spread farther eastward, settling mostly in the low valleys where water and grass were relatively abundant. By 1886, both the Rapid Creek and Spring Creek valleys had sufficient numbers of settlers to warrant the establishment of post offices (at Creston and Folsom, respectively).[8]

In the years before the railroad's arrival, most of the area's early settlers experienced a difficult and arduous life. The lack of transportation options both to and within the region limited both the availability of consumer goods and the accessibility of markets for farm and ranch products. While many of the settlers undoubtedly sold livestock (and some crops) to the retailers of Deadwood and other Black Hills mining towns, a subsistence-based lifestyle predominated. The construction of the FE&MV ameliorated this somewhat, mainly by easing the process of cattle and sheep shipment. Throughout the period, ranching activity predominated; the land's continued remoteness, the arid climate, short growing season, and rough landscape made it less than hospitable to the agricultural homesteaders who were populating the eastern Dakota prairies.[9]

Settlement in the region became more rapid and geographically dispersed following the 1890 opening of much of the White River area to Euro-American use. The years 1890 and 1891 saw the arrival of a significant number of ranch settlers into the newly-available Badlands country. Reminiscence by a South Dakota cowboy named Bruce Siberts observed:

> The big pasture west of the Missouri that the Sioux had turned over to Uncle Sam had few ranchers in it when I went there in 1890, but within another year or so there were all kinds of livestock roaming over it.[10]

Most of the settlement occurred along the White River and other major watercourses, again due to the valleys' relatively hospitable terrain and easy availability of at least a limited supply of the ranching essentials: land, grass, and water. In the immediate White River region, settlement was substantial enough that by the mid-1890s a small string of

unplatted hamlets existed in the area, most boasting little more than a post office, a mercantile, and perhaps a schoolhouse. Among these villages was a tiny settlement known as Black. Black was founded in 1890 and renamed Interior in 1894.[11]

By 1895, the number of Euro-Americans who had taken up permanent residence in the White River Badlands probably numbered 100 or more; a significant number of Native Americans also continued to inhabit the area. The vast majority of the area's residents were engaged in ranching, although the lack of land records and other data from the era means that relatively few specifics are known about their livelihoods. Cattle and sheep were probably allowed free-range grazing in the hill country, while the bottomlands were used for hay and subsistence agriculture. Although some land in the Rapid Creek area was put under irrigation, this was not the norm for the region. Cattle and sheep that were not sold locally were driven to the railhead towns of Hermosa and Fairburn for shipment to market. Surviving photographs indicate that houses and other structures were small, vernacular affairs, constructed from hewn local logs. In general, the larger ranching businesses that dominated some areas of the northern plains did not have a significant presence in the Badlands area.[12]

The Euro-American society that had developed within the White River Badlands by the mid-1890s was isolated, subsistence-based, self-sufficient, and relatively stable. In general, these qualities were reflective of other remote ranching areas in the Northwestern Plains, and were, in large measure, based on the region's great isolation. The nearest towns—those of the eastern Black Hills—were limited in their offerings, and required a multi-day journey for most of the settlers. The nearest railways were similarly remote. Euro-American habitation to the north was extraordinarily sparse, and connections to the east were distant and hampered by the unbridged Missouri River. For most area residents, these circumstances probably limited trips beyond the Badlands to a handful of excursions per year—if that.

South of the White River Badlands, a significant Native American presence remained, which provided the Badlands settlers with avenues for social and economic interaction. For most of the area's early white settlers, the Lakota community was a presence in day-to-day life; for some, especially in the area's southern reaches, the Euro-American ranchers were as closely tied to the Lakota community as they were to neighboring white ranchers. For the most part, this was likely seen as a mutually beneficial situation.[13]

Into the first years of the twentieth century, the Euro-American community in the White River Badlands remained small, with little new settlement occurring after the mid-1890s. In part, this was due to a national economic recession at the end of the century, but local factors were of equal importance. The Badlands area remained isolated and difficult to reach, and the land's aridity, geography, and isolation made it relatively unattractive to agricultural settlers. Perhaps most significantly, the open-range economic model that was in place in the area limited the opportunities for population growth. In essence, the land had reached its carrying capacity for the time.

The Arrival and Significance of the Railroads (1885-1907)

Throughout the late nineteenth century and into the twentieth, the prairies and Badlands of western Dakota largely remained the domain of open-range cattle and sheep ranchers. Pressure from cattle interests in the 1880s had helped bring about some of the reductions in the size of the Great Sioux Reservation, and few other white settlers chose to compete with the ranchers for the newly-opened land. Throughout much of western Dakota, nineteenth-century homestead activity was limited and often unsuccessful, resulting primarily in scattered, isolated farms in the larger river valleys.[14]

Similar to other areas of the arid, remote Northwestern Plains, the ranch-based settlement and economy in the White River Badlands was destined for upheaval in the first years of the twentieth century. A series of developments, both local and regional in scope, helped drive these changes. The most significant event was the arrival of the railroads.

In eastern South Dakota, as elsewhere in the American Midwest, the last third of the nineteenth century saw an explosive growth in the number of railway lines serving the region. More than any other factor, these new railroads promoted and shaped the patterns of Euro-American settlement in the area. The first railways, entering land that was to become South Dakota, arrived in 1872, on the eastern and southeastern edges of the Territory; by the end of 1870s the eastern quarter of the state was well-served by a web of railway lines, and two routes had been constructed as far west as the Missouri River. The rapid pace of Dakota railway construction continued into the 1880s, and by 1885 South Dakota boasted over 2,400 miles of active railroad lines.

The Missouri River remained a barrier for the railroads, as well as other forms of land transportation, and no tracks bridged the river for the remainder of the century. Two major railroads, strong competitors, grew to dominate the region: the Chicago, Milwaukee, & St. Paul (CM&StP, or "Milwaukee Road"), and the Chicago & North Western (C&NW, or "North Western"). Both railways ultimately blanketed eastern South Dakota with their networks. The Milwaukee, the larger of the two, was renamed "Chicago, Milwaukee, St. Paul & Pacific" following completion of its transcontinental line in the early twentieth century. [15]

The situation was markedly different, however, west of the Missouri. No railroad entered the West River region until the FE&MV from Nebraska was constructed in 1885, and the nineteenth century saw only one other major railway construction project in the area: the Chicago, Burlington & Quincy (CB&Q, or "Burlington") completed a route from Nebraska through the Black Hills to Deadwood in 1891. Outside the Black Hills region, railway service remained essentially nonexistent, stalling the potential for economic growth and settlement.[16]

As the railroads extended across Dakota, they brought with them waves of settlement and dramatic economic transformation, in large part orchestrated by the railways themselves. Extensive railroad advertising and promotional campaigns worked to draw settlers to the regions that were effectively being opened by the construction of new railway lines. These efforts, operating both in the United States and Europe, promoted the availability

of "free" government land along the railways, land that was billed as excellent agricultural country. This farmland could be claimed under the terms of one of several federal homestead laws that were enacted beginning in the 1860s—programs that, essentially, allowed settlers to acquire title to a homestead claim following a period of residence and the completion of specified "improvements." The lure of this land proved powerful and attracted tens of thousands of new settlers to western Dakota during the 1870s and 1880s. South Dakota's population mushroomed from 11,776 in 1870 to 98,268 a decade later, and to 263,411 by 1885. The peak of this homestead rush was the period from 1878 to 1887, an era now known as "The Great Dakota Boom."[17]

The boom years of the early 1880s in Dakota also brought political change to the region. The region's growing population strengthened Dakota Territory's case for statehood, and the momentum for statehood grew throughout the decade. Issues relating to the territory's subdivision were finally resolved in 1889, and on November 2 of that year both North Dakota and South Dakota were admitted to the Union as states. Pierre was selected as the South Dakota capitol, by virtue of its central location and probable role as gateway to the state's largely unexploited West River region.[18]

The involvement of the railways in the settlement of Dakota was not limited to the promotion of rural homesteading. As part of their choreography of the Great Plains settlement process, railroad companies and their subsidiaries routinely platted and promoted townsites along new lines that were under construction. These towns were developed at regular intervals along the length of a line, typically every seven to ten miles, ensuring that every homesteader would be within an easy day's ride of a community. Most towns were platted using relatively standard layouts embraced by each individual railway. Though nearly all of the new villages harbored hopes for dramatic growth and prosperity, they usually remained small centers of local trade and civic life, typically boasting only a handful of stores, two or three grain elevators, churches, and a school. Literally hundreds of such towns were established in Dakota during the homestead boom years, making them a defining characteristic of the cultural geography of the region.[19]

In South Dakota, this nineteenth-century homestead boom was wholly confined to the eastern half of the territory, and the boom itself came to a virtual halt after 1887. A combination of local drought, too-rapid expansion, and national economic stagnation ended the Great Dakota Boom, and the expansion of the homestead frontier stalled for almost two decades. The decade of the 1890s saw South Dakota's population increase by only 5,175, a dramatically different trend from the two preceding decades and one that caused the era to be remembered as "The Great Dakota Bust."[20]

For the White River Badlands and most of western South Dakota, the primary effect of the Great Dakota Bust was the preservation of the region's open-range ranch economy. The population growth and economic transformation that had so impacted the eastern half of the state effectively ended on the banks of the Missouri River, and there was only minimal pressure for that circumstance to change. The bust was also evident in the Black Hills where the 1870s gold strikes had brought such frenetic settlement and activity. The

decade of the 1890s saw population losses in both Pennington and Custer Counties. The westward expansion of the Great Dakota Boom clearly awaited the arrival of a changed economic climate.

Favorable economic conditions began to surface in the first years of the twentieth century, presaging a series of dramatic changes to the cultural geography of the Badlands and much of western South Dakota. Nationally, the economic doldrums, precipitated by the Panic of 1893, began to lessen; among other things, the improved business climate allowed western railroads to once again consider the possibilities of further growth. Most of the northern Plains railway companies began exploring possibilities for major route expansions during the 1900s and 1910s and in many cases substantial new construction ensued. As it had in the 1880s, this railway development was accompanied by town-building and extensive promotion of homestead opportunities in the newly accessible areas. Among the region's railroads, the Milwaukee was by far the most aggressive in this regard; between 1906 and 1909 the railroad constructed an entirely new transcontinental line running from northern South Dakota to the Pacific coast. Other railways contemplated similar schemes, while simultaneously searching for smaller-scale growth opportunities in regions already served. South Dakota's West River country was high on the list of areas considered as expansion targets.[21]

Other events also helped generate interest in South Dakota's West River country. These included further reductions in the size of the state's Indian Reservations, as well as the new federal policy of encouraging the breakup of "trust" reservation lands into individual family allotments. While neither of these changes directly impacted the White River Badlands area, they helped increase the public's awareness of the vast areas of largely-unsettled land in the western half of the state.[22]

By 1905, the combination of renewed economic confidence and a greater awareness of the West River country was strong enough to encourage action, and the state's two major railways resumed active planning for new east-west routes to the Black Hills. Both of these lines were destined to directly and significantly impact the White River Badlands area. The route for the new Chicago & North Western line began at the company's railhead in Pierre, and followed the Bad River upstream in a southwesterly direction to a point near the river's headwaters, west of present-day Cottonwood. From there, the line continued in a northwesterly direction before dropping into the Cheyenne River valley near what is now Wasta; after crossing the Cheyenne, the route headed nearly straight west to Rapid City and a connection with the FE&MV (which by then was integrated into the North Western system). While the Chicago and North Western survey bypassed the White River Badlands, which lay to the south, the route was near enough to the area that a substantial increase in local agricultural settlement in the northern Badlands was virtually guaranteed.

In contrast, the route chosen by the Milwaukee Road directly penetrated the heart of the Badlands country. The Milwaukee Road survey began at that company's Chamberlain railhead, proceeded almost due west across the prairies and low hills between the Bad and White rivers. West of what is now Kadoka, the route dipped slightly southward to

avoid the eroded Badlands cliffs, passed near the White River at the village of Interior, and continued west within sight of many of the Badlands' largest buttes. The railway left the Badlands country near the future site of Scenic; the route proceeded in a northwesterly direction, crossed the Cheyenne River, and followed Rapid Creek upstream to Rapid City. Construction of the Milwaukee railway dramatically impacted the cultural geography of the entire White River Badlands.

The first work on the railways' Black Hills lines was undertaken by the Milwaukee, which built westward from Chamberlain to Presho in 1905. Both railroads worked on their Rapid City lines in earnest in 1906; the Milwaukee's construction crews continued westward from Presho, while the North Western built simultaneously from both its Pierre and Rapid City railheads. The Milwaukee's 1906 work brought it to the new town of Murdo, about sixty miles short of Interior and the eastern Badlands. For the North Western, the 1906 construction season saw track completed from Fort Pierre to Philip, and east from Rapid City to Wasta. Both railroads completed their Rapid City lines the following summer, with the Chicago and North Western winning the race by a matter of three weeks. Regular service on the two routes soon began, and—in the style of the Great Dakota Boom—the stage was set for a radical transformation of the White River Badlands country.[23]

The White River Badlands and the Homestead Boom (1906-1918)

In planning and constructing their new lines to Rapid City, both the Milwaukee and the Chicago and North Western adhered to the time-honored development patterns they had perfected during the settlement boom earlier in the nineteenth century. The railroads paid little attention to the physical geography of the area, or to the fact that local agricultural conditions were difficult, at best. As they had across nearly all of eastern South Dakota, the railway's marketing departments and townsite subsidiaries sprang into action in the White River Badlands with the same energy as the tracklayers themselves had exhibited.

The selection and establishment of townsites was an early and important step. Along the Chicago and North Western, townsites were platted at approximately 10 to 12 mile intervals along nearly the entire length of the Pierre-Rapid City line, a slightly longer spacing than that which accompanied most nineteenth-century railroad expansions. In the Badlands area, the Chicago and North Western towns included Cottonwood, Quinn, Wall, and Wasta, from east to west. Land sales, commercial development, and other activity began at all four towns almost immediately, evidenced in part by the establishment of a post office at Cottonwood in November 1906, and at the other three locations in the first half of 1907.[24]

The Milwaukee developed a townsite program for its Rapid City line that was somewhat more optimistic than that of the Chicago and North Western, but it was more cognizant of the vagaries of local geography. Along the eastern portion of the route, where the land was more arable, new towns were spaced as little as seven miles apart, but the interval between towns increased to ten miles or more in the Badlands and beyond, in apparent recognition that intensive agriculture was less likely to be successful there. The town of Kadoka marked the Milwaukee's eastern approach to the Badlands country; the

succeeding communities along the route included Weta, Interior, Conata, Imlay, Scenic, and Creston. Although the development of the Milwaukee's Badlands-area towns probably lagged behind that of most other small railway communities in the state, all towns along the line quickly grew to the point where they were able to support post offices. Kadoka received a post office in 1906; Scenic's was established in 1907; and Conata and Imlay followed in 1908. The post offices at Creston and Interior had been established earlier in order to serve the region's cattle ranchers; the office at Creston dated from 1886, and the office at Interior, originally established as "Black," dated from 1891. The name Interior was adopted three years later.[25]

The establishment of the new railway townsites was, as always, accompanied by substantial promotion of the towns and their nearby homestead land. Of the two railroads serving the area, the Milwaukee was likely the more aggressive marketer, in part because the Rapid City line was only one of several route expansion projects underway at the time. Both railroads, though, actively encouraged new settlement in the area, and the news of the lines' construction also provided the region with significant free publicity. The attention was such that some homesteaders moved to the area in advance of the railroads, something that had been a relatively rare occurrence in the Badlands during the previous two decades.[26]

Unquestionably, the homesteaders' rushed to the Badlands as swiftly and dramatically as other settlers' had rushed to other newly-accessible regions of Dakota. One way of gauging the pace of growth in the region is the review of county population statistics, though this is somewhat complicated by the frequent shuffling of South Dakota's county boundaries in the late nineteenth and early twentieth centuries. During the period of 1900-1910, the eastern Badlands area was largely in Stanley County, as was the new Chicago & North Western line eastward to Pierre. The eastern portion of the new Milwaukee line was located in Lyman County, while the western Badlands and the tracks of both railroads to Rapid City were located in Pennington County. Table 4 shows the population growth of those counties during the decade:

Table 4. Population Growth in the Missouri River-Rapid City Corridor, 1900-1910[27]

County	Population, 1900 census	Population, 1910 census	Change
Lyman	2,632	10,848	+8216 (412 %)
Pennington	5,610	12,453	+6943 (222 %)
Stanley	1,341	14,975	+13,634 (1117 %)
TOTALS	9,583	38,276	+28,693 (399 %)

Though yearly population figures are not available, the vast majority of this growth was directly related to the construction of the Chicago and North Western and Milwaukee railroads through the region. Review of a state census of Stanley County in 1905 showed the county with only 2,649 residents; this suggests that roughly 90% of the period's growth occurred in the last half of the decade.[28]

The population increases brought by the West River homestead boom ultimately resulted in the restructuring of county boundaries and local governments in the region. This process was slightly different in South Dakota than in other Midwestern and Western states, however, due to South Dakota's nineteenth-century penchant for county creation. Numerous "paper counties," without established local governments or substantial Euro-American settlement, had been authorized by the South Dakota legislature prior to the boom years, and the arrival of the region's settlers; consequently, the region's county boundaries needed to be heavily readjusted after the actual settlement took place. In the immediate Badlands area, Pennington County had been created in 1875 following the Black hills gold rush, while Jackson County was established in 1915 after the homestead boom. The portion of Jackson County south of the White River was a paper county named Washabaugh from 1889 until it was annexed into Jackson County in 1979. Much of the South Unit of Badlands National Park is in Shannon County, which remains an unorganized political entity in 2006. (Shannon County is administered by neighboring Fall River County.) Until 1943, the northern portion of Shannon County was designated as Washington County, yet another paper entity.[29]

In the Badlands region, as well as elsewhere along these two railways, the period from 1907-1911 represents the greatest number of homestead arrivals between 1900 and 1955 (Note: Appendix A of this document provides a list of Badlands-area homestead patents between 1900 and 1955). Review of Appendix A indicates that 60 percent of the land patents in the Badlands area occurred between 1907 and 1911. Reminiscence by long-time Badlands resident Leonel Jensen suggests that there were few homesteaders in the area in May 1906, but by that autumn there was a claim on almost every quarter-section (160 acres) of land. This suggests that a high number of homesteaders knew that the railroads were imminent, and they arrived immediately in advance of the tracklayers in hopes of improving their odds of obtaining a relatively good land claim.[30]

Jensen's recollection is bolstered by federal land records for the Badlands country, showing patented homestead entries for a vast majority of the available land in the region. Federal records show that Badlands-area homesteads began receiving patents soon after the turn of the century, with the number increasing rapidly beginning in 1907. Land patents were awarded at a frenetic pace from 1907 through 1915. Review of Appendix A indicates nearly 80 percent of all land patents awarded for the immediate Badlands area were issued during that nine-year period. The dates of these patents suggest that most of the region's agricultural settlement took place during the first decade of the twentieth century. By 1922, both the homestead and land patent processes had progressed to the point where the majority of the land in the immediate badlands area was in private ownership.[31] Clearly, the railroads brought with them a sweeping, almost instantaneous overhaul of land ownership patterns throughout the White River Badlands, bringing an end to the area's brief open-range era and ushering in a new period of small farms and agriculture. Ultimately, this new cultural geography for the Badlands proved to be far less tenable than what preceded it, and as a consequence it proved to be equally brief.

Homestead Life in the Badlands (1906-1918)

In the last four decades of the nineteenth century and the first two decades of the twentieth century, the federal government enacted a series of incentive programs intended to eventually transfer millions of acres of the western public domain to individual farmers and ranchers. The first and best-known such law was the Homestead Act of 1862, which allowed settlers to claim up to 160 acres of eligible government land, title to which could be obtained following a five-year residency and the completion of specified improvements to the homesteaded land. Over the years, a variety of other homestead opportunities were also made available, most with eased ownership requirements; these were enacted due to the growing realization that land in much of the American West was too arid or infertile to support the intensive agriculture that was needed to make a 160-acre farm viable. Among these programs were the Enlarged Homestead Act of 1909 (applied to South Dakota in 1915), which allowed for the acquisition of 320-acre homestead claims; and the Stock-Raising Homestead Act of 1916, which allowed settlers to make 640-acre claims on federally designated non-irrigable grazing lands. In addition, federal legislation in 1912 shortened the homestead residency requirement from five years to three.[32]

Because of the chronological timing of the homestead boom in the White River Badlands, most initial claims in the area were made under the terms of the original 1862 Act, although the later programs also played a role. Many of the Badlands area claims also took advantage of a provision in the Homestead Act called "commution," which shortened the residency requirement for ownership in exchange for a cash payment.[33]

Across most of western South Dakota, much of the available homestead land was difficult agricultural country, a circumstance that was particularly true in the Badlands country and one that was recognized almost immediately by most arrivals. Consequently, settlers who worked to establish themselves in the region attempted to obtain land holdings in excess of the maximums allowed by the homestead laws. This practice was generally accomplished by having individual members of nuclear or extended families homestead adjacent claims, which could then be managed and operated as a single unit. (See Chapter 7 of this document for case studies of pioneer homestead families in the Badlands region.)

During the early years of the Badlands homestead era, the life and work of the region's settlers were typical of the early twentieth-century homesteaders throughout the remote Northwestern Plains. Early settlement activities focused on constructing a shelter, and breaking land for cultivation. Houses and other buildings were almost universally small, vernacular structures. Dugouts and sod buildings were common in some parts of the Badlands because the sparse tree cover in the region made wood difficult to obtain locally. However, as discussed in Chapter 7, some soils in the area were not conducive to the construction of sod houses. Poor-quality lumber did exist on some of the Badlands-area buttes and tableland, and not surprisingly those areas were logged by early settlers.[34] While lumber and other building materials could be shipped in via rail, this was cost prohibitive for many settlers, although items such as building hardware, doors, and windows were often purchased.

The land itself was tilled with horse-drawn equipment and bounded with wire fences. Though wheat was usually considered the standard grain crop of the northwestern plains, corn and a variety of other crops were also attempted. (See Chapter 7 for examples). A handful of very small-scale irrigation efforts were also attempted, though the region's lack of water made these impractical. Small reservoirs for stock watering were more common, and many of the stock ponds on former homestead claims within the Park boundaries may date to this historical period. Hay for the feeding of livestock and horses were an important commodity, and something that could be grown with relative success in some areas. One unique and memorable aspect of the region's homestead era was the practice of constructing large "chutes" on the sides of buttes where hay was produced, allowing the harvested hay to be easily dropped to the valleys below.[35]

The first decade of intensive agricultural activity in the Badlands area was characterized by a profound lack of success, despite several years of relatively encouraging rainfall and good commodity prices. An occasional good year (often the first one) would, for the most part, be followed by a succession of crop failures. One such story, from Interior, is reflective of the hopeful agricultural experimentation during the period, and its results:

> To draw even more homesteaders to the Badlands, the Milwaukee Railroad brought out a steam-powered tractor that could pull a six-bottom plow and broke up hundreds of acres of sod. The freshly plowed ground laid fallow for the rest of the summer and absorbed the fall rains and the melt from the winter snow. The first crop of corn thrived on the precious moisture and the nutrients from the decaying prairie grass. "Sod corn" was nature's ruse to lure more settlers to the Badlands. The second crop, lacking both the nutrients and the moisture, withered away when struck by the first hot winds of July. The Badlands had taught the homesteaders yet another lesson.[36]

At its heart, this story is reflective of the hundreds of smaller-scale attempts by homesteaders in the White River Badlands to make a success of their claims. They desperately sought a formula that would allow agriculture to succeed in a region that was wholly unsuited for it. For nearly all settlers, the combination of harsh geography, inadequate agricultural technology and science, and minimal resources meant that their efforts were doomed to fail. By the 1910s, their destiny was already evident to many of the region's new arrivals, and the process of exodus and land consolidation began.

The Badlands Homestead Towns (1906-1940)

While the story of agricultural settlement in the White River Badlands was founded on the establishment and development of small homestead farms, the region's railway-platted towns were also an integral element of the area's early twentieth-century cultural geography. Individually and collectively, these small communities served as centers of economic, educational, religious, and social life for the Badlands farmers, vital roles in a still isolated and remote country. Dependent for their survival on the success of the surrounding farms, their growth and decline mirrored that of the homesteads themselves, though each grew and faded in a seemingly-different way.

Though each of the Badlands towns was intended to serve as the center of an agricultural community, most of the towns were near-total creations of the railway companies, and the towns owed their existence to these railways. While limited settlement during the open-range era had taken place near some of the future Badlands towns, the ranch communities were tiny and bore little resemblance to a platted town. Even Interior, the largest ranch center in the White River Badlands, was transformed by the arrival of the Milwaukee and owes its existence as a platted townsite to the railroad.[37]

Initial developments at nearly all of the Badlands towns were funded by the railroads, and designed to serve railway operational needs. These facilities included depot buildings, section houses (for track maintenance crews), and rudimentary water supply systems (mainly to provide water for the railroads' steam locomotives). The railway water systems often featured small storage reservoirs, creating something of an oasis in the arid desert-like setting.[38]

Most, but not all, of the towns were formally platted by subsidiary companies of the railroads. Throughout the northern plains, railroads utilized standardized plat designs for their towns, and the townsite layouts used in the White River Badlands all display similar characteristics. Street grids were typically aligned with the railroad right-of-way through the area, with the railroad anchoring one end of the town plat. A single commercial street ran perpendicular to the railway line, meeting the railway line near the location of the depot. Residential streets flanked both sides of the commercial thoroughfare.[39]

Beyond these basic developments and the marketing and sale of townsite lots, the railroads left the development and expansion of their towns to the vagaries of the free market; consequently, the growth or stagnation of a townsite, in large measure, became a reflection of the success or failure of the agricultural land surrounding it. Given the difficult nature of Badlands-area farming, it is therefore not surprising that all of the local townsites struggled, and most faded relatively quickly. Each displayed its own evolutionary pattern, though, based in part on local geography and in part on unique circumstances unrelated to the agricultural economy.

Comparisons between the towns located on the Chicago and North Western line and those along the Milwaukee show noticeable differences in growth and success, reflecting the differing geographies of the two corridors as well as other social and economic factors. For the incorporated communities in the area, population changes over time help show both a town's early success, as well as its pattern of growth and decline. Tables 5 and 6 shows these trends for the area's incorporated communities. Since the area's smaller towns—including Scenic, Conata, and Imlay—were never incorporated; comparable population figures for those communities are not available.

Table 5. Population Trends of Incorporated Townsites in the White River Badlands Area, 1910-1950.[40]

Town	1910	1920	1930	1940	1950
Cottonwood	--	121	191	118	102
Interior	--	--	144	182	126
Quinn	--	--	141	189	214
Wall	167	224	326	500	556
Wasta	--	--	--	153	144

Table 6. Population Trends of Incorporated Townsites in the White River Badlands Area, 1960-2000.[41]

Town	1960	1970	1980	1990	2000
Cottonwood	38	16	4	12	6
Interior	179	81	62	67	77
Quinn	162	105	80	72	44
Wall	629	786	770	834	818
Wasta	196	127	99	82	75

Perhaps the most telling conclusion from the above table is the comparison between which towns were included in the census, because they were incorporated, and which towns were not included in the census. All four of the Badlands-area townsites platted along the Chicago and North Western route progressed to the point where they were able to incorporate, and all reached a population of more than 100 people, at least for some extended period of time. In contrast, only one of the six Milwaukee towns in the immediate Badlands vicinity was ever incorporated—and that community (Interior) in some measure actually pre-dated the arrival of the Milwaukee. These data suggest, at least in part, that the Milwaukee corridor was less successful overall than that of the Chicago and North Western. However, as discussed below, other factors also played a role in this disparity in later years, including the establishment of Badlands National Monument (nearer the Milwaukee line), and the improvement of major automobile transportation corridors that partially followed the Chicago and North Western alignment.

Indeed, several of the towns along the Milwaukee line, including some in the heart of the Badlands country, never expanded beyond more than a couple of business buildings and a handful of houses. The town of Conata, for example, at its peak, included only a railroad depot and reservoir; boarding house for railway workers; two stores, two churches, a school, and a dance hall. Perhaps surprisingly, there was no saloon. The population of both the town and its surrounding homesteads was less than 50 at its peak. Interestingly, the town also boasted a small mining business, a one-man operation which converted volcanic ash into "Knife and Fork Metal Polish."[42]

Among the other Milwaukee towns, Weta, Imlay and Creston all remained largely undeveloped, much like Conata. Interior retained its status as the largest community in the sparsely populated region. Both Interior and Scenic were helped economically by their relative proximity to the Pine Ridge Indian Reservation. As tourism to the Badlands slowly became more popular, Interior, and to a lesser degree Scenic, began to benefit

from that activity. Ultimately, though, none of the towns along the Milwaukee line could be considered successful.[43]

The Chicago and North Western towns fared better during the early homestead years, and also proved more enduring. This is largely a reflection of the differences in the physical geography of the two routes; the North Western corridor featured somewhat more arable land and, perhaps more importantly, provided easier access to water. As the automobile age dawned, all four towns along the Chicago and North Western found themselves on the route of a major trans-state highway—the so-called "Black & Yellow Trail," which later became US Highway 14. The town of Wall, by virtue of its central location and position near a major highway intersection, became a major local trade center for eastern Pennington County and Western Haakon County.[44]

The End of the Homestead Era (1918-1940)

The homestead boom in the White River Badlands followed a path typical of that displayed elsewhere in the Northwestern Plains, both in expansion and in decline. The Badlands homestead era, however, was arguably even less successful than that of other regions in western South Dakota. The difficult geography of the Badlands, with its poor soil, challenging topography, and arid climate, proved unusually inhospitable to homestead-era settlers, resulting in unusually rapid farm consolidation and abandonment. In the later years of the homestead era, an increasing interest in the natural and scenic values of the White River Badlands helped offset the depopulation of the region, as momentum grew for the preservation of the central Badlands as a National Monument.

In general, the boom years for homesteaders in the western Dakotas and eastern Montana extended from the first years of the twentieth century until the end of World War I. The railway corridors between the Missouri River and Rapid City were relatively early recipients of the homesteaders' attention, since they were among the first twentieth-century lines to be built in the region. As unclaimed land along the Rapid City rail lines became scarce, settlers were drawn into even more remote country; simultaneously, the railroads worked to continue the boom by building still other branch lines into previously-unserved regions. The Milwaukee Road maintained its status as a primary promoter of northern plains homesteading throughout the period, constructing several new lines in the Dakotas and Montana. In contrast, the Chicago and North Western's Rapid City extension was nearly its last burst of expansion in the West River country.[45]

The unusually poor nature of the land, particularly along the Milwaukee corridor, made the Badlands settlers more susceptible to farm losses caused by climactic variations or other factors. The first drought period of the homestead era hit western South Dakota in 1910 and 1911, and "lines of covered wagons moved out of the White River Valley through Chamberlain during the late summer of 1911."[46] This marked the beginning of the end for the region's homestead era, and provided a strong indication that the area was better suited for ranching than agriculture. Regardless, the four-year homestead rush had ended the open-range economy, and transferred most of the White River Badlands region from public to private ownership.

The optimism of the West River homestead boom endured through much of the 1910s, buoyed by years of relatively good rainfall and high crop prices. However, the situation throughout the region changed markedly beginning in 1918. The end of World War I resulted in sharp price declines for many agricultural products, which had been abnormally high due to wartime demand. Simultaneously, much of the Northwestern Plains entered a prolonged drought, making dry-land crop production in the area even more problematic than previously. The combined result was a dramatic and final end to the region's homestead era.[47] Only five percent of the land claims within the immediate Badlands area were patented between 1923 and 1955 (see Appendix A).

Although the patterns of homesteading and land acquisition in the White River Badlands have not been analyzed quantitatively, it is clear that some homesteaders left the region almost immediately after receiving title to their lands. Most others left a few years after that. This exodus of settlers provided an opportunity, for those who chose to stay, to acquire newly-vacated farms and increase their land holdings well beyond the homestead maximums. Most of the small number of new homestead patents awarded during that era were probably also intended to increase the holdings of existing farmers and ranchers. These processes allowed area residents to gradually increase land holdings to a size that would be more economically viable. In many cases, especially in the Milwaukee corridor, these enlarged farms became less dependent on crop production, shifting lands from agriculture to grazing or hayfield use. This proved to be a more sustainable use for the land, and allowed a smaller number of farm workers to manage larger holdings. In essence, the region was returning to its nineteenth-century economic base. That is, a range-based economy that supported a small number of ranch families. The difference was the ranchers now owned the land upon which their cattle grazed.[48]

By increasing public awareness of the Badlands as a natural wonder and scenic attraction, the process of creating a ranch-based economy in the White River Badlands became more complicated. As early as 1909, local individuals were proposing that the Badlands be made a national park, and a 1919 report by the US Forest Service endorsed the idea. By then, however, a significant portion of the proposed national park area was already privately owned, and for a time this became a significant deterrent to the park proposal.[49]

Efforts by South Dakota Senator Peter Norbeck and others to obtain federal recognition and protection for the Badlands continued through the 1920s (see Chapter 9), and the creation of Badlands National Monument was finally authorized (but not established) by an act of Congress in 1929. Coincidentally, this legislation corresponded with the beginning of another period of drought and crop failures, this one encompassing much of the entire Midwest. By the early 1930s the severity of the Midwest's farm crisis was such that federal government intervention was underway on a number of levels; among the programs that had been implemented were ones designed to provide a mechanism for federal acquisition of substandard agricultural land. In 1934, the National Park Service proposed that these programs be utilized in the Badlands to acquire private land in the area for an enlarged Badlands National Monument.[50]

Efforts at land acquisition began almost immediately, and continued throughout the 1930s under the auspices of the Federal Emergency Relief Administration (FERA). The political process of creating Badlands National Monument was simultaneously underway. Badlands National Monument was finally established by President Franklin Roosevelt on January 25, 1939; the monument included tens of thousands of acres of formerly-private land that had been acquired by the federal government since 1934. Additional private land in the area, primarily to the south of the monument, also came under federal ownership during that period. Land acquired outside the monument ultimately became part of Buffalo Gap National Grassland.[51]

By the end of the 1930s, relatively little survived of the homestead-based economy that had been forged in the Badlands country three decades earlier. Much of the land along the Milwaukee Road corridor had reverted to federal ownership, and the remaining private land was primarily used for cattle ranching. The smallest of the railway towns were dead or dying, and the survivors served a reduced population base and attempted to refocus their commercial attention on the growing Badlands tourist trade. To the north, the region served by the Chicago and North Western fared somewhat better, although changes were readily apparent there, as well. Most of the land remained in private ownership. Farms consolidated and ranching again played a dominant role in the regional economy. With the exception of Wall, the population of the corridor towns was stagnant, soon to begin a long and gradual decline. Tourism and the automobile brought new life to Wall, and the town both endured and grew, making it an anomaly in the historic geography of the twentieth-century Badlands country.

World War II and Beyond (1941-2006)

While the fifty-year period from 1890 to 1940 was one of dramatic, evolutionary changes in the cultural geography of the White River Badlands, the decades that followed have largely been ones of relative stability. The World War II years caused a temporary halt to Badlands-area tourism, but the war reinvigorated the agricultural economy, and rural economic stability generally continued in the years that followed, in large part because the events of the 1910s, 1920s, and 1930s had helped restore a more appropriate economic carrying capacity to the land. Farm and ranch consolidation continued in the years following World War II, but at a noticeably slower rate than in earlier years.

Perhaps the most significant events of the period had to do with transportation. South Dakota's state highway network improved significantly during the 1940s and 1950s. Major east-west roads across the state had been paved prior to World War II, thereby providing automobile access to the Badlands area as well as access to larger population centers, such as Rapid City. This trend continued in the 1950s and 1960s with the paving of South Dakota Highway 44 from Interior to Rapid City, and later with the development of the Interstate 90 corridor north of the Badlands. Automobile travel through the area increased correspondingly, and the town of Wall in particular benefited.

Improved automobile transportation in the area corresponded with a decline in local railroad service. The last passenger trains through the Badlands area (on the North Western) ended in October 1960, regional freight traffic declined, and local freight traffic

became almost nonexistent. The Milwaukee Road declared bankruptcy in 1977, and three years later abandoned much of its remaining South Dakota track, including its Rapid City line. The State of South Dakota then acquired the Rapid City route and numerous other Milwaukee lines in an effort to preserve rail service; while most of the acquired track was later reactivated, the rails west of Kadoka remained moribund until they were finally removed in 1998-99. Meanwhile, the Chicago and North Western's Rapid City line was acquired in 1986 by a new corporation, the Dakota, Minnesota & Eastern Railroad (DM&E). The DM&E continues to operate the Pierre-Rapid City line, but local traffic to or from the Badlands area is minimal.[52]

With the exception of Wall, which survives on highway trade, tourism, and the attraction of the "Wall Drug Store," the towns along the former Chicago and North Western line are also declining in population. Each retains at least some full-time residents amidst a handful of vacant and occupied buildings. Along the former Milwaukee line, the town of Conata has completely disappeared, while the towns of Weta, Imlay, and Creston exist only as individual ranches. Interior and Scenic are both shadows of their former selves.

The process of change is a continual one, and further transformations are almost certain for the Badlands region in generations to come, although it seems unlikely that future events will match the drama of a century ago. The legacy of those events, though, will continue to form the background for the Badlands as we know it today.

Postscript: Homestead-era Cultural Resources

In general, the era of Euro-American settlement in the White River Badlands was like a whirlwind—frenetic and brief. Befitting this characteristic, the changes wrought by the settlement years were substantial yet ephemeral, and relatively little evidence of this era survives in the Park today. In part, this is due to the nature of the homesteaders' activities. For example, most claims were only lightly developed, with ramshackle, impermanent buildings and few other improvements. The federal land repurchase programs of the 1930s were also a major factor in the paucity of historic sites within the Park because the federal government worked diligently to restore the reacquired land, to the extent possible, to its pre-settlement condition. Homestead buildings were destroyed, fences removed, and roads closed. Thus, the public land in the Badlands region contains few reminders of its agricultural or ranching heritage, though some potential historic resources may remain on private property in the vicinity of the Park.

Because the land within Badlands National Park has not been subjected to a comprehensive cultural resources survey (i.e., less than 90 percent of the Park has been subjected to an archeological survey), it is not possible to compile a meaningful list of homestead-era cultural sites within the Park boundaries. It is believed, however, that no standing buildings or major structures from the pre-NPS era survive in the Park. Likewise, nearly all minor features have been eradicated, though a few survive. Several early stock dams may remain, although the location, integrity, and historic significance of these early ponds have not been evaluated. In addition, at least one homestead-era grave remains in the Park, and the alignments of some former roadways remain evident.

It should be noted that some of the maintained, unpaved roadways in the Park pre-date the arrival of the NPS at the Badlands, and thus may be considered homestead-era resources. The abandoned grade of the Milwaukee Road line to Rapid City passes through a small corner of the Park; the grade is intact for nearly all of its length, and may constitute a National Register-eligible resource. Other possible homestead-era historic sites in the Park are primarily, if exclusively, archeological in nature, and a formal cultural resources survey would be required for their identification. Most of the latter sites would consist of artifact scatters in the rear or side yards at the former locations of homestead buildings. A historic archeological survey, including detailed deed and chain of title research, is recommended for a more complete understanding of the location, extent, and integrity of the Park's homestead-era resources.

Reminders of the ranching and homestead eras in the White River Badlands are far more evident outside the Park, although again no formal survey has been undertaken. Most homestead buildings outside the Park have also disappeared, although a few remain—primarily as components of larger, surviving ranches. A handful of such properties are visible along the Highway 44 corridor heading west from Interior. Other historic resources exist along that roadway, including the old Milwaukee Road railway grade. The small towns along Highway 44 are perhaps the region's most evocative homestead-era reminders. Although Conata exists today only as an archeological site, extant homestead-era buildings remain today at other townsites, and portions of both Interior and Scenic retain a strong period appearance. These towns provide perhaps the best opportunities for preservation of the homestead legacy of the White River Badlands.

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[1] For a summary of the fur-trade era in South Dakota see Chapter 4 of Herbert S. Schell, *History of South Dakota*, 4th Edition (Pierre: South Dakota State Historical Society Press, 2004).
[2] Philip S. Hall, *Reflections of the Badlands* (Freeman, SD: Pine Hill Press, 1993), 7-9.
[3] Schell, 298-315, includes an overview of the erosion of the Sioux lands in western Dakota. See p. 315 for a map of Indian land cessions during the period.
[4] Mark Hufstetler and Michael Bedeau, *South Dakota's Railroads: An Historic Context* (Pierre: South Dakota State Historic Preservation Office, 1998), 6-12.
[5] Mark Hufstetler, "Custer County Historic Sites Survey, Phase III: Final Project Report," for the South Dakota State Historical Preservation Center, Vermillion, December 1991, 2-3. For a chronology of railway line construction in South Dakota, see Rick W. Mills, *Railroading in the Land of Infinite Variety: A History of South Dakota's Railroads* (Hermosa, South Dakota: Battle Creek Publishing Company, 1990), 232-234.
[6] Hall, *Reflections of the Badlands*, 35-37; Schell, *History of South Dakota*, 110, 154-5.
[7] Schell, *History of South Dakota*, 242-257.
[8] Hufstetler, "Custer County," 2-6; George H. Phillips, *The Postoffices of South Dakota, 1961-1930* (Crete, Nebraska: J-B Publishing Co., 1975), 14-15, 49-50.
[9] Hufstetler, "Custer County," 2-6; Hall, *Reflections of the Badlands*, 55-74.
[10] Walker D. Wyman, Recorder, *Nothing But Prairie and Sky* (Norman: University of Oklahoma Press, 1954): 46, quoted in Badlands Natural History Association, "History of Badlands National Monument," (Interior, South Dakota: the Association, 1968).
[11] Hall, *Reflections of the Badlands*, 101-128.
[12] Ibid.
[13] Ibid.
[14] Schell, *History of South Dakota*, 242-248.
[15] Hufstetler and Bedeau, *South Dakota's Railroads*, 5-12.
[16] Ibid., Mills, *Railroading in the Land of Infinite Variety*, 232-234.

[17] Hufstetler and Bedeau, *South Dakota's Railroads*, 6-8; James Frederic Hamburg, *The Influence of Railroads Upon the Processes and Patterns of Settlement in South Dakota* (New York: Arno Press, 1981), 4.
[18] Schell, *History of South Dakota*, 215-222.
[19] For an excellent overview of the railway townsite phenomenon, see John C. Hudson, *Plains Country Towns* (Minneapolis: University of Minnesota Press, 1985).
[20] Hufstetler and Bedeau, *South Dakota's Railroads*, 12.
[21] Ibid., 12-15.
[22] Ibid., Schell, *History of South Dakota*, 242-257.
[23] Rick Mills, *125 Years of Black Hills Railroading* (Hermosa, South Dakota: Battle Creek Publishing Co., 2004), 78-80.
[24] Philips, *The Postoffices of South Dakota*, 32, 49-50.
[25] Ibid.
[26] Hall, *Reflections of the Badlands*, 143-166.
[27] "South Dakota, Population of Counties by Decennial Census: 1900 to 1990," http://www.census.gov/population/cencounts/sd190090.txt (accessed December 2005).
[28] Paula M. Nelson, *After the West Was Won: Homesteaders and Town-Builders in Western South Dakota, 1900-1917* (Iowa City: University of Iowa Press, 1986), 21.
[29] For background information on this subject, see "Dakota's Counties," *The Wi-Iyohi: Monthly Bulletin of the South Dakota historical Society* 13 (June 1959): 2-15.
[30] Interview, Leonel Jensen, Wall, SD, by Ray H. Mattison, June 2, 1965. Quoted in Badlands Natural History Association, "History of Badlands National Monument."
[31] Letter, Senator Peter Norbeck to Prof. W.C. Toepelman, University of South Dakota, May 22, 1922. Quoted in Badlands Natural History Association, "History of Badlands National Monument."
[32] Badlands Natural History Association, "History of Badlands National Monument." Also see Schell, *History of South Dakota*, 170-174.
[33] Ibid.
[34] Hall, *Reflections of the Badlands*, 170.
[35] Ibid., 143-181.
[36] Ibid., 155-156.
[37] The best period descriptions of the Badlands-area homestead communities are found in Hall, *Reflections of the Badlands*, 143-166. Also see Nelson, *After the West Was Won*, 81-100.
[38] See, for example, the description of Weta on p. 118 of Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh Counties: 1915-1965* (Kadoka: the Society, 1965). Other communities are similarly described both in this volume, and in *Eastern Pennington County Memories* (Wall, SD: The American Legion Auxiliary, 1965).
[39] For a description of railway townsite development in the region, see John C. Hudson, "Towns of the Western Railroads," *Great Plains Quarterly* 2 (1982): 41-54.
[40] "South Dakota Historical Data: Community Population by County, 1890-2000," http://sdrurallife.sdstate.edu/newcommunity/Historic%20Towns.pdf.
[41] Ibid.
[42] Hall, *Reflections of the Badlands*, 156-158.
[43] Ibid., 143-166.
[44] For additional background on the development of Wall, see *Eastern Pennington County Memories*, 9-14.
[45] After the Rapid City lines were completed, the Milwaukee directed its attention north and west, constructing numerous branches off its new transcontinental main line. The North Western's only later west river expansion was a branch to Winner and Wood, in the south-central portion of the state. See Mills, *Railroading in the Land of Infinite Variety*, 232-234.
[46] Ibid., 257.
[47] Schell, *History of South Dakota*, 252-297.
[48] For a good overview of this period in western South Dakota, see Paula M. Nelson, *The Prairie Winnows Out Its Own* (Iowa City, University of Iowa Press, 1996). The work's primary focus, however, is lands to the east of this study area.
[49] Badlands Natural History Association, "History of Badlands National Monument."
[50] Ibid.

[51] Ibid.
[52] Mills, *125 Years of Black Hills Railroading*, 160-201.

CHAPTER SEVEN

Case Studies of Agricultural Use of the White River Badlands (AD 1900-1950s)

CHAPTER 7

CASE STUDIES OF AGRICULTURAL USE OF THE WHITE RIVER BADLANDS (AD 1900-1950s)

Case Histories, Subject Selection, and Study Methodology

This chapter consists of a series of illustrative examples of the agricultural development and use of the Badlands from permanent Euro-American settlement to the post-World War II era. Six case histories provide information about families who took up early homesteads or cash entries, and built ranching and/or farming operations ranging in complexity from meager to prosperous. The families discussed in the case histories either left the country soon after arrival or remained to the present day. Trends of development and land use discussed in the previous chapter are examined in more detail here through the experiences of individual families.

Selection of case study subjects was based almost exclusively on the availability of information about those families. Typically, that information was in the form of oral histories and published local histories (see below). In addition, the case histories cover different geographic areas of the Badlands in an effort to identify adaptations made to specific locations. The selected case histories showcase individuals or families who lived south and west of the western end of the Badlands (i.e., outside the Park boundaries), throughout the Sage Creek Basin, in the Imlay and Conata areas, and in the far eastern end of the Park, roughly midway between Interior and Cottonwood. Readers will note a preference for family histories associated with the existing North Unit of the Park; this is purely a reflection of the availability of data used to prepare the case histories.

To compile data for these case studies, researchers relied most heavily on three types of sources: published histories, oral histories, and patent and census records. There is a relatively small number of published local histories and personal reminiscences which relate specific events and personal lives of Badlands residents during the historic period. In addition to brief histories of families who lived in eastern Pennington and Jackson Counties and on Cuny Table, the most useful sources were reminiscences written by Bormann, Crew and Heck, and Olney concerning personal and family experiences particularly during the early homesteading period.[1]

Oral histories were used to supplement or verify statements presented in published documents. They were in one of two forms. First, Badlands National Park maintains copies of several interviews with long-time area residents at its archives. Only transcribed interviews were used for the current project. The majority of the interviews were conducted in the late 1960s and the 1970s, thus providing first-hand information about the homesteading period. Additionally, for this project, researchers held three interviews, with subjects suggested by Badlands National Park staff. Keith Crew, Nellie Cuny, and Tony Kudrna all provided information about their family experiences.

To get a sense of the representativeness of how case history families acquired land, researchers reviewed readily available patent records for adjacent land parcels. The Bureau of Land Management (BLM) provided, via compact disk, all electronic patent summary information it had for townships encompassing portions of Badlands National Park. (Note that no such records are available for lands within the Pine Ridge Indian Reservation.) In theory, the BLM records identify the patentee, legal description, patent date, and type of entry for each piece of patented ground. Researchers found the data base very useful but incomplete, with as many as 20 percent of the entries missing data.

Other important federal records used for this project were census data. Using records at the South Dakota Historical Society in Pierre, researchers searched for information about age and country of birth for non-reservation families identified as main case history subjects. A few miscellaneous sources of information were of limited use. These included unpublished manuscripts housed at the Badlands National Park Library, such as those regarding grazing and land use; and the Jackson County Clerk and Recorder's Office in Kadoka. Researchers used the latter repository very briefly to learn more about settlers from Pierce, Nebraska, who homesteaded at the far eastern edge of the Badlands.

Far West Badlands and Cuny Table

As the Badlands rise from the east side of the Cheyenne River near the junctions of Custer, Fall River, and Shannon counties, one comes to the area where Dad and Thetna Yeger raised a family of five daughters and commanded a relatively large livestock business. With landholdings both on and off the Pine Ridge Indian Reservation, they prospered during the 1920s and into the mid-1930s. Theirs is the story of a mixed-blood Badlands family whose lives were dominated by Euro-American ways but still incorporated a few elements of the Lakota culture.

Dad Yeger was a man of German heritage. In 1916, he married Thetna Hudspeth, apparently a lifetime resident of the Buffalo Gap area (that town being about 25 miles west of the reservation boundary). Thetna was one-quarter Sioux Indian; her grandmother was a full-blooded Sioux named Blue Blanket who had married "an old soldier" two generations before.[2]

Thetna had a 160-acre allotment near the western edge of the reservation, while Dad had established his homestead off-reservation not far to the west. In addition to those two small parcels, the couple leased many acres on the reservation in the general vicinity of their claims. Using this combination of ownership and lease, the two were able to accumulate and care for large herds of livestock. They raised sheep, cattle, milk cows, "a bunch of horses," pigs, and chickens. Apparently with sheep as a specialty, they ran as many as 1,000 head at a time.

Dad and Thetna's five daughters were required to work hard to aid in the family's operation, but were not asked to perform chores routinely considered to be boys' or men's tasks. For those, the Yeger's employed hired hands for herding the sheep, shearing, and a wide range of other tasks that required physical strength and stamina. Meanwhile, the girls had to garden and, more importantly, haul water home. There was a

good spring on the property, but because the spring was a half mile from the farmstead, water had to be hauled by a wheeled cart with a barrel on it. In instances during the drought years of the Depression when the two stock ponds on the property dried up, they hauled water to the nearest stockpond as well.

The Yeger's did not practice farming per se, although they raised clover (unirrigated) for livestock feed. The corn and other feed they provided the animals during the winter was purchased, rather than grown on the home place. Although the Yeger family had considerably more livestock than most Badlands families, their day-to-day living resembled that of others in several ways. The family maintained a large garden, where they raised tomatoes, potatoes, carrots, onions, beans, and peas. They canned the vegetables as much as possible, with some of the more unusual products being sauerkraut (in deference to Dad's background) and canned meat sealed with grease in stoneware crocks. Basic groceries, such as flour, sugar, coffee, cheese, and some canned vegetables, were purchased at the nearest town.

In the case of the Yeger family, the nearest town was Buffalo Gap, 25-30 miles west of the farm. This considerable distance to town is indicative of the extraordinary isolation in the Yegers' corner of the Badlands. That distance factored strongly into the family's practice of driving to Buffalo Gap (via a wagon trail) only once or twice a year. Another aspect of their isolation was the very low population density. The nearest neighbor, actually Thetna's father, was 15 miles away, so there was rarely any socializing with others outside of the family and the hired help. Lastly, no school had been organized within walking or horseback-riding distance of the Yeger farm.

It is for this last reason that the five Yeger daughters received their education at the Red Cloud School in Pine Ridge, 45-50 miles to the southeast. Although Buffalo Gap was closer, they would have had to board there as well, and reportedly there was not much surplus housing available in the town. The Red Cloud School, started by the Roman Catholic Church, was a logical choice for the Yeger family because of the large number of mixed-blood students. The children left their parents' ranch in September, and did not see Dad and Thetna again until Thanksgiving or Christmas because of the distance between home and school. Like many other boarding school families, the Yegers likely camped in a tent (or tipi) when they visited the girls during brief holiday breaks. The girls returned to the ranch each year in May, where they resumed their chores.

In 1936, Dad Yeger died from overwork, according to family lore. Thetna continued with the ranching operation, however, by simply hiring more help as needed. Eventually, she sold the place, and for a few years cooked at area ranches. The daughters continued to attend school at Red Cloud. One daughter, Nellie, met her future husband, Sidney Cuny, at the Red Cloud School. Sidney was the fourth generation of the Cuny family to live on or near Cuny Table.[3]

Cuny Table is a large, relatively-flat piece of high ground situated near the southwest edge of the present-day Badlands National Park. The table top measures roughly 9 miles east-west and up to 3.5 miles north-south, and lies 300 feet above the surrounding

badlands. It is bordered by "sharply meandering, precipitous cliffs of pinnacles and crevices."[4] Although the surface water is generally limited to springs on the sloping edges of the table, fresh water can be found in wells about 70 feet deep.[5]

The story of the Cuny family is interesting because it chronicles some of the earliest settlement in the Badlands and it marks a strong commitment to their Badlands way of life. Sidney's great grandmother, Josephine Bissonette, was the daughter of a full-blood Oglala. Sometime during the 1870s, she married Adolf Cuny, a frontiersman from Switzerland, who had immigrated to Wyoming where he operated a livery stable and also served as sheriff. Josephine left Wyoming with her children (but without her husband) by 1890 and settled in the middle of what became known as the Cuny Table. If not *the* first permanent residents of the area, the Cuny family was one of the first, as Josephine claimed one of the earliest allotments there. By the time of the confrontation on Stronghold Table and the Wounded Knee Massacre (1890-1891), her son Charles had established himself as a trader in the Manderson area while maintaining a ranch on Cuny Table. Josephine's children and their children took up allotments on the reservation on Cuny Table, near the southeast edge of the landform.[6]

Over the generations, the Cuny family continued to live on the Table. This included one of Charles Cuny's sons, Chet, who with his wife Mabel and sons Sidney and David, comprised a farming family like many others on Cuny Table. The combination of relatively flat terrain and presumably adequate annual precipitation allowed for dryland wheat farming, and wheat fields covered Cuny Table in the 1920s and 1930s.

In striking contrast to the isolation of the Yeger family ranch, the Chet and Mabel Cuny farm was within a short distance of several other farms. In addition, a local school and Catholic church were open for many years, and there was a dance hall nearby. There was no store or post office (the nearest being at Scenic over 10 mile**s** to the north), but for a short time there was even a gas filling station and a convenience store. Roads that had been little more than wagon trails for years were graded and graveled during the mid-1930s, and in 1935 local workers for the Works Progress Administration (WPA) graded a main east-west road across the Table (present-day BIA Highway 2).[7]

Nellie Yeger married Sidney Cuny in 1942. Five days after their wedding in July, Sidney entered the US Army and was moved out of state. Later that summer, the US Army appropriated hundreds of thousands of acres of the Badlands, including Cuny Table, for use as a Bombing Range. The Chet and Mabel Cuny family was forced to abandon its farm, while Nellie moved to California, and Texas, and then back to California as she followed Sidney during his state-side, World War II tour of duty.[8]

Although the wheat farmers were forced to leave, and were scattered throughout the region (and beyond), some of the ranchers' cattle continued to graze on Cuny Table and other parts of the Bombing Range. Eventually, when families were given the option of repurchasing their allotments and other claims, a small number chose to do so, including Chet Cuny and his brother Lawrence Cuny. However, the older Cuny generation did not return to live there. Subsequently, Sidney and Nellie Cuny purchased three 160-acre

parcels and raised a small herd of cattle. They leased grazing land from the National Park Service, after the Bombing Range was acquired by that agency. Nellie supplemented the family's ranching income by working as a baker for the Rocky Ford School (about 10 miles to the east), and later driving a school bus. Much later, Nellie opened the Cuny Table Café near their home, although it was never considered a money-making enterprise. Sidney died in the early 1990s, but Nellie continues to operate the café and runs about 200 head of cattle in the Badlands.[9]

Miller Basin (Imlay Area)

Miller Basin is a small basin near the west edge of the Badlands between the small communities of Scenic and Imlay. Lying opposite the Sage Creek Basin, it drains into the White River to the south. Homesteads in the Miller Basin area lay along the Milwaukee Road railroad line and were less isolated than either the Yeger family homestead, located much farther south and west, or the families on Cuny Table discussed above. Perhaps the Miller Basin's most well-known residents were, and are, members of the Josef and Marie Kudrna family.

The number of foreign-born homesteaders in the Badlands seems to have been rather small compared to American-born settlers. One family that settled in the Miller Basin, Josef and Marie Kudrna and their children, is representative of such foreign-born families. Their long tenure in the Badlands provides an insight into the originals of immigrant families and the adaptations they made on moving to the area, which differed somewhat from those made by other long-time Badlands families.

Josef Kudrna, Marie Loskota, and six other Bohemian emigrants came to the United States through Ellis Island in the fall of 1903. Born in 1877 and 1881, respectively, Josef and Marie had been raised as Catholics in Bohemia. They were from two different social classes, however, and had not been allowed to marry in their home country, prompting their emigration. Once in the United States, they moved immediately to Milwaukee, Wisconsin, and married shortly thereafter.[10]

While in Milwaukee, Josef was employed as a carpenter for the Chicago, St. Paul, and Milwaukee Railroad. He also attended school, where he learned to read, write, and speak English, although never fluently. Marie stayed at home to raise the family; the Kudnras had one son and two daughters while living in Wisconsin. She never learned to speak English well, and preferred to converse in her native language, presumably Czech.[11]

In 1910, Josef bought a 160-acre homestead relinquishment in the Badlands area covering portions of Sections 27, 28, and 34, Township 3 South, and Range 14 East. He arrived in May, at which time he began to build a house. The family moved to its new home soon thereafter.[12]

Josef proved up on his homestead claim, rather than commuting it to a cash entry as so many of the Badlands settlers did. In 1921, Marie patented a 200-acre Desert Land Act parcel in Section 28, and two years later Josef patented another 120 acres, apparently

under the provisions of the Enlarged Homestead Act.[13] Over the years, the family also acquired parcels from neighbors who found they could not survive in the Badlands.[14]

The first years on the homestead were among the most trying for the family, especially Marie. She did not want to stay in the Badlands, but she and Josef had no money to leave. Before the family had an opportunity to build a livestock herd, Josef worked away from the homestead as necessary. One season, he picked bones and sold them in town (for fertilizer). He worked nearby on a section for the Milwaukee Road, his old employer, and he also built fences for a cattle rancher in the area. Marie presumably raised her children single-handedly during those times, the five of them sharing a small space in the sod house that Josef had built when he established the homestead.[15]

Josef, Marie, and their four children (the fourth born after they had moved to South Dakota) eventually came to operate a successful farm and ranch, regularly depending on the good business and financial sense of the head of the family. The Kudrna family raised cattle, hogs, and chickens. The hogs were raised both for family consumption and cash. They usually sold hogs two or three times per year, when the animals had matured to about 200 pounds. Many of the eggs that the chickens produced were sold for money to purchase groceries such as sugar, flour, and coffee.[16]

Farming involved wheat and corn crops. Also, beginning in the late 1920s, Joseph broke sod on a 120-acre parcel to the east of their home to raise flax. At that time, the yield was five bushels per acre, at $3 per bushel and wheat was selling for only $1 per bushel, thus flax was a viable economic alternative.[17] Flax farming was short-lived in the area, however, as the price dropped to an astounding $9 per ton and a half at one point.[18]

To work their grain crops, the Kudrna family purchased gasoline-powered equipment at a time when other Badlands farmers had neither the funds nor inclination to do so. Josef bought the first tractor in the area, a brand-new Case model, in 1925 or 1926, and a new combine in 1929. He also purchased a Model T in 1924. In all those cases, he declined to operate the equipment himself, noting that his reflexes were not as good as they once had been. Instead, his sons used the tractors and combine.[19]

Like many Badlands settlers, the Kudrna family also depended on a vegetable garden. In addition to the potatoes raised for the family, extra potatoes were sold in Scenic. Marie canned many items from her garden, but also harvested and canned wild fruit, particularly plums, chokecherries, and buffaloberries.

Available information suggests that the 1920s were the most profitable for the Kudrnas. In addition to the new equipment Josef purchased, they built a new, wood-frame house in 1927. However, the 1930s Depression presented new hardships for the family. With wheat prices at 20 cents per bushel, and cows selling for $20 and calves for $5 per head, the family had a difficult time, but managed to hold their land. The 16-foot domestic water well that the family had depended on since moving to the homestead went dry during that time. The winter of 1936-1937 was one of the driest that the family could

remember, and they were forced to haul water at night from a WPA spring development some miles distant.

Imlay was the nearest community to the Kudrna ranch (3.5 miles distant), and, although always small, it provided a few basic services for area settlers. There was a post office, store, school, dance hall, and a Catholic church. The Kudrna children attended the Imlay School, either on foot or on horseback each day. The children also visited the dance hall, although the parents reportedly never did.

The town of Scenic was located about 5.5 miles from the Kudrna home in the opposite direction from Imlay, and was the real center of commerce for this part of the Badlands. The family visited there often, purchasing coal for heating their home at the Farmers Union and groceries at the local store.[20]

The proximity of the Pine Ridge Indian Reservation to the ranch was partially responsible for a good relationship between the Kudrnas and their American Indian neighbors to the south. Perhaps soon after moving to the Badlands, Josef became acquainted with some American Indian families, purchasing a heifer for use as a milk cow and his first team of horses. Over the years, he leased land on the reservation where his cattle could graze. After many years, the family lost its lease as more livestock were grazed in the area and Indians were given preferences on leases. Josef's amicable relationship with the Indian families may have been reinforced by their common religious beliefs, as Lakota people used to attend, "quite a bit," the Catholic Church in Imlay where the Kudrnas worshipped.[21]

Many things changed for the Kudrna family beginning with World War II. Just prior to the war, the youngest son Tony was drafted, and eventually was sent to the Pacific Theatre. He served in both Australia and New Guinea, building runways for the Air Force at the latter location. About the time of his return from the war, Josef died and left the family ranch to his widow and his two sons Joseph and Tony.

Shortly after the war, the post office at Imlay closed, presumably marking the end of the small town's existence. The family converted the farmstead from coal and wood to propane for heating and cooking, and between 1952 and1953 electrical power was brought to the area. In 1952, they built a new house at the farmstead. The farm no longer included hogs; the Kudrnas relied on cattle exclusively. After Marie died in 1973 and Joseph died in 1980, Tony and his nephew Donald have continued to run the ranch to this day. They still live on the Kudrna home place in 2005.[22]

Sage Creek Basin

Sage Creek is a major tributary of the Cheyenne River, entering that stream on the south. Its upper reaches, which generally comprise the area known as Sage Creek Basin, eventually became a major portion of present-day Badlands National Park. The basin, which measures roughly 8 miles long and 2-3 miles wide, is bordered by the Badlands wall on the north and Hay Butte to the south. Although the most intensive and longest-

lasting historic occupations were in the basin itself, homesteaders claimed land parcels across the upper Sage Creek drainage basin, on and beyond the fringes of the basin.

Sage Creek Basin encompassed some of the earliest homesteads within the area that would become Badlands National Park. A few individuals took claims in the Sage Creek Basin in 1902, but most others did not take or "prove up" on their claims until the 1910s, or later. Unlike Cuny Table or even Miller Basin, this part of the Badlands was not as intensively occupied during the early twentieth century. Long-time area residents remember fewer than 10 families who stayed in the area any length of time.[23]

Two case histories of the upper Sage Creek drainage basin are provided here because they represent both ends of the homesteading spectrum, from those who had no intention of staying in the Badlands to others who spent a good part of their lives there. In 1911, Earnest Bormann, a young bachelor, took over a relinquished homestead entry that straddled the Badlands wall one mile north of Sage Creek. He left the property immediately after commuting his homestead in 1913. Conversely, Jess and Nellie Harris's family was the most well-known of the Sage Creek Basin occupants, having stayed in the area for about 30 years. Their home ranch, located at the confluence of Dry and Sage Creeks, was the center of a comparatively large ranching operation by Badlands standards.

When Ernest Bormann decided to take up a homestead in the Badlands, he was following in his father's footsteps. Fritz Bormann, a German immigrant, had homesteaded in Yankton County, South Dakota, in the early 1870s. Most of the boys in the family eventually went on to stake claims of their own.[24]

By 1911, John Zabranski, a neighbor of the Fritz Bormann family, was living in eastern South Dakota in Davison County, and he encouraged Ernest to homestead in the White River Badlands. Zabranski had made minimal improvements on his homestead on the north edge of the Sage Creek drainage basin. He quickly found that he had no interest in either sticking out the 5-year residence term or commuting the entry via cash payment. He agreed to relinquish his claim, and Ernest immediately filed on the same parcel, namely the NW quarter of Section 4, Township 2 South, Range 15 East.[25]

From the beginning, Ernest had no illusions about making the homestead his permanent residence. His personal account of his occupation reflects a lackluster dedication to the property, and a stronger interest in visiting the country and making a meager living by working for others. He only cultivated 10 acres (actually an achievement in itself) and never attempted to purchase or raise any livestock other than a horse he had brought to the Badlands from his father's farm.[26]

In some ways, his Badlands house was a reflection of his limited commitment to the land. The house was akin to a typical homesteader's shack, of wood-frame construction and measuring just 8 x 12 feet. The house had a side gable roof and a single door and window. Ernest did, however, employ aspects of a common prairie house building technique to winterize his shack. He built short sod walls directly against all sides of the

tar paper shack, but never completed them to the eaves. Out of necessity, he also excavated a basement under his shack. Homesteaders almost invariably built either a basement or a "cave" (dugout) to keep foodstuffs from freezing in the winter and spoiling in the summer. Ernest's house furnishings also were humble, consisting of a bed (i.e., a bed sack filled with buffalo grass), a heating/cooking stove, and perhaps little else.[27]

Although Ernest had good knowledge and skills about farming, skills that he had gained as a boy, he barely took advantage of these on his Badlands homestead. In the summer of 1912, he busted sod on 10 acres and planted oats. One year later, on the same plot, he planted some drought-resistant milo. In both cases, the hot winds of summer damaged the crops, so that Ernest harvested just one wagon load of oats and apparently none of the milo. In order to feed his horse during the winter, Ernest hayed wild grass in creek bottoms and other "low places" about 3 miles from his home place. He never purchased cattle or sheep.[28]

When Ernest had satisfied his residency requirement for a commuted homestead entry (18 months), he immediately left for Chamberlain to apply for a patent. By September 1913, his homestead was vacant. He subsequently sold the 160-acre parcel, but the site's more recent history has not been researched.[29]

Aside from the fact that Ernest apparently had no intention of staying in the Badlands, he also lacked any family support structure in the immediate area. Those homesteaders who stayed in the Badlands often had family members and/or long-time friends or acquaintances who took up nearby claims. Their support network took several forms, from simple company in a new land to joint operation of ranches. One of Ernest's brothers, John, did take up a claim 3.5 miles south on a tributary of the Middle Fork of Sage Creek (Section 27, Township 2 South, Range 15 East), but that was two years after Ernest left the area.[30]

In contrast to Ernest's situation, the history of the Jess and Nellie Harris family, whose lives provide details for the next case history, is an example of homesteading in the Sage Creek Basin with close family members for neighbors. Much of the Harris' success, however, can be attributed to an aggressive ranching plan and the execution of that plan.

Jess and Nellie Harris were among those homesteaders whose route to the Badlands was via the Black Hills. Jess was born in Tennessee, but he was drawn to the Black Hills by the time he was about 18 years old. He reportedly located a number of valuable gold mines in the Hills, but by the time he took up his Badlands homestead he had turned to full-time farming. His wife was born Nellie Bobier. Eighteen years Jess' junior, Nellie was not yet born when her family moved to the Black Hills in 1879. There, her father was first engaged in the mining business, but later homesteaded toward the south end of the Black Hills. Married to Jess Harris in 1899 when she was just 16, Nellie proved to be a good partner in the Harris family's Badlands ranching operation.[31]

The 160-acre homestead that Jess claimed in 1902 was well-located along Sage Creek in the heart of the Sage Creek Basin. The creek provided some of the best surface water in

the area, even if it had to be "filtered" before consumption by the family. As it turned out, the area was also a good location for cattle ranching, and the family accumulated a considerable amount of acreage during the 1910s and 1920s.[32]

In 1910, Jess proved up on his original homestead claim, in the west half of Section 2, Township 2 South, Range 14 East. Two years later, he was able to patent an additional 160 acres in that section via a cash entry, and in 1920 one more quarter-section via an additional homestead entry. In the latter year, Nellie patented 240 acres located 3 miles to the south-southwest in Sections 19 and 30 of the same township.

The family's beginnings were humble enough, although perhaps not typical. When Jess and Nellie moved to their homestead with their very young family, they resided in a log house. Because of the family's Black Hills connection, they built a home and some of the outbuildings, of log—with both log and lumber obtained from the Black Hills. It was not until about 1920 that the old log home was replaced with a larger, presumably, wood-frame structure. Also, the livestock bought by the Harris family was more impressive than the typical Badlands homestead. They not only brought cattle and horses, but also chickens, ducks, geese, and turkeys. As they developed their property, the Harris family engaged in limited farming. They raised corn, maintained a large garden, and, of course, they put up hay (presumably unirrigated, as was other Badlands alfalfa and wild grass hay).[33]

Although the Harris family accumulation of land from the US government was more aggressive than that of many Badland homesteaders, they simply supplemented the outright purchase of patented parcels when neighboring homesteaders abandoned the area. Their accumulation of property helped support the cattle herd the family maintained. Jess and Nellie had about 500 head of cattle, and possibly an equal number of horses.[34]

Jess and Nellie Harris had family members who took up homesteads in the vicinity. Among those was John H. Bobier, Nellie's brother, who claimed 640 acres in Sections 1 and 12, just east of the Harris ranch. He took up the claim sometime between about 1905 and 1915, and left it before the patent had been issued. One of John's two sons, Richard, and Richard's wife, Anne, moved onto his father's homestead in 1915, possibly intending to patent a parcel for themselves. They lived there with their small children until 1918.[35]

Considerably more is known about the occupation by the Richard and Anne Bobier family than that of his father's. The Bobiers' farmstead was about one mile from the Harrises', and the family was considerably younger. By the time Richard and Anne moved to the Sage Creek Basin, the Harrises were well on their way to a stable and successful ranching operation. By contrast, Richard and Anne had a smaller operation. They took over John Bobier's homestead house, and later built their own root cellar on the property. They added other outbuildings as well, and even attempted (unsuccessfully) to dig a well for drinking water. Like the Harrises, they maintained a large vegetable garden and cultivated about 25 acres for a cornfield. Richard and Anne had several milk

cows, and separated cream which they sold in Wall, 12 miles to the north. By 1918, the Bobiers had 20 head of cattle.[36]

Despite their acreage and apparently at least a start in the beef cattle business, Richard and Anne relied very heavily on business away from their ranch. Richard owned a threshing machine, and hired it out to area farmers during the harvest to separate grain from straw. Eventually he tired of the threshing business, and perhaps life in the basin as well, so the family elected to leave the ranch in about 1918 and move to Wall. Richard changed careers at that time, operating a garage and a delivery business in Wall for five years before moving again, this time out of state.[37]

The Bobier family's move roughly coincided with that of many families from across the Badlands. The dry year of 1916 discouraged many homesteaders, while at least a few others, such as Ernest Bormann, had left simply because they had achieved their goal: to patent a homestead.

Another member of the Jess and Nellie Harris family held property in the area about the same time as the Bobier family. Jess's uncle, Andrew J. (Jack) Harris, while living with the family, patented 640 acres just one half mile south of the Harrises homestead block in Sections 11, 14, and 23. A bachelor, Harris later moved to Quinn Table (to the west), and later returned to the southern United States where he and his brother had been raised.[38]

During the 1910s and 1920s, Jess and Nellie continued to build their ranching operation. They added many homesteads to their holdings, perhaps including those of John Bobier and Jack Harris. They occasionally lived at another ranch headquarters they owned at the edge of the Quinn Table.[39]

To ensure their children were educated, Jess and Nellie hired a live-in school teacher at their Sage Creek Basin ranch. Rural families took this extraordinary step to ensure the education of their school-aged children. Later, they rented a place in Wall and even later bought a house in Rapid City where they lived during the school year. During those months, Jess stayed at Sage Creek or the family's Quinn Table ranch to care for their livestock. On occasion, Jess moved to town to live with Nellie and the children.[40]

In addition to the 500 or more head of cattle, the Harris family had a large herd of horses, estimated by one source to be about the size of the cattle herd. The family also raised hogs and chickens. Their garden was quite large. In addition to the standard crops and vegetables, the family grew peanuts, a skill Jess presumably learned when he lived in his home state of Tennessee.[41]

Despite the family's successes, in the mid-1920s, Jess and Nellie found that the ranch was in financial trouble. Cattle losses and crop failure, coming at a time when Jess was 60 years old, forced the family to concentrate exclusively on the Sage Creek Basin ranch, but by the early 1930s, they were forced to leave the old Sage Creek homestead because it was no longer profitable.[42]

In 1929, roughly half of the land in Township 2 South, Ranges 14 and 15 East, that would eventually become part of Badlands National Park (and where the Harrises lived) was described as "vacant," presumably meaning not claimed by private owners. Shortly after the Harrises left Sage Creek Basin in the early 1930s, the remaining full-time residents in the area also moved away. Clyde Wyant, whose father and family members homesteaded more than one parcel in the area between about 1912 and the mid-1920s, was reportedly the last to leave the basin around 1936.[43]

Conata Basin

Homesteading in the Conata Basin began shortly before the Milwaukee Road built its railroad line through the area. The Conata Basin is a relatively flat expanse, cut by several shallow ravines. It is bordered by rugged badlands to the north and the Pine Ridge Indian Reservation on the south. The tiny community of Conata once lay at roughly the center of this homesteading "cluster," but today the town no longer exists.

The case history provided here for the Conata Basin is brief, due to the lack of readily available detailed information on families who homesteaded and stayed in the area. It instead focuses on the mechanics of finding and establishing a homestead, for which there is better information. Paul Beaman was a homestead locator, who moved to the Conata area in 1907 shortly before the town was established. One of the families for whom he helped locate claims was the Sarah Ageton family. Sarah and her family lived in the Badlands for only a few years.

Paul Beaman, his wife, and son George moved to the Badlands in May 1907 to claim a few homesteads. Within a short time, Paul had taken on the task of a locator, whereby he sold relinquishments to the succeeding wave of homesteaders. Individuals or families who had moved to the Badlands and perhaps had only gotten as far as setting up their homestead shacks, found the conditions too harsh. Paul acquired the relinquishments and sold them to others.[44]

The Beaman family lived in Iowa prior to moving to the Badlands, an experience they had in common with many of the Conata area homesteaders.[45] Because so many have been identified as once living in Des Moines, Iowa, it seems possible that Paul had actually advertised his services there, through broadsheets, newspaper, or perhaps simply by word of mouth.

Like his father, George Beaman homesteaded a claim and was involved in the business of homesteading. For the first months after he arrived in 1907 and before the railroad reached Conata in August, George freighted goods and possessions between Kadoka (then the end of the rail line) and the old town of Interior on the White River. Later, he formed a partnership with another man, and the two built about 50 homestead shacks between 1907 and 1910. These were wood-frame shacks covered with tar paper that were moved from place to place as some homesteaders abandoned their claims and new homesteaders looked for a house to demonstrate progress toward the requirement of making improvements on their quarter-section claims. Unlike many of the buildings that

punctuate the landscape of the Plains with their gable roofs, Paul's buildings featured shed roofs.[46]

Sometimes the men would combine the freighting and building enterprises. George described it this way:

> ...these homesteaders would send us their listing of their land and size of the shack they wanted, and shipped their furniture. Well, when their wife was ready to come out there, why we would have a shack built and the furniture moved in, and she would just move in and start keeping up the place. We got more than $20 (the standard for a house alone) for that kind of deal, I promise you that.[47]

The sod houses and dugouts that homesteaders built in other parts of the Badlands and surrounding areas were not suitable in the Conata Basin because the clay soil did not support the growth of buffalo grass, the staple of a sod home. The gumbo soil was not suitable for dugout house construction, although some homesteaders built their "caves" for winter food storage.[48]

Many years later, George recalled that many, if not most, of the homesteaders had no intention of staying on the land after they proved up, and that included what reportedly was a high percentage of women homesteaders. His wife Della was one such woman homesteader. Moving from Des Moines in 1909, Della came on the recommendation of her physician. After she arrived, she paid George to build her a house, although one that turned out to be a more impressive than the typical homestead, with shingle siding and more than one window. After they married in January 1910, Della and George resided at her homestead for about three years, reportedly eventually patenting it, either as a homestead or cash entry. They did not farm and the only livestock they kept at the time were a few milk cows and a horse.[49]

Another family of Iowans from Des Moines, including two unmarried women homesteaders, moved to Conata in March 1911. Three of the four reportedly "selected [their homesteads] by correspondence with those who were surrendering the claims."[50] Sarah Ageton, her sons Jesse and Roy, and her daughter Maude all took up claims, the first three in Section 35, Township 3 South, Range 16 East, and Sections 1 and 2, Township 4 South, Range 16 East, respectively. Maude's homestead, which she did not claim until 1912, lay nine miles to the west in Section 31, Township 3 South, Range 15 East. An aunt and uncle left Iowa a short time later, taking up a claim near Maude's.[51]

The family's experiences seem to have been typical for the area. This includes their moves away from the Badlands to other locations after each homestead had been proved-up. Sarah, Jesse, and Maude returned to Iowa, while Roy moved to Belle Fourche. While in the Badlands, each family member had her/his own wood-frame homestead shack sided with "rubberoid," otherwise known as tar paper. At Sarah's place, and perhaps the others, the family built a root cellar, but that seems to have been the extent of building improvements. At first they relied for water on a man-made pond in Conata,

one quarter mile to two miles distant. Homesteaders filled their barrels from the pond, hauling them home in their wagons; livestock drank from the same pond. The Ageton's later dammed a small ravine near Sarah's house, and waited for rain water to fill it. For fuel to heat her home and cook her food, Maude collected "some fallen scrub pines" and purchased coal, a practice to which other homesteaders may have been accustomed.[52]

The family owned a few horses, and fed them over the winter with hay they cut at the Pine Ridge Indian Reservation. Roy and Jesse worked out an arrangement with some Indian farmers, the Davidson Brothers, whereby the Ageton's provided the mower and labor, and the two parties split the harvested hay. The remainder of the Ageton livestock was limited to three pigs. These were free-range, allowed to scrounge for feed across the prairie. The family engaged in very little farming. They attempted to raise corn, but their only crop was destroyed by a neighbor's cattle and lost.[53]

Because the homesteads proved to be a poor source of income, Maude turned to teaching for a living. She taught at three area schools during her tenure in the Badlands, occasionally staying with a student's family or at an abandoned shack near the school.[54] RTI did not research the disposal of the Ageton claims for this study. They are presumed to have eventually been acquired by neighboring ranchers for grazing land.[55]

Upper Big Buffalo Creek

The upper Big Buffalo Creek drainage basin, at the far eastern edge of the Badlands, had a settlement history comparable to that of the Conata Basin, not far to its southwest. It is an area of hills with some steep-sided ravines and bluffs. There are no permanent sources of surface water, but Big Buffalo Creek and some tributaries have running water in the spring. Also, one homesteader reported good drinking water in a 20-foot well.[56]

Records for patents in Township 3 South, Range 18 East (one of the townships generally encompassed by the upper Big Buffalo Creek) identify the earliest patent as that of Fred Fry in December 1907. Between that date and the end of 1915, the US government had deeded about 80% of the lands patented in the township to homesteaders. Initially, the claims were homestead entries that were commuted and paid for in cash. Cash entries dominated the patents until 1914 when homestead entries became the preferred mechanism for patent. Less than two-thirds of the land in Township 3 South, Range 18 East was ever patented, which is not surprising, given the very rugged terrain particularly in the south and southeast portions of the township.[57]

As noted previously, the area had not been opened to Euro-American settlement until 1890, the date when the Great Sioux Reservation was opened. But the most critical barrier to early settlement, the absence of local railroad access, was lifted in 1907 with the arrival of two rail lines across this stretch of South Dakota. A large number of the homesteaders arrived by railroad, with the closest railroad destinations on the east side of the Badlands being Cottonwood on the Chicago and Northwestern Railway line and Interior on the Chicago, Milwaukee, and St. Paul line. Both stations were established at their present locations in the same year that the two railroads were built through the area.

Immigrants to the upper Big Buffalo area often traveled with family members or friends, or they sent for them shortly after arriving. They would settle on adjacent claims, if possible. A fair number of the immigrants came to the east side of the Badlands and adjacent areas from communities in eastern Nebraska, such as Emerson, York, and Pierce. Others came from Des Moines or other Iowa towns, and some came from Minnesota.[58] Immigrants from Pierce, Nebraska, included at least six families: the Goffs, Browns, Crews, Blairs, Leedoms, and Mendenhalls. The Crew family provides the case study for settlers in this area at the northeast edge of Badlands National Park.

The first member of the Crew family to take up a claim in the area was Claude, a young man of 22 years in 1908 when he first saw the Badlands. Encouraging his parents Edwin and Lucy Crew to move from Pierce and join him in the Big Buffalo area two years later, Claude soon had to admit that his first choice for a piece of South Dakota (NW quarter of Section 9, Township 3 South, Range 19 East), was less than ideal as there was no water on it. Ed and Lucy also claimed a 160-acre parcel immediately to the west, with a portion of it in the Badlands. Ed and Lucy purchased the parcel from a discouraged immigrant, Fred Pagel, who returned to Minnesota rather than stick it out in the Badlands. Abandoning his original claim, Claude later moved one mile south, below a wall of Badlands (in Section 18, Township 3 South, Range 19 East), where he homesteaded another 160-acre parcel. He patented that homestead entry in 1919.[59]

The appeal of the upper Big Buffalo Creek land was almost certainly its price. Although the area was obviously dry, and in places rugged by eastern South Dakota standards, the price of 50 cents per acre for commuted homesteads was about one-twentieth of the price of property being offered by a land company in the Kadoka area about 20 miles to the east.[60]

In their eagerness to make claims in the area, homesteaders occasionally rectified bad choices by either abandoning a claim before patent, such as Ed, Lucy, and Claude Crew did, or by making an additional filing. This latter choice could be accomplished by filling out the 160-acre maximum acreage allowance if a smaller parcel had been claimed at first, or by having a spouse, sibling, or adult child register a claim of her/his own.[61]

To get to their new home, the Ed Crew family took the Chicago and Northwestern Railroad from Pierce, Nebraska, to Cottonwood, South Dakota—the nearest station. An immigrant rail car hauled all of their possessions, including horses and wagons. The family then used the wagons to move their belongings the last 15-16 miles to their homestead claims.[62]

When Ed and Lucy Crew made the move to the Badlands, they may have been among the older of the area immigrants. They were 52 and 47 years old, respectively. Their oldest child Laura did not move with the family and the youngest son Leslie was 18 years old at the time of the move. Ed and Lucy had been born in Iowa and, after marrying, had moved to Pierce, Nebraska, in 1896. There is no information available about what factored into their decision to leave Pierce, other than the fact that they did not own land there.[63]

Local histories indicate that, like the Crews, most of the eastern Badlands homesteaders were American citizens who had been born and/or recently lived in South Dakota or adjacent states.[64] This pattern might be attributable to the late date of the immigration, by which time the influx of immigrants to the United States had fallen appreciably from that of the late nineteenth century.

The Crew family's homestead developed into an admirable success, it would appear. Ed, Lucy, and Leslie built two houses, a root cellar, and a sheep barn on the property; raised 30-40 horses and 400-500 sheep; and watered the livestock with water from a stock pond on the property. After Leslie married in 1919, he and his wife lived on the property with Ed and Lucy for several years, working the ranch together.[65]

The Crew family success was in contrast to the failure of many of the early homesteads in the Big Buffalo Creek area. While sources have reported that at the height of the boom homestead shacks stood on almost every quarter-section of land (outside of the rough Badlands to the south), an exodus began as early as 1916 when drought dried up surface water, grasses, and what crops there were. As families left, their neighbors generally did not move to buy the empty parcels. At that time, Jackson County had no interest in taking the parcels for back taxes, so the land stood without owners. Neighboring ranchers, however, used the parcels for grazing their livestock, without making payments to either the former owners or the county. Adjacent neighbors apparently made verbal agreements among themselves about who would use a parcel if more than one rancher was interested.[66]

During this time, the Crew family's ranching operation focused almost exclusively on sheep. Rarely did any of the local residents attempt to grow grains because of the dry climate and absence of surface water, but some were successful when they raised alfalfa seed in the wet bottoms along some tributary stream courses. Families, including the Crews, also kept a small number of dairy cattle, taking their cream to Cottonwood to be shipped by railcar to regional markets.[67]

Those neighboring immigrants who left the upper Big Buffalo Creek area at about the time of World War I included George W. Goff. He was one of the first, if not *the* first, to move to the area from Pierce, Nebraska. George took up a claim in Section 12, Township 3 South, Range 18 East, not far to the west of the Crew family claims. George commuted his homestead entry in August 1907 and patented that 160-acre parcel in early 1908. Two other members of the Goff family, perhaps siblings, also claimed land in the vicinity. John patented his 160-acre piece just north and northwest of George's in 1908 and Lulu patented her parcel east and southeast of George's in 1910. Records indicate, however, that George and his wife Elizabeth had returned to Pierce by 1918. In that year, they deeded George's quarter-section to Edgar S. Goff, possibly another brother or a son.[68]

When Leslie Crew returned from military service in World War I and married Jessie Buerck in 1919, the story of the next generation of the Crew family began. Jessie had

moved to the area from Minnesota when she was 18 years old. She lived with her sister Ada who had earlier married James Bateman. Bateman's homestead, which initially consisted of 160 acres which he patented in 1909, lay about 1.5 miles north of George Goff's and within one-eighth of a mile of Big Buffalo Creek. For a brief time before marrying, Jessie taught at the Fairview School, some 15 miles from her brother-in-law's homestead.[69]

As noted above, after Leslie and Jessie married, they lived and worked at Ed and Lucy Crew's homestead, apparently occupying (and perhaps building?) the second house at the farmstead. At the same time, Leslie began to acquire his land. He received a patent for a homestead claim within a mile or so of his parents. He also purchased another quarter-section and used it to produce hay. His quarter-section was subject to two mortgages totaling $630, and eventually he and his wife were unable to repay that and a mortgage on another property (perhaps his homestead). The 320 acres were lost in 1926 to the State of South Dakota through a sheriff's deed. It may have been at that time that the couple moved briefly to Spearfish. Within six years, however, about when their second son Keith was born, Leslie and Jessie had returned to the Badlands.[70]

In 1932 or 1933, they purchased a quarter-section in Section 11, Township 3 South, Range 18 East. When the new highway was completed about three years later, Leslie and Jessie opened a gas station on their newly-acquired parcel, and continued to operate it until mid-1951. The place catered to tourists, offering refreshments and souvenirs in addition to gasoline. The couple certainly shared his parents' spirit of hospitality and tourism service. For years, the Ed and Lucy Crew family home had served as an unofficial headquarters for visitors to the Badlands from surrounding communities, and Leslie and Jessie carried on the tradition at their gas station.[71]

Leslie and Jessie also continued in the family's ranching tradition. After Ed and Lucy died in 1937 and 1949, respectively, Leslie and Jessie incorporated the old homestead into their ranching operation. Between 1939 and 1940, they began to accumulate other acreage in the area, often purchasing it at auction in Jackson County. In the late 1940s, Leslie and Jessie added the old Ed and Alice Brown homestead to their increasingly large landholdings. Eventually, that property would be the next generation's project to provide a service to Badlands tourists and at the same time preserve a piece of the area's homesteading past.[72]

No story of the east end of the Badlands or the Crew family is complete without mention of Edgar I. and Alice Brown. They and their son Charles were also from Pierce, Nebraska. Arriving in 1909, Ed had, in the previous summer, selected his 160-acre homestead parcel (then recently relinquished by another party) on either side of a south tributary of Big Buffalo Creek (NE quarter of Section 12, Township 3 South, Range 18 East). He subsequently commuted the homestead, paying cash for the land, and receiving a patent in 1911.[73]

Unlike their neighbors, the Crews, the Browns traveled to their Badlands homestead in a covered wagon. But in many other respects their lives were comparable to those of their

neighbors. For example, their first major task when reaching their homestead was to build a "permanent" home. The Brown family chose to build a dugout sod house, using the local material which was plentiful. If historic photographs and written remembrances are any indication, at least half of the first homes in the general area were made with sod walls. Cottonwood logs served as roof and supporting members in the Brown house, while milled lumber from a White River sawmill was used for roof decking and window and door trim. Between 1911 and 1913, the family also erected a dugout root cellar, outhouse, chicken coop, and barn on the property. Another major improvement came in 1913 when an abandoned claim shack was moved onto the property and added to the north side of the sod house. Perhaps at about that time, the front of the sod house and the claim shack were sided with matching lap siding. Between 1915 and 1920, the old barn was replaced with a new, larger structure and a garage was attached to one end. Later, a new well was dug. These improvements were the only ones ever made on the 1909 Brown farmstead.[74]

Like Ed Crew, Ed Brown was in his early 50s when he made his initial claim on 160 acres in the Badlands.[75] Despite his age, he maintained a diversified farming operation. The family reportedly raised (or tried to raise) barley, spelt, wheat, oats, and alfalfa, and kept a small number of livestock, which included chickens, pigs, milk cows, and occasionally some beef cattle.[76]

After Ed died in 1920, Alice and Charles continued on the place until 1934, presumably producing similar crops and handling the same type of livestock. By 1936, both Alice and Charles had left for California, and a bachelor by the name of George Carr was renting the old homestead and caring for the buildings. George had a small farming operation as well, with most of his efforts apparently concentrated on raising oats, wheat, and alfalfa. He continued to live on the property, at least seasonally, until his death in 1949.[77]

As noted above, Leslie and Jessie Crew purchased the Brown homestead acreage. Years later, son Keith would restore the old "soddy" and other homestead buildings. In the family tradition of tourist services, Keith and his wife Dorothy opened the "Prairie Homestead," just beyond the Park's northeast entrance to area visitors, using the "soddy" and other outbuildings to tell the agricultural and homesteading history of the badlands.[78]

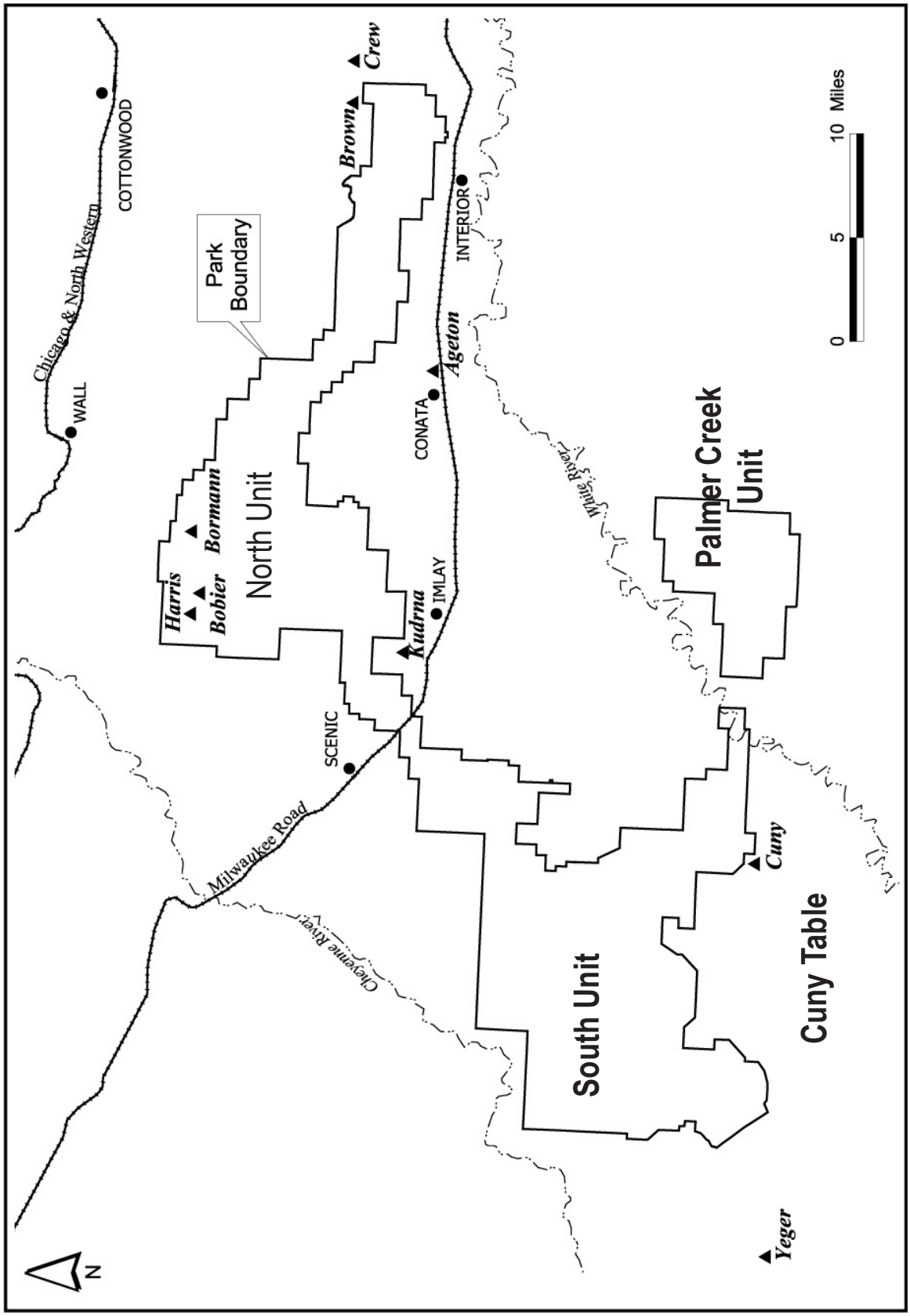


Figure 2: Map showing locations of selected homesteads mentioned in text (homesteads labeled in italics by claimant's surname).

Source: To be added in future submissions.



Source: Copy of photograph at Badlands National Park Archives, No. BADL-6343; reprinted from Bormann's *Homesteading in the South Dakota Badlands – 1912*, p. 71.

Figure 3: Ernest Bormann stacking sod around base of his tar-paper homestead shack in 1912.



Source: Photograph courtesy of Keith Crew; reprinted from *Prairie Homestead*, p. 10.

Figure 4: Edgar and Alice Brown sod homestead house (at left) and another shack attached (at right), both buildings with wood lap siding. Alice and son Charles standing in front of house, photo from early 1930s.

[1] American Legion Auxiliary, Carrol McDonald Unit, *Eastern Pennington County Memoirs* (Wall: 1965); Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh Counties 1915 – 1965* (n.p.:1966); Virginia I. Kain Lautenschlager, *A History of Cuny Table, 1890-1983* (Rapid City: Pioneer Baptist Press, 1983); Ernest Bormann, *Homesteading in the South Dakota Badlands* (Stickney, SD: Argus Printers, 1971); Keith Crew and Douglas Heck, *Prairie Homestead, Meet the Browns and Their Neighbors* (Martin, SD: Lewis Publications, 1996); Maude Olney, "Light on the Badlands," *South Dakota Department of History Report and Historical Collections* 33.

[2] All information provided about the Yeger family was provided by (daughter) Nellie Cuny, interview with Mitzi Rossillon, tape recording, 27 January 2005.

[3] Cuny interview; Lautenschlager, *History of Cuny Table*, 34-5.

[4] Lautenschlager, *History of Cuny Table*, 2.

[5] Ibid., 25.

[6] Ibid., 33-4, 84, appended "Some Last-Minute Tid-Bits"; Cuny interview.

[7] Lautenschlager, *History of Cuny Table*, 24, 26-7, 50, 55, 58-9, 69; Cuny interview.

[8] Cuny interview; Lautenschlager, *History of Cuny Table*, 74.

[9] Ibid.

[10] Tony Kudrna, interview by Mitzi Rossillon, Scenic, SD, 31 January 2005; South Dakota census, 1925, cards on file, South Dakota Historical Society, Pierre.

[11] Ibid.; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 200.

[12] US Bureau of Land Management, "Land Patent Details, General Land Office Records," accessed 16 December 2004, portion of online database for various townships in Jackson and Pennington Counties; Kudrna interview.

[13] US Bureau of Land Management, "Land Patent Details." It is possible that the 120-acre parcel was patented instead by Joseph Kudrna, the son, who would have been of legal age to take up a homestead at about that time. The records that RTI used do not distinguish between family members of the same or similar name.

[14] Kudrna interview.

[15] Ibid.; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 200.

[16] Kudrna interview.

[17] Ibid.

[18] Lautenschlager, *A History of Cuny Table, 1890-1983*, 51.

[19] Kudrna interview; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 200.

[20] Kudrna interview.

[21] Ibid.; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 200.

[22] Kudrna interview.

[23] American Legion Auxiliary, *Eastern Penning County Memoirs*, 218; US Bureau of Land Management, "Land Patent Details"; Louis Blumer, interview by J. Earnest, tape recording, Wall, 15 January 1968, Badlands National Park Library, Headquarters.

[24] Bormann, *Homesteading in the South Dakota Badlands*, 10, 15.

[25] Ibid., 10, 22, 24.

[26] Ibid., 26, 33-37, 62.

[27] Ibid., 63, 69-70.

[28] Ibid., 62, 65.

[29] Ibid., 88, 93.

[30] Ibid., 7; US Bureau of Land Management, "Land Patent Details."

[31] American Legion Auxiliary, *Eastern Pennington County Memoirs*, 210; US Census Bureau, 1910 Census.

[32] Anne Bobier, interview with Susan Sindt, taped interview, Rapid City, 14 February 1973, Badlands National Park Library, Headquarters.
[33] American Legion Auxiliary, *Eastern Pennington County Memoirs*, 218-219.
[34] Ibid., 220; Blumer interview; Bobier, interview.
[35] US Bureau of Land Management, "Land Patent Details"; Bobier interview; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 218.
[36] Bobier interview.
[37] Ibid.
[38] American Legion Auxiliary, *Eastern Pennington County Memoirs*, 220; US Bureau of Land Management, "Land Patent Details."
[39] American Legion Auxiliary, *Eastern Pennington County Memoirs*, 220.
[40] Ibid.; Blumer interview.
[41] Ibid.
[42] Ibid, 220.
[43] Anonymous, *Land Use and Survey Maps of South Dakota and the Badlands Region, 1929*. Bound volume on file, Badlands National Park Library, Headquarters; American Legion Auxiliary, *Eastern Pennington County Memoirs*, 219-221; Blumer interview.
[44] George and Della Beaman, interview with J. Stockert, 1 April 1971, Badlands National Park Library, Headquarters; American Legion Auxiliary, Carrol McDonald Unit, *Eastern Pennington County Memoirs* (Wall: 1965), 201
[45] Olney, "Light on the Badlands," 500; Philip S. Hall, *Reflections of the Badlands* (Vermillion: University of South Dakota Press, 1933), 156-7.
[46] US Census Bureau, Digitized Census Index, on file, South Dakota Historical Society, Pierre; Beaman interview.
[47] Beaman interview.
[48] Ibid.
[49] Ibid.
[50] Olney, "Light on the Badlands," 491.
[51] Ibid., 491, 505-506.
[52] Ibid., 495, 505, 510-511.
[53] Ibid., 499-499.
[54] Ibid., 501-509.
[55] One source indicates that the land was "in use" as of 1929: Anonymous, *Land Use and Survey Maps*.
[56] Keith Crew, interview by Mitzi Rossillon, partial tape recording, Phillip, SD, 29 January 2005.
[57] US Bureau of Land Management, "Land Patent Details"; Anonymous, *Land Use and Survey Maps*; Crew and Heck, *Prairie Homestead*, 14.
[58] Crew and Heck, *Prairie Homestead*, 13; Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh Counties*, 46, 66, 109, 111, 134; Francis and Wanda Guptill, *Memoirs from Interior and Wanblee Schools*, unpublished manuscript, 1989, on file at Badlands National Park Library, Headquarters, 6; Olney, "Light on the Badlands," 500.
[59] Crew and Heck, *Prairie Homestead*, v, 1, 33, 35; Crew interview; US Bureau of Land Management, "Land Patent Details"; Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 134; South Dakota, 1915 State Census.
[60] Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 9-10.
[61] Ibid., 12-13.
[62] Ibid., 134.
[63] Ibid.; South Dakota, 1915 State Census, on file, South Dakota Historical Society, Pierre; Crew interview.

[64] See for example, Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 11-16, 66, 134-135; Olney, "Light on the Badlands."
[65] Crew interview; Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 134.
[66] Crew interview; Crew and Heck, *Prairie Homestead*, 14.
[67] Crew interview.
[68] Crew and Heck, *Prairie Homestead*, 13, 45; US Bureau of Land Management, "Land Patent Details"; Jackson County, receiver's receipt for $80 for SW¼ of Section 12, Township 3 South, Range 18 East, 29 August 1907, Book 5, p. 412; Deed for SW¼ Section 12 from George W. and Elizabeth Goff to Edgar S. Goff, 21 August 1918, Deed Book 4, p. 192.
[69] Crew interview; Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 134; Crew and Heck, *Prairie Homestead*, 29; US Bureau of Land Management, "Land Patent Details."
[70] Jackson-Washabaugh County Historical Society, *Jackson-Washabaugh*, 134; US Bureau of Land Management, "Land Patent Details"; Jackson County, Deed for SW¼ Section 13, Township 3 South, Range 18 East from Mattie and Charles Smalley to Leslie C. Crew, subject to mortgage, 19 April 1919, Deed Book 4, p. 393; Sheriff's deed from SW¼ Section 13 and SE ¼ Section 14, Township 3 South, Range 18 East from E.B. Hughes, Sheriff, to State of South Dakota, 26 August 1926, deed Book 9, p. 150; Crew interview.
[71] Crew and Heck, *Prairie Homestead*, 34; Crew interview.
[72] Ibid.; Jackson-Washabaugh County Historical Society, *Jackson-Washabagh*, 154.
[73] Crew and Heck, *Prairie Homestead*, 7, 8, 11, 45; US Bureau of Land Management, "Land Patent Details."
[74] Crew and Heck, *Prairie Homestead*, 7-11, 15.
[75] Ibid., 17.
[76] Ibid., 16.
[77] Ibid., 19-21.
[78] Ibid., v.

CHAPTER EIGHT

Twentieth Century Economic Development and Tourism

CHAPTER 8

TWENTIETH CENTURY ECONOMIC DEVELOPMENT AND TOURISM

Introduction

At the turn of the nineteenth century, agriculture continued to form the basis of South Dakota's economy. Early settlement had centered on small homesteading farms where immigrants from the eastern United States and Europe struggled with extreme weather conditions, poor soils, and rough terrain to establish a living based on growing crops (corn, wheat, and milo) and raising livestock (cattle, sheep, and horses). When the railroads arrived in South Dakota in 1907, they provided an impetus for economic development focused on travelers drawn to the area by published images of spectacular scenery and adventure.

Pioneers in the Preservation of Natural Landscapes and the Promotion of Travel (ca. 1830-1907)

Individuals with a strong sense of adventure set out in search of the scenic wonders. Artists and writers were among those who traveled to celebrate this landscape in their paintings and written narratives. Combining a sense of awe they felt in viewing the Western scenery, artists also evoked a spiritual sense of the sublime beauty that was unique to the American landscape. Their depiction of the landscape as uniquely American supported Americans' needs to compete with the historic landscapes of the old world. There was also something spiritual about the Western landscape that elevated it to a higher plane. Artists such as Thomas Cole, who depicted this magnificent landscape, drew a direct connection between nature, God and Nation. In 1835, Cole wrote that America's wilderness was its most distinctive feature:

> Because in civilized Europe the primitive features of scenery have long since been destroyed or modified… And to this cultivated state our Western world is fast approaching; but nature is still predominant, and there are those who regret that with the improvements of cultivation the sublimity of the wilderness should pass away; for those scenes of solitude from which the hand of nature has ever been lifted, affect the mind with a more deep toned emotion than aught which the hand of man has touched. Amid them the consequent associations are of God the creator—they are his undefiled works, and the mind is cast into the contemplation of eternal things.[1]

As some art historians have noted, artists of the American Romantic movement saw themselves "as spiritual leaders who were involved not only with art but with the iconography of nationalism."[2] Henry David Thoreau wrote in praise of the undisturbed natural beauty to be found in the Western wilderness, "national preserves…in which the bear, the panther, and some even of the hunter race, may still exist…not for idle sport or

food, but for inspiration and our own true re-creation" and other Transcendentalists influenced Americans' appreciation of nature.[3]

Romantic and Enlightenment concepts of nature expressed in the artistic movements of the nineteenth century fueled a conservation movement and spread sentimental ideas of nature through popular literature such as Hawthorne's *The House of Seven Gables* and Thoreau's *Walden*. Concern for protection of the environment led to the formation of various organizations such as the Sierra Club, founded by John Muir, Warren Olney, J.H. Sennger, and William Arnesin in 1892; the Audubon Society in 1905; and the Save-the Redwoods Society in 1918. These organizations contributed to the proliferation of tourism by supporting the establishment of national parks, which by virtue of being managed by the federal government, were seen to be a way to protect vast areas of natural wilderness. In 1899, a statement prepared by the Sierra Club and several other organizations prompted Congress to pass legislation establishing Mount Rainier National Park.[4]

As part of their membership activities, the Sierra Club began organizing annual outings that were intended to introduce interested parties to the landscapes that Sierra Club members hoped to preserve. After the success of the first outing, such trips became a staple of Sierra Club membership, introducing greater numbers to the wonders of outdoor recreation and travel.[5]

Promoting Travel and Tourism (ca.1890s-1939)

Real life experiences, expressed in narrative form, by pioneer women who had personally witnessed the awesome beauty and rugged terrain of the Western landscape, also expanded knowledge of the Western scenic beauty among those who were exposed to literature. Between 1922 and 1939, more than a dozen women wrote novels or stories that featured young pioneer women in prairie homesteads or ranching communities of South Dakota. Unfettered by social customs and relying on their initiative and survival skills, these early female settlers were the chief protagonists and heroines of the stories.[6]

Authors such as Lucile Fargo and Edith Kohl provided a female-dominated view of life on the prairie that had been previously established by writers such as Hamlin Garland in the 1890s. These women were the essence of modernity with their steadfast refusal to follow the traditional path of marriage, dependence on fathers or husbands, and the expectations of homemaking and motherhood that Society had allotted them. Female characters were portrayed as decision-makers and achievers, having a strong sense of purpose and ambition, and succeeding in establishing homesteading claims. These women were strong anchors that held together the core spaces of their communities such as the schools and churches.

Just as the pioneer environment of early South Dakota provided a new field of action for the literary heroine, so the Western landscape offered a new terrain to be explored and conquered by women who were eager to face its physical and emotional challenges. Women, who read authors such as Lucile Fargo, realized they too could succeed in facing the challenges thrust at the protagonist of *Prairie Girl* (1937), in which the pioneer

qualities of self-reliance, physical strength, and fearlessness gave substance to feminist ideas.[7]

The women who came alone to settle in the harsh lands of South Dakota were the inspiration for others who came after them including travelers who were intent on finding a more serious purpose in life than the traditional role they had so far been afforded. Based on her own experiences, Edith Eudora Kohl recounted in *Land of the Burnt Thigh* (1938) her feelings regarding the beauty of the landscape, the proximity to coyotes and wolves, as well as the sheep and cattle of the homesteaders. Edith Kohl set up the printing of a local newspaper, in which she promoted settlement as a cooperative enterprise between people, businesses, and the railroads. Kohl wrote:

> "A surprising number of homesteaders were girls who had come alone. They had a purpose in being there. With the proceeds of a homestead they could finish their education or go into business. Many of these girls came from sheltered homes and settled out in the plains wilderness, living alone in isolated shanties."[8]

While a number of female novelists set their narratives in the homesteading areas of South Dakota, others wrote within the framework of ranching communities west of the Missouri River, or the mining towns of the Black Hills, the setting for many later 'Western' movies. Typical of these novels was the prototype 'cowgirl' version of the pioneer woman who participated fully in everyday life on the ranch, riding in rodeos, and camping in the untamed landscape that they loved.

Stories provided insight into the lives of the early women settlers in South Dakota and suggested a freedom and opportunity for women to grow and develop. Such sentiments inspired women to travel to the West in search of similar experiences. The idea of the wilderness as a travel destination appealed to women who were interested in testing the limits of their physical abilities as well as tearing down traditional notions of their capabilities. Many Englishwomen, generally those with independent incomes, explored the mountainous regions of the American West. Often traveling alone, or accompanied by single male companions, they hiked mostly in destinations such as the Rocky Mountains and the Yosemite Valley; places that had been opened to tourists through the improvements made in rail transportation and accommodations.

Tourist guidebooks were important commercial influences on the eastern United States as well as overseas, particularly Britain, where popular opinion of these sites in the western United States was fomenting with the view of them as potential travel destinations. In addition to opening up these places to exploration and discovery, the railroads played a significant role in promoting them. Advertisements placed by rail companies in British newspapers and journals beginning in the 1840s praised the virtues and qualities of scenery and recommended preferred travel routes and points of interest. Such promotional material was also available through the railroad land offices and private land companies at depots across the country. In contrast to the colorful and enticing images portrayed through travel guides that promoted tourism by rail travel, the narratives

produced by those who had visited these sites revealed a different picture of this travel experience. Many complained of the deficiencies in accommodation. [9]

The growing interest in the natural world that characterized America in the mid- and late nineteenth century, was fuelled by the rapid urbanization and development of the industrial revolution in the eastern United States, where open space was becoming increasingly hard to find. Natural wonders became prime tourist destinations and an interest in outdoor recreation grew. Some of these natural wonders, such as Niagara Falls, Mammoth Caves, Yellowstone, and Yosemite, came to be seen as travel destinations where man could also find God manifested in natural beauty.[10]

Initially, it was principally the elite who traveled to see the sights they had enjoyed in paintings and through literature. As the availability of popular forms of literature increased, thanks to improvements in printing technology between 1860 and 1900, a broader cross-section of America became exposed to the wonders of the Western landscape. Within this developing technology, the illustrated press carved out its own special niche in the market. Serving to expand the public's horizons, this new form of publication brought into the home images of places, people, and ideas only previously imagined. Premier politicians, industrial tycoons, African chiefs, geographic wonders, and mechanical marvels were all suddenly available through the pages of the illustrated newspapers.[11]

One of the favorite subjects of illustrated newspapers such as *Gleason's Pictorial Drawing Room Companion,* produced in Boston, as well as the *Illustrated American News* and *Harper's Weekly* produced in New York, was the image of the West as "an area at once dangerous and exotic, forbidding and appealing." [12] A deep ambivalence began to characterize many Americans' views of the West as it appeared to represent both a 'Garden of Eden' with its untamed and lush landscapes, and a land populated by the unpredictable American Indian. By definition, the West was regarded by Eastern settlers as the place where civilization and savagery met. It was a place defined by myths and illusions, by incomprehensible extremes of weather, grand mountains and geologic formations, with seemingly unending expanses and emptiness. Whatever sentiments the West might conjure in the minds of visitors, one thing was clear, no other nation had a 'Wild West.'[13]

Picturesque America, another popular magazine/display book, depicted the American West as a place of vast wilderness and solitude. According to its subtitle, the book contained pen and pencil renderings of the mountains, rivers, lakes, forests, waterfalls, canyons, and cities of America. The book also served as a way of promoting national unity after the Civil War. By revealing the wonders of the country, the book allowed American citizens to construct a national self-image based on reconciliation of the North and South and incorporation of the West.

Oliver Bunce Bell, editor of *Picturesque America* was convinced that Americans wanted to know about the dramatic scenery and new travel destinations that existed within their own country. Visitors from Europe had long complained that the United States was

lacking in the monuments of long-established civilizations, that its coasts were dull, that it lacked the majestic mountains of the Swiss Alps, and that its countryside was not groomed like that found in England. Although technological advances had already begun to alter the landscape, books such as the *Picturesque America* were careful not to reveal the impact engineering feats such as railroads, dams, and roads had had on the landscape. Often images were cleansed of anything that might detract from the purity of the landscape. Even settlements and farms were omitted from the depictions, leaving the impression of an eternal natural heritage that was still awaiting discovery.[14]

Railroad Development (ca.1889-1907)

Painters, writers, explorers, and returning travelers portrayed the image of the West as paradise, and railroads provided the means by which to access these places. Due to the location of rail lines, visitors could often glimpse from the windows of the rail carriages the scenery that awaited further discovery. This was the case with the Badlands whose towering formations were visible from the cars of the Chicago, Milwaukee and St. Paul Railroad, as they traveled across the flatlands of the prairies south of, and parallel to, the formations.

But it was only with the arrival of the automobile that travel to destinations such as the Badlands was opened up to a wider public. The automobile facilitated the development of the tourism industry to the point where it eventually competed with the agricultural economy. Development in the small homesteading communities, such as Scenic, Interior, Conata, and Imlay could not have occurred however, without the railroads, which brought in settlers while also opening up trade possibilities for those living in these remote areas.

By 1907, railroad development through the White River valley had begun to affect the character of the landscape. Towns began to spring up, typically every twenty miles along the line where trains stopped to take on water. From east to west, beginning near the town of Kadoka, the watering stops included Weta, Interior, Conata, Imlay, and Scenic. With its proximity to the Badlands and accessibility via the railroad, Interior became a natural stopping place for tourists. The town soon boasted two hotels, two cafes, five saloons, a bank, a Ford dealer, a livery stable, and a newspaper. In 1928, a newspaper column advertised the sale of the Tourist Inn, in Interior. Run for six years by Ray Schultz, the inn was “rated one of the best equipped places, being a combination of hotel, confectionary, and lunchroom.” Nevertheless, it appears that Mr. Schultz was possibly seeking a more lucrative location for his business as the newspaper stated he was “considering opportunities in the Black Hills region of South Dakota, in Wisconsin, and in Hollywood.”[15]

The community of Weta witnessed the construction of a hotel in 1908. By 1910 the town appeared to be flourishing with a variety of venues for visitors including a café, the Confectionary Store, and Hotel, as well as McHenry’s Hotel.[16]

Lodge, located about eight miles north of Interior, was a small community that had settled around a post office, and offered travelers a place to stay and take refreshment. It was similar to many small communities that dotted the landscape along the White River.

Known as a road house, the Willow Springs was located on the Sidney-Deadwood Trail and offered, as one traveler described it, "Everything a worthy pilgrim desires can be secured."[17]

Another hotel was located at Scenic, the last stop on the rail line before reaching Rapid City. Like several of the other small towns, Scenic had a newspaper, the *Scenic Observer*, a store, a blacksmith shop, and a couple of restaurants. The small hotels that were built at early homesteading towns were likely similar to one on the Old Bismark Trail in the vicinity of Meadow, South Dakota, which was simply a room in a sod house and offered a resting place for travelers (see Figure 5).

Local Recreation as Tourism (1909-1941)

Life in the small towns of the Badlands was mostly taken up with making a living but there were occasions when the locals would create their own amusements and celebrations. Local entertainment attracted residents from the surrounding area and created a local recreation industry. This local recreation also involved the American Indian population and eventually became an attraction that enticed tourists to the area as well as providing an alternative source of income for the local population.

The northern Plains Indians had considered the Badlands their home prior to settlement by Euro-Americans. Between 1880 and 1920, most American Indians struggled with the process of cultural assimilation. The transition from a nomadic, bison-hunting lifestyle to reservation life proved difficult, and tribal members were confronted with far-reaching cultural changes when the federal government assumed ownership of the region. As a consequence, American Indians were forced to experiment with new economic, social, and political practices, based on what their cultures and the Indian Office would allow.[18]

Open-range ranching, practiced on reservations, was an endeavor that allowed the American Indians to continue their skills as horsemen. By extension, the entertainment value of cowboying and rodeos was soon recognized and the rodeo developed into a lucrative attraction for paying crowds.[19]

In 1919, the town of Interior began to sponsor an annual "Frontier Days" celebration. In part, Frontier Days was intended to celebrate American Indian culture, supplement local income, and promote real estate sales on the Pine Ridge Reservation. In the 1920 program for the event, the White & Campbell Real Estate Company of Interior advertised "Indian Lands" for sale and promised that "cars and men" would be ready to take prospective buyers out.[20] The program went on to read:

> OUR INDIANS: Most of the Indians who take part in the celebration are Oglala Sioux from the Pine Ridge Indian Reservation, the north boundary being the White River, which is one mile from Interior. In addition to those from the Pine Ridge, there will be noble red men from the Cheyenne and Rosebud Agencies, also from the Lower Brule.… Six big steers have been donated by the cattle men of this vicinity for a daily barbecue for the Indians. Indian pony races, medicine dances, and other things dear to the

> Indian heart, the most thrilling of which will be the Omaha Indian dance in full regalia and war paint. Women, children and men take part in this famous dance. From 300 to 500 Indians will participate each day—the dance staged exactly as it was in the old days when the Paleface still kept his wigwam pitched on the eastern side of the Allegheny Mountains.[21]

At such events, the Badlands region was invaded by model T's, Chevies, and Maxwells. The paved road had yet to be introduced and drivers were accustomed to carrying a shovel as they struggled with the wheel ruts that caused high centers in the roads, and contended with wooden bridges over wet ground. When tourists began to visit these events, they mostly carried tents and camping equipment. Interior put in a free campground on the east side of town, furnished with tables and seats. The campground was used for several years, with as many as twenty or thirty cars accommodated at one time.[22]

Locally, the rodeo and cowboy show was also a tourist attraction. In 1928, a group of Pine Ridge men formed the Pine Ridge Sioux Rodeo Association designed to generate outside attention, raise revenue, and promote Lakota pride and camaraderie. According to its organizers, the rodeo's primary aim was to put Pine Ridge on the map.[23]

The Pine Ridge Sioux Rodeo Association enriched the social environment of the reservation, but also used its revenue to improve the built environment. In 1929, they rehabilitated an existing hall to accommodate the large rodeo crowds, anticipating new uses to include a town hall, community center, and a meeting place. In 1933, the US government used this hall to house Emergency Relief Workers on the reservation.[24] Horsemen in the vicinity of the Badlands who became recognized showmen included George Defender from Standing Rock Reservation (1891-1934). Shannon County settlers knew Defender as the "World Champion Indian Rider" and "the great Indian cowboy."[25]

The Coming of the Automobile (1908-1940)

Although local celebrations and recreation played a role in promoting tourism, the unusual formations of the Badlands continued to serve as the important draw for tourists, just as it had in the 1870s when paleontologists and fur traders first brought word to the east about this important region. Once automobiles became affordable to a wider range of Americans, a dramatic change occurred in the concept of tourism. In fact, mass production of affordable cars revolutionized the way American's viewed travel. No longer was travel to the exotic wonders of the West the province of the wealthy, or a sentimental and philosophical exercise, it was now open to the common man to find joy in experiencing the outdoors. The person "who thrills in an elemental contact with the reality of nature…" who appreciates that: "There is more than 'scenery' to be complacently inspected; there is the life and atmosphere of the West to be lived."[26]

A new concept of outdoor recreation was formed with the help of the automobile and the establishment of good roads—one was equally dependent on the other, and South Dakota was one of the earliest and most aggressive states in promoting and encouraging automobile tourism in the 1920s. The state's scenic roads and tourist lodges precede

some of the earliest automobile parkways in the eastern United States. Many survive today, and continue to serve the needs of travelers.[27]

Development of good roads also needed the legislation of a dedicated political advocate. In 1905, Senator Peter Norbeck made the first automobile trip from Pierre to the Black Hills by means of the Deadwood Trail. Norbeck's description of the roads reveals how difficult it must have been to travel, even in areas that were already becoming popular tourist destinations.

> We drove from Fort Pierre to within two or three miles of the Grindstone Buttes the first day where we stopped at a ranch, which was also a post office. We were caught in heavy rains and remained there for several days. Mail was then brought by horseback from Philip and we were told it was 13 miles. After the roads dried up a little we proceeded to Rapid City but had a team help us along for twenty or thirty miles. We found the water too high in the Cheyenne River to cross on our own power but fortunately three cowboys came along and kindly hitched their ropes to the car and towed us across on a gallop. We reached the Rapid City without any serious trouble. We were then caught in a heavy snowstorm and had to leave the car and take the train for home via Sioux City.[28]

In general, the dirt roads that led to the Badlands were wagon roads that followed east-west section lines. When it was necessary to deviate to the north or south they turned at a sharp right angle in order to conform to the survey pattern. Most deviations from the east-west direction occurred where the topography necessitated a divergence, west of the Missouri River. Thus, while the railroads influenced the location of towns across South Dakota, the topography, and the United States Public Land Survey also contributed to location of roads, which, in turn, influenced further development.[29]

Where dirt roads existed, some determined travelers persevered to visit the sights they had heard and read about. A federally supported road improvement program, however, was needed before visitors would come in large numbers to the scenic wonders of places as remote as the Badlands (see Figure 6).

The Role of Government in Developing Infrastructure (ca. 1910-1942)

In 1916, when the Federal Aid Road Act was passed it signaled recognition that better roads were essential to the national welfare and that highway improvement was a national as well as a local responsibility. US involvement in the First World War highlighted the need for a coherent network of trunk highways rather than simply a piecemeal collection of local roads.[30]

Between 1913 and 1919 the number of registered vehicles in South Dakota increased from fewer than 15,000 to more than 100,000. Such an increase added to the need for improved road conditions, as more people than ever before were traveling for pleasure as well as traveling further distances. The increase in tourism began to profoundly affect the

country's economy. A surge in engineering-related construction encompassed road building as well as bridges and tunnels. Construction of highway facilities for the newly mobile millions was a necessary byproduct of increased travel and as a result created new sources of employment. Cars and people needed services; the days when the motorist had to rely on the general store for his gasoline and the local blacksmith for auto repairs were suddenly part of history. Now 'filling stations' with visitor facilities such as cafes, restaurants, and restrooms, as well as curio stores, lined the highways that led to tourist destinations.[31]

Although the Badlands had long been a place of interest, it was extremely difficult to access. The Black Hills on the other hand was more easily accessible, and promotion of this area as a resort attracted visitors, who once they had arrived in the area, likely considered the drive to the Badlands within the range of possibilities. The discovery of gold in 1874 had first drawn attention to the Black Hills as a destination in the late nineteenth century. In the 1920s, the area was seen as a tourist destination with such prominent figures as President Coolidge spending his summers in the Black Hills. In 1927 work began on the Mount Rushmore memorial, which led to the development of a gravel highway from Rapid City through Keystone to Custer State Park and the extension of the highway from the town of Custer to Wyoming, to provide access to Mount Rushmore from either the east or the west. Completion of this highway prompted a new routing of US Route 16 from its original alignment as South Dakota Route 9, which had previously taken traffic northwest from Rapid City.[32]

US Route 16 originated in Milwaukee, Wisconsin, and crossed southern Minnesota and South Dakota before extending to north central Wyoming. Serving as a principal east-west highway it linked Sioux Falls and Mitchell with Rapid City and became the favored route across South Dakota to the Badlands, the Black Hills, and Yellowstone. The forerunner of US Route 16 was a series of dirt roads that connected the small towns that had sprung up around homesteads and the railroad, but by the end of 1936, the highway was fully surfaced.[33]

US Route 14 was another highway that ran across South Dakota. US Route 14 was originally called the "Black and Yellow Trail," which, according to information available from the Federal Highway Administration, referred to the road's role in linking the Black Hills and Yellowstone National Park.

South Dakota took great pride in providing quality roads to travel destinations. In 1942, a brochure advertising tourism in South Dakota indicated an image with roads surfaced in gravel with safety poles at the corners. The wording of the brochure indicated:

> Good Roads: Two hardsurfaced dustless highways reach from the eastern border to the western boundary. Along their routes are many places of historic interest and scenic features unique to the state. Widely traveled visitors frequently state that they are able to make more miles with safety over South Dakota Roads than anywhere else. The higher altitude aids visibility and the long stretches of straight road make it possible to keep

> going at a steady pace. Without slackening for frequent curves. Stretches of 25 miles without a deviating curve are common, and 50 miles in a bee-line are not unusual. South Dakota highways have gained a national reputation for safety. In 1940 they were given the best safety record in the United States.[34]

As improved travel routes opened areas to tourist traffic, services blossomed along roadsides within town limits. Many of these were gas stations, some of which boasted cafes or restaurants and were accompanied by campgrounds. By 1939, there were 24 gas stations in Jackson County with 21 of them directly fronting US Route16. In Pennington County there were 51 gas stations, 24 of which fronted US 16.[35]

As mentioned earlier, the principal accommodation and service facility open to the traveler in the early days of tourism was the private room, or the hotel that was often a room on a private ranch. Most of these facilities were very primitive. As tourism became accessible to the less wealthy traveler, the camping ground became more prevalent. Communities sometimes provided such facilities, usually without charge. They offered space, water, wood, electricity, laundry and sanitary facilities, lounging and dancing rooms, police protection and sometimes even daily newspapers in the hope that visitors would stay long enough to spend money in the local community. [36]

In conjunction with the increased availability of roads to destinations unknown, literature provided insight into the best places and means to camp. One such book was J.C. and John D. Long's *Motor Camping*, published in 1923, by Dodd, Mead and Co. of New Jersey. They recommended the national and state parks as good places to find camping facilities, but suggested local opportunities for camping also existed. In the vicinity of the Badlands, campgrounds existed in the towns of Deadwood, Cottonwood, and Kadoka. By 1927, Ben Millard and Senator Peter Norbeck had begun to seek the perfect place to site a refreshment stand, a hotel, and a camp in the area that would eventually become Badlands National Park.

With the surge in camping activities, automobile companies began designing cars that could convert to camping, such as the Reo "Speed Bungalow" or the Hudson-Essex "Pullman Coach." By the 1930s, increasing numbers of camps were being constructed in national and state parks, and motor camps or courts began to provide other options, ranging from primitive shacks or tents with a common bath, to luxurious hotel cottages and efficiency bungalows. By the 1950s, more tourists were using the motor courts than hotels or resorts.[37]

Further improvements to roads came in 1956 when President Dwight D. Eisenhower authorized funding for an Interstate Highway system. In the area of the Badlands, Interstate 90 (I-90) connected to US Route 14, which ran east-west north of the Pinnacles Entrance of the North Unit. It also lay in close proximity to the town of Wall.

US Route 16A had been a secondary road that funneled traffic north from the Badlands and west of Kadoka to the north and was originally part of South Dakota Route 40. The

Route16A alignment was applied between 1944 and 1948. When I-90 was constructed, Route 16A conveniently led from the Badlands National Monument to I-90. By 1962, the east end was truncated to Cactus Flats, at I-90. In 1980, the route was re-designated as SD-240 after mainline US Route 16 was decommissioned east of Rapid City.[38]

When I-90 was proposed, running east to west and north of the Badlands Wall, the town of Wall lobbied successfully to have two exits lead into town, an unusual accomplishment for a town its size. Wall possessed a special advantage in that it lay in close proximity to the convergence of US Route 14 and US Route 16 before following one route west toward Rapid City, cutting through town on the north side. The proximity of I-90 as well as the development of US Route 16A, which funneled tourists from the Badlands to I-90 stimulated the tourism industry, and hotels, restaurants and cafes, and curio stores developed in the area. Wall Drug was one of the attractions that drew tourists into town. In the 1930s, Wall Drug was just one of many small businesses struggling to make a living from the tourist trade. Owners Dorothy and Ted Hustead hit on the idea of enticing weary tourists off the highway by offering free ice water. The gimmick worked and this, together with other enticements, continues to lure visitors to this day.

In the vicinity of the Badlands, families that had previously eked out a living by homesteading, began to see the opportunities presented by increasing numbers of travelers to the area who needed both a place to stay and services for their automobiles. Leslie and Jessie Crew were descendents of a homesteading family in the area of Cottonwood on the Badlands Wall. In 1932, the Crew family moved three miles west of the original homestead site and established a ranch. In 1934, they opened one of the first tourist businesses in the area—a Standard Oil Station with curios and cold drinks (see Figure 7). In 1964, the couple built the Cactus Flat Campground on the ranch, which Jessie continued to operate until 1977, when she sold it to her son Keith, who changed its name to Circle 10 Corral Campground to reflect the original site of the old Circle 10 Corral where cattle had been rounded up since 1900.

In 1962, Keith and his wife Dorothy purchased and restored what had been a homestead belonging to the Brown family. It was a sod dwelling, typical of early homesteading practices. The dwelling was restored and interpreted to provide tourists with insight into early twentieth-century life in the Badlands. The property was listed in the National Register of Historic Places. In 1970, the Crew family further catered to travelers by constructing the Prairie Fuels gas station at Cactus Flat, which has since expanded to a mini-mart Amoco Station.[39]

Another tourist attraction in the Badlands area was located at Scenic. In the 1920s one traveler wrote:

> We follow Highway number 40 through other Badland wonders five miles farther. The road is very good. At Scenic we visit the widely known Museum Filling Station. Here we see a beautiful and interesting collection of stones from the Black Hills. In fact the entire building is covered with

> rocks, fossils and other interesting things embedded in concrete. Prehistoric animal bones and Indian relics from the Badlands are within.[40]

After World War II, tourist camps evolved into overnight housing known as motels. Most were family-owned establishments with an average size of twenty-five units. They provided an easy way to buy into the tourism industry, as all that was needed was a small tract of farmland on the outskirts of town, and very few personnel to operate the establishment. Many retired couples opened motels as a way of investing savings. After 1950, however, large chains began to compete with the family-run places, which could not keep up with rapidly changing facilities and modernized equipment. Gradually the motel industry moved from the outskirts of towns into the urban centers and along stretches of highways.

With improved roads and lodging for the vacationer, the State of South Dakota worked diligently to promote tourism as a major source of income. The South Dakota Travel Guide advertised the wide and diverse range of recreational opportunities that were available year-round. With its many lakes and rivers, forests, mountains, and plains, South Dakota was a prime destination for activities such as pheasant, deer, elk, and waterfowl hunting, and fishing. Summer sports included rodeos, hiking and trail walking, swimming, tennis, and golf.

The large increase in recreational travel soon overtook the South Dakotan manufacturing industry in terms of annual income and dollar volume. A 1955 study revealed that over half the population of the United States took a vacation annually and traveled almost 12 million miles with 90 percent of that travel undertaken by private automobile.[41]

In 1958, South Dakota boasted approximately 600 motels with 7,000 units that generated an income representing a large share of the state's service industry. The number of motels in South Dakota exceeded the number of those in the neighboring states of Nebraska by 150 and North Dakota by 400. South Dakota motels were considered uniquely positioned geographically to serve the nation's touring public. With attractions such as the Black Hills, the Badlands, and Custer State Park, and highways well-suited to reach them, South Dakota was well positioned to develop a highly successful tourism industry.

In the 1950s the National Park Service recognized the rapidly growing potential for tourism to tap into the consumer society, where travel was easier than ever, roads were safe, and the resources had been folded into well-managed sites. After a World War II-era dearth in funds negatively impacted the tourist trade by allowing national parks' facilities to deteriorate, a new impetus was heralded in 1956 to create massive change and restore the tourism industry. The Mission 66 program, as it was called, infused millions of dollars into the development of facilities at national parks, and in turn the renewed tourism industry spilled over into neighboring communities, providing employment and revitalizing small towns. There is no doubt that the natural and cultural resources of South Dakota, in particular the Badlands and the Black Hills, have long been recognized as a lucrative source of income, and the resources of these natural areas have been successfully harnessed to support an economy primarily based on tourism.



Source: Library of Congress.

Figure 5: Pioneer Hotel, typical early twentieth century tourism accomodation.



Source: National Park Service.

Figure 6: Ca. 1917 Driving in the Badlands.



Source: Photograph courtesy of Keith Crew; reprinted from *Prairie Homestead*, p. 10.

Figure 7: Promoting tourism in the Badlands, ca. 1920.

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[31] Automobile Manufacturers Association, Inc. Automobiles of America, 2nd ed. (Detroit: Wayne State University Press, 1968) 21, 27, quoted in Rae, *The Road and the Car in American Life*, 102-103.
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[35] Elisabeth Eiselen, "The Tourist Industry of the Modern Highway: US 16 in South Dakota," 227.
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CHAPTER NINE

The Development of Badlands National Park

CHAPTER 9

THE DEVELOPMENT OF BADLANDS NATIONAL PARK

Introduction

Badlands National Park (BADL) was originally authorized in 1929, and established in 1939 by Presidential Proclamation as a national monument, that was intended to preserve the scenic and scientific values of a portion of the White River Badlands and to make them accessible for public enjoyment and inspiration.[1] In 1968, lands on the Pine Ridge Indian Reservation were added to the Park. This land is now managed under an agreement with the Oglala Sioux Tribe, and in 1976 approximately 64,000 acres within the monument were legally designated as wilderness. In 1978, Congress elevated the monument to National Park status.

Early Attempts to Attract Recognition (1909-1929)

In August 1870, Peter Norbeck was born to a Norwegian immigrant family on a farm in Clay County, southeastern South Dakota. Norbeck, who was elected to the state senate in 1918 and to the Unites States Senate in 1920, developed a life-long interest devoted to wild life conservation. He traveled thousands of miles throughout the west and worked closely with numerous individuals to protect and preserve the natural and cultural resources he witnessed. National Park Service Director Horace Albright, in writing about Norbeck, declared:

> We are not likely to see soon another leader arise who will have such a broad knowledge of the conservation problems of the country and the courage, power and legislative skill in drafting and guiding through Congress the laws necessary to provide permanent solutions to these problems.[2]

Although Norbeck is perhaps most well-known for his work in securing national park status for Mount Rushmore, he traveled extensively to the Badlands, making five trips in one year to the area.[3]

In March 1909, as a state senator, he argued for Congressional approval of a joint resolution to set aside a national park in the South Dakota Badlands. The resolution read as follows:

> Whereas there is a small section of country about the headwaters of the White River in South Dakota where Nature has carved the surface of the earth into most unique and interesting forms, and has exposed there, in the geological formations to an extent, perhaps not elsewhere found; and
>
> whereas this formation is so unique, picturesque and valuable for the purposes of study that a portion should be retained in its native state,

> therefore be it resolved by the House of Representatives, the Senate concurring; That Congress be and hereby is requested to provide that the Secretary of the Interior shall select township of government land in the most picturesque portion of the region mentioned and the same shall be set aside and be kept as a National Park.[4]

The wording in this resolution proved to be important, as, over the years, the designation of parkland became increasingly complicated as legislators quibbled over how to select lands exhibiting scenery of "supreme and distinctive quality or some natural feature so extraordinary or unique as to be of national interest and importance."

Norbeck was well aware that authorization of funding for a project did not necessarily guarantee its availability. Congress was increasingly reluctant, primarily for financial reasons, to confer the status of "national park" onto just any piece of land, but Senator Norbeck continued to campaign for recognition of the importance of the Badlands. In 1911, he traveled to the Badlands to see for himself the reality of what he had heard and read about.

The US Forest Service was also interested in setting aside the area as a national park. In 1919 the Forest Service had identified the potential to develop and manage natural areas for recreational use. Forest Ranger Louis Knowles, of the Harney District of the Black Hills National Forest, was sent to the Badlands in search of sites suitable for federal "Game Parks or Preserves." His report described the landscape as "having suffered from the ravages of constant plowing" and that there was little remaining in the way of wildlife, there were also few trees as many had been felled for fencing. Fences that protected private property also marred the scenic views, in particular, the views of the Badlands Wall, a dramatic and irregular cliff which paralleled the north bank of the White River for nearly sixty miles, and was a favorite Badlands hiking spot.[5]

Knowles quickly determined that the federal government should identify the area to be included within the Park or monument boundaries, and restrict public access to the land for grazing and other private commercial activities pending park establishment. He also proposed constructing a road along the Wall that would allow greater numbers of visitors to experience the scenic views of the Badlands.[6]

By May 1922, Peter Norbeck, now a US Senator, introduced a bill for designating the Badlands area as a national park. On that same day, Congressman Williamson introduced an identical bill in the House of Representatives, however, neither one of these bills was successful. Norbeck explained the situation in a letter to a constituent as follows:

> …regarding the Bad Lands National Park, [I] will state that the Park Service here will not approve a bill of that kind—and therefore, we can not secure the legislation. They are, however, willing to approve the plan of having it designated by the President as a 'National Monument.'[7]

Land ownership was one of the obstacles that prevented the designation of the Badlands as a national park because the government required a certain number of acres to be

incorporated into a public recreation facility. The bulk of the property in the area was privately owned and the NPS refused to purchase privately-owned land for inclusion into a park.[8]

Norbeck was not alone in his efforts to obtain national park status for the Badlands, and he continued to work with others to promote the idea. In July 1928, Norbeck led a group of fellow Senators and National Park Service (NPS) officials on a trip to inspect proposed parks in the Dakotas and Wyoming. Their trip included a dinner stop at Ben Millard's hotel, located in the vicinity of the Wall, and a spectacle of Indian dance at Interior, South Dakota. Regrettably, it was decided that the Badlands formations lacked the grandeur and spectacle of the locations such as the Grand Canyon, or Bryce Canyon, and therefore could not be awarded National Park status.

Senator Norbeck settled for monument status, but he insisted that the State of South Dakota construct a highway through the proposed Badlands Monument and purchase most of the privately owned land, in the hope that this would ensure prompt tourism development of the site and full state cooperation as far as construction and maintenance of roads as well as purchase of lands was concerned.[9]

President Coolidge authorized the designation of the Badlands as a National Monument in 1929, stipulating that land must be acquired and roads built at the state's expense. Only after these conditions had been met to the satisfaction of the United States President, could a proclamation be issued and the lands dedicated as described. This bill also stipulated that the Department of the Interior could grant hotel and lodge franchises prior to fulfillment of the conditions.[10]

Private Development (1927-1929)

Tourism development had already begun in a small way in the vicinity of the Badlands prior to any discussion regarding possible designation of the area as a national monument or park. Visitors traveling by rail came through the local towns, taking advantage of the accommodation and lodging established there.[11]

One description of travel through the Badlands indicates a campground with restaurant facilities on the outskirts of Interior, and curio stores in Interior and Scenic:

> We spend more time than we had planned examining the place, so we find ourselves in Interior for the night. We pitch camp and during the night receive our first rain on the trip…The bacon and coffee are more than welcome when we return. After breakfast we strike camp and drive into town. There, Palmer's Curio shop attracts us for some time. We leave with several calcium silicate crystals and specimens of the world's only sand crystals…The most interesting person we met on our trip is found in Interior. He is Mr. Henry Thompson, who runs a little souvenir stand called "The Wonderland." He tells some very interesting tales of early days in the West.[12]

Further description indicates tourism infrastructure at Scenic:

> We follow State Highway number 40 through other Badland wonders five miles farther. The road is very good. At Scenic we visit the widely known Museum Filling Station**.** Here we see a beautiful and interesting collection of stones from the Black Hills. In fact the entire building is covered with rocks, fossils and other interesting things embedded in concrete. Prehistoric animal bones and Indian relics from the Badlands are within. The bones, the curious animal pictures, the petrified eggs, the skeletons, Indian relics and numerous other curios are remarkable. They have attracted people from throughout the world, not for a hasty examination but for extensive study. This place is one of the important places to see in the Badlands. One cannot afford to miss it under any circumstances. The vicinity of Scenic is known to scientists as the greatest fossil field in the United States. Scenic is also an Indian Trading Post.[13]

Ben H. Millard also saw the opportunities for tourism in the area. Millard, who was born in Minnesota, moved to South Dakota in 1893. He was a businessman and a banker who later was employed by the South Dakota Department of Banking to oversee the distribution of assets of insolvent banks. He arrived in the Badlands to oversee the demise of the Bank of Interior, and once there, learned of attempts to establish a national park or monument. Millard saw the opportunities that the Badlands presented for development as a tourist attraction and began exploring potential sites for establishing tourist facilities. Coincidentally, Senator Norbeck's daughter had met and married Ben Millard's nephew the previous summer.

In 1927, Millard and Norbeck surveyed the area for a potential refreshment stand, hotel, and camp location. They agreed that a stand would do well at Cedar Pass and Millard's sister, Clara Jennings, purchased a tract of private land at ten dollars an acre on a relatively flat prairie at the foot of the pass. The Millards regarded this as a temporary measure until a more scenic location could be acquired. As it transpired, the land they purchased was far more suited to development in terms of its topography and open landscape. According to some sources, Patrick R. Downes, and his wife Sarah, previously homesteaded the land on which the Cedar Pass lodge stands. They apparently had a substantial home, consisting of a two-story, four-room house located north of the current highway alignment.[14]

Further homesteads appear to have existed in the area in which the Monument was eventually developed, although their exact location has not been verified for this report. Oral history indicates that:

> John Everett came with his first wife, Cecilia Noonan and built a claim shack 12 by 14 feet. In 1915, they made an additional filing on 20 acres just below Cedar Pass. This was much better land and produced a much better living—one year they produced 30 bushels of beans. There was a

> very good well of soft water—which was closed when the government took over the land.[15]

Millard opted to construct a simple dance hall using bark-covered boards at this location. He engaged bands to play once or twice a week and on holidays in the spacious, high-ceilinged building. To safeguard his investment, Millard mounted an advertising campaign valued at $800 that brought visitors from as far away as Rapid City.[16]

State and Federal Highway Partnerships (1929-1976)

Language authorizing establishment of a national monument stipulated that land contiguous to the Badlands should be acquired, and that roads should be constructed by the state. Acquisition of land was no easy matter, however, road development was achievable in terms of developing state and federal highway partnerships. The State of South Dakota recognized the importance of establishing good roads as a means to encourage tourism in the area, which would likely result in increased revenue.

Senator Norbeck and Mr. Millard recognized the importance of establishing good roads that encouraged tourism. The two worked together with the state highway department to ensure an appropriate scenic route was constructed through the Badlands. The route tourists were taking through the Badlands passed by the area Millard developed as his base. One route was described in 1929 as follows:

> The passes become more crooked and the grades more steep. The road is bordered by profuse scrub cedar trees. There is a thrill in that drive! At first it looks dangerous, but the danger seems to minimize as we approach each more steep and more crooked and more narrow section. By taking it slowly the risk is small.[17]

Several local residents of the Badlands area contributed to the establishment of the Badlands as a National Monument including A.G. Granger of Kadoka, Leonel Jensen a local rancher, Ted E. Hustead, owner and operator of Wall Drug, and Dr. G.W. Mills of Wall.[18] One notable figure that contributed to publicity that helped raise awareness of the Badlands was Frank Lloyd Wright.

Wright wrote about South Dakota's natural wonders in several of his works, and was particularly convinced that the only way to visit them was by automobile. He wrote of the Badlands as nature's impressive architecture and clearly appreciated the aesthetic sensitivity that Millard and Norbeck had employed with respect to the natural forms and scenic potentials of the route they had persuaded state highway officials to construct through the Badlands. He described the experience as follows:

> As we rode, or seemed to be floating, upon a splendid winding road that seemed to understand it all and just where to go, we rose and fell between its delicate parallels of rose and cream and sublime shapes, chalk white fretted against a blue sky with high floating clouds—the sky itself seemed only there to cleanse and light the vast harmonious building-scheme. [19]

South Dakota Route 40, mentioned in the description above, originally extended along current South Dakota 44, through the Badlands along what became South Dakota Route 16A (then South Dakota Route 240) to Belvidere, then south and east along current SD-63 and SD-44. In the late 1960's, SD-40 was rerouted to go southeast from the Badlands to SD-73 east of Wanblee. The old alignment of SD-40 between Belvidere and west of Cedar Butte became an extension of SD-63.[20]

In the early 1970's, the entire route was re-designated a part of SD-44, which had been extending its way westward in the 1950's and 1960's. A new SD-40 was implemented in 1976 about 15 miles further south, in Pennington and Custer Counties.

Scenic highways became an important product that promoted tourism. Today, the Badlands Loop Scenic Byway comprises 31.5 miles of roadway, and along it there are 14 designated overlooks that allow visitors to stop safely and appreciate the scenic views.

Federal Land Programs (1933-1936)

During the depression, President Roosevelt initiated several programs to provide incentives and financial means to support further economic development. In June 1933, under executive order #6166, the monuments and public grounds of the nation's capital, an assortment of national monuments previously under the US Forest Service, and many battlefields and military cemeteries previously under the War Department were brought under the stewardship and management of the National Park Service. Furthermore, in 1934, under a cooperative agreement with the new Federal Emergency Relief Administration (FERA), the National Park Service assumed leadership for nationwide recreational planning and began to develop model parks, called recreational demonstration areas, on land considered 'sub-marginal' for agriculture.[21]

Although a number of federal programs provided funds and labor for the development of state and county parks, few provided funds for the acquisition of land to create the parks. The period during which recreation and tourism was rapidly becoming a lucrative source of income for both public and private entities, coincided with President Roosevelt's developing interest in land-use issues and the utilization of natural resources. At the same time, many farmers were struggling to make a living. Roosevelt considered sub-marginal land of limited value for agriculture and reasoned that it would be better suited to serve as public parks and recreational facilities. In 1934, the Federal Surplus Relief Administration provided 25 million dollars for the purchase of low-productivity or poorly used lands, five million dollars of this funding was for the acquisition of lands to be converted to recreational use. Later that same year, the funds were transferred to the FERA.

The FERA provided the funding necessary for the federal government to acquire land that was otherwise deemed substandard for agriculture but could be developed as public parkland. This program was in fact two-fold: in addition to funding land purchase, it facilitated the need to increase recreational facilities, and a means to provide demonstrations of how recreational facilities could be planned and developed.[22]

Although some of the land needed to create the Badlands National Monument was located in the public domain, a large portion of the proposed area the monument was still owned by homesteaders, who had left the area after continual battles with drought and other natural disasters. A federal government report determined that sixty percent of the land adjacent to the area in the Badlands that was under consideration as a national monument, should be considered sub-marginal and "generally unsuited to agricultural uses…" with some of it "so badly eroded that it will not maintain a grass and hence is wasteland except for its recreational and scenic beauty."[23]

This was the land that lay south of US Routes 14 and 16 and west of US Route 73. The FERA subsequently purchased this land from those willing to sell and most people moved to the west coast, some were employed in the building of a dam called the Resettlement Project.

Beyond the primary goal of reclaiming sub-marginal lands, the program represented an effort to meet the need for increased recreational facilities. This included land suitable for daytime recreation facilities in the neighborhood of major population centers; waysides along major highways where motorists could rest and enjoy recreational activities such as picnics, and outdoors activities; extensions to national parks and monuments developed for recreational activities such as camping, picnicking, and swimming; and land adjoining state scenic areas. Once this land had been acquired, the Civilian Conservation Corps (CCC) and similar forms of relief labor provided opportunities for the land to be developed.

In developing parks from sub-marginal lands for recreational purposes, the NPS became involved for the first time in comprehensive planning, (later master planning), building park roads and trails, constructing rustic buildings and structures, and naturalizing and reforesting the landscape on a massive scale.

By 1936, forty-six projects had begun in 24 states. Criteria for acquisition of sub-marginal land called for some degree of scenic character and topographical qualities that made a system of roads and trails, a body of water, separate areas for daytime use and overnight camping. Whereas the Resettlement Administration was responsible for relocating displaced residents to areas outside the boundaries of parks, the NPS directed all planning and development. The Recreational Development Areas (RDAs) program, under the stewardship of the NPS, was to reclaim sub-marginal land and increase recreational facilities, this program had an enormous influence on the development of a national park design aesthetic focusing on naturalistic idioms, and encompassing an expanded repertoire of new types of structures to accommodate new activities within the parks.[24]

Support and interest in purchasing land for the national monument came from various NPS executives. In November 1934, NPS Director Arno B. Cammerer recommended to the Secretary of the Interior that he approve additional land for inclusion in the proposed Badlands National Monument. He proposed that this be implemented by executive order of the President, and executed by acquiring privately owned lands through existing

federal government relief programs. Regional Director Herbert Maier also supported the idea of using sub-marginal lands to increase the recreational aspect of the Badlands. He wrote to NPS Washington headquarters regarding sub-marginal land in the area of Badlands National Monument as follows:

> I have personally visited this area and cannot recommend it too highly as having national appeal of a type unlike any other area in the United States. The land in use is extremely sub-marginal for cultivation or grazing, and is highly desirable for acquisition and development as a Recreational Demonstration Project, Type IV, an extension to a present public holding.[25]

In April 1935, officials from the Sub-Marginal Land Committee inspected areas in Jackson and Pennington Counties, certified them unsuitable for agricultural use, and recommended that they be made available for purchase by the NPS. Acquisition of the homesteads was complicated because many owners still held property rights, even though they no longer occupied the land. Many owners also owed taxes and mortgages on their lands in excess of their current value. In addition, some tracts of land had expired but unreleased oil leases.[26]

Intervention came from the federal government in June 1936, in the form of approval from the Secretary of the Interior for the Badlands National Monument boundary extension, amending the original act of March 1929. This amendment authorized the inclusion of adjacent or contiguous lands, as determined by the US President within five years from the act approval, and capped the size of the monument at 250,000 acres. In the same month, President Franklin D. Roosevelt ordered that all unreserved and non-appropriated lands in Pennington, Jackson, Fall River, and Custer Counties be "temporarily withdrawn from settlement, location, sale or entry for classification and use as a grazing project pursuant to the sub-marginal land program of the Federal Emergency Relief Administration."[27]

With public land potentially becoming available for purchase, the NPS could begin developing plans for recreational infrastructure.

The New Deal Era (1929-1941)

Master planning within the NPS became a mandatory process in 1929 under the leadership of landscape architect Thomas Vint.[28] Principles established in 1916 that centered on landscape preservation and conservation determined policies that guided all future planning. Key park service personnel including the NPS Director, Stephen Mather, landscape architect, Thomas Vint, and others, determined that in order to conform to principles of preservation and conservation of the natural landscape, construction was to disturb the ground as little as possible and improvements were to be of native materials, and rustic in character. This concept was particularly prevalent in national parks in the west where landscape architects struggled to plan necessary visitor facilities in landscapes that encompassed vast areas of natural scenery.[29]

Park designs that gave primacy to a philosophy that protected the natural environment provided for development in clusters, whereby buildings were grouped together functionally and aesthetically into an attractive and harmonious "ensemble." Often this involved making a decision as to whether to retain or demolish existing government or concessionary buildings. Siting and location of facilities was further complicated by the need for certain structures to be visible to the public and others to be screened.[30]

At the proposed Badlands National Monument, master planning conformed to principles set out by the main office of the Branch of Plans and Design, Western Division, San Francisco. Resident landscape architect Howard Baker surveyed the area in 1935, and in a subsequent report indicated that one major and two minor developed areas should be considered.[31]

The most pressing issue to resolve at Badlands was the provision of clean water to large numbers of people. To address the water problem, which was nearly as bad at Cedar Pass as it was at Wall, funding in the amount of $22,000 was appropriated to fund a reservoir system. The funds were intended for the construction of a pipeline from the White River to a reservoir that would store 100,000 gallons, complete with a collection system, a pump house and pumping equipment at the White River, and distribution lines in the headquarters area. This water system was constructed between May 1940 and May 1941. In addition to the water system constructed in 1940, catch basins or dams remained on the land that had originally been built by homesteaders. According to oral history these catch basins were located to the west of Rock Spring, in the western portion of the Park, and on the road leading to what is known as Nevas Draw, a boneyard is located at one of these dams.[32]

In addition to the need for water, an administrative facility was necessary to oversee management of the area. Such a facility would encompass offices, but also cover visitor facilities such as a museum, and concessionaire within the same general area. In order to concentrate facilities, and avoid their duplication and piecemeal siting throughout the monument, the NPS determined that it would be desirable to locate the headquarters, utility group, residential area, and visitor facilities in one, more or less, compact grouping.

The pros and cons of a future headquarters at either of the two already developed sites were debated. The Pinnacles site appears to have been the first choice for the headquarters due to its location at the juncture of two monument highways (US Highway 16 and State Highway 40). It was also of interest because of its proximity to Pinnacles Pass and its centrality within the monument area, which would facilitate administration. The connection to a transcontinental highway at Wall appears also to have been an advantage. Furthermore, park planners anticipated that a greater number of visitors would pass through the highly scenic Pinnacles area regardless of which entrance they used.

The private development that had already been established at Cedar Pass was also to be considered a potential site for headquarters development. Ben Millard's tourism facilities included a one-story frame structure that functioned as a dining hall, lounge, and kitchen;

fifteen cabins; a gas station; and restrooms. Electricity lit the grounds and buildings, and a sewage disposal system emptied into septic tanks.

The NPS considered these facilities lacking in comfort and convenience, and inadequate for their projected visitation levels. Refurbishment appeared not to be a viable option, as this would still not meet NPS standards for quality accommodations. Initially the NPS had slated Millard's development for demolition, but possibly due to the way the development lay lightly on the land, conforming to NPS notions of preserving the landscape as far as was feasible, the development was retained and eventually incorporated into NPS ownership.

The Site Design for Pinnacles

The proposed headquarters site at Pinnacles was on a promontory of land that extended beyond the rest of the canyon rim, close to the precipitous cliff walls, and towering high above the canyon bottom. The site would provide magnificent panoramic views of the Badlands formations that extended across the land. Arguments against establishing a headquarters site at the Pinnacles included the fact that there was little land on which to develop an administrative headquarters. This would have to be attempted at the nearest town, Wall, which did not fall within the national monument boundary. The NPS had experienced problems maintaining administrative offices in towns or villages in the past, which made Wall less attractive. In addition, water supply was severely limited. Despite the many advantages of the Pinnacles site, it was ultimately rejected in favor of the Cedar Pass site.

A proposal for development at the Pinnacles site took into consideration the visitor experience combined with protection of the natural resources, as well as the need to facilitate the lives of employees. The proposed master plan of 1938 shows administrative structures, a museum, and the operator's building clustered along an axis formed by the entrance road and parking area. The proposed parking area was of a simple design, intended to avoid confusion yet large enough to accommodate both current and projected future needs. The circulation route and parking area were designed to allow visitors to go from their cars to the various buildings without having to cross traffic.

The 1938 Master Plan for the headquarters building notes that the design was intended to provide an effective architectural setting while offering commanding views of the Badlands formations both from within the building and from its associated seating terrace. The partially roofed terrace, situated between the two wings of the building and extending to the rear, was intended as a shady retreat and observation point. The concessionaire's wing was placed to the left of the main axis in close proximity to the cabin group that was also part of the concessionaire's responsibility. There was a sharp division between the concessionaire's units and government developments, each located on opposite sides of the main axis; yet they were still conveniently nearby. The concessionaire's wing would have a dining room and lounge from which visitors could view the spectacular and colorful landscape.[33]

The proposed utility group was placed at a distance from the center of activities, and at the bottom of a deep draw out of view from the main highway and the administration and

concessionaire's area. In addition to the compact grouping of the utility buildings, the plan was to connect individual buildings by walls that would act as a screen. The buildings in the utility grouping were designed to allow for future expansion. The residential area was proposed to be placed at a point which was sufficiently far from the center of activities to afford some privacy, yet close enough to be within easy walking distance of both utility and administrative groups.

The Site Design for Cedar Pass

Cedar Pass was an attractive option for locating the Park headquarters for a number of reasons. The Park boundary and land acquisition issues were easier, particularly after Ben Millard offered to donate his land to the NPS. The Pinnacles site lacked available water, and locating administrative facilities in Wall was considered inefficient for park operations.

The proposed Cedar Pass site design was consistent with the Pinnacles proposal in its use of tight clusters and functional zoning. Zones promoted efficiency for those working onsite. For example, staff housing and administrative offices were in separate clusters, but employees could walk easily between the two areas.

The 1938 Master Plan was amended several times by 1949 to address the evolution of the new park; most notably in ca. 1943 when the NPS concentrated on developing Cedar Pass and abandoned the idea of locating a headquarters at the Pinnacles site. Sources differ as to the reason for choosing Cedar Pass over the Pinnacles. Some indicate it was the accessibility to water that made Cedar Pass the favored location. Others suggest it was Millard's offer to donate approximately 28 acres of land in the Cedar Pass area.[34]

Reasons for retaining Millard's facilities at Cedar Pass are also unclear but in view of strained financial resources in the early years prior to and during World War II it can be surmised that Millard's improved facilities appeared more positive than they had initially. Rather than razing Millard's development the NPS assimilated them into new site development. By June 1940, five buildings had already been constructed at Cedar Pass, relating to maintenance and administration.[35]

Once location had been settled, materials remained an issue to be decided. As a historically-used material it is not surprising that natural sod was given serious consideration as a possible building material for all the units in the headquarters area. In 1935, resident Landscape Architect Howard W. Baker had recommended adobe as a building material, but Thomas Vint preferred investigating the possibility of using sod. Eventually, the idea was rejected as impractical. A stone quarry was found within the monument area from which a hard, gray stone could be obtained in quantities sufficient to construct all of the proposed buildings. It is not known what type of stone this was. The 1938 Master Plan conceded that stone construction would be more expensive than sod, but felt it would also be "far more permanent, free of vermin attack, and the erosion to which sod is subjected." In addition, it would "eliminate the need of constant maintenance." Stone would also allow for the construction of large structures and, as noted in the plan "would lend itself to a freer and more interesting architecture."[36]

The Civilian Conservation Corps (CCC) was brought into the Badlands to provide much needed labor. Initial construction efforts were impaired by the fact that the CCC camp had been located at Quinn Table, and their work was needed between Cedar Pass and the Pinnacles. Thus, laborers wasted much of the day traveling to and from the site. Consequently a mess kitchen, hall, and a CCC camp were constructed at Cedar Pass. An earlier CCC camp at Quinn Table was abandoned and transferred to the NPS. [37]

The new CCC camp, which included a utility area, maintenance garage, and blacksmith shop, was located just south of the monument boundary on land owned by the Soil Conservation Service (SCS) and was protected from the prevailing, severe, northwesterly winds by the formations that surround it on three sides. Approximately 1,800 square feet of main water line had to be laid between the camp and the monument residential area, before the permanent reservoir could be used. In the meantime, the camp was supplied through a 6,000 gallon steel tank, which was subject to freezing in cold weather. [38]

Although the camp was eventually dismantled, some of the buildings and associated features in the utility area were retained as the maintenance yard. The maintenance yard was separate from other functions in the Cedar Pass Developed Area and as such set a precedent for the location of maintenance facilities away from other developed area functions.

Addressing visitors' complaints that roads were inadequate and park managers' fears that cars parked along roadsides exacerbated erosion, the CCC constructed five new parking areas.

CCC labor constructed wood and concrete signage, improved roads with new layers of gravel, razed abandoned farmsteads, and constructed a building near the Pinnacles checking station that would serve as the temporary residence for the acting custodian until a more permanent building could be completed at Cedar Pass. The ranger played an important part in addressing visitor needs by documenting and ranking their requests for things like improvement of roads, expanded museum facilities, and restroom facilities.[39]

Millard remodeled several cabins in 1941, added plumbing, and constructed one new cabin. When he constructed a sewer line from Cedar Pass lodge, intending to connect it with the NPS sewer system, CCC crews constructed a pipeline ditch from the reservoir at Cedar Pass to the highway, crossing at the junction of the highway and the headquarters area service road.

In May 1941, Millard donated 160 acres that enabled the NPS to construct a custodian's residence at Cedar Pass. Although the land was located close to the formations, it became the beginning of the headquarters' residential area. At the same time, Millard continued to actively develop the area, laying cement asbestos pipes to the reservoir and constructing septic and dosing tanks that would eventually constitute the sewer system at Cedar Pass headquarters.

The CCC was also active at Pine Ridge Reservation, providing wage-paying jobs and job training for American Indians for the first time. However, with the abolishment of the

CCC, the Indian reservation population was forced to find alternative assistance. With World War II employment opportunities, some Indians left the reservation to find work in the Black Hills military depot; most however worked as unskilled labor and received direct or indirect reservation relief. Reservation inhabitants supplemented their meager wages with welfare payments, land lease payments and agricultural operations.[40]

World War II and the Monument as a Bombing Range (1942-1968)

During America's involvement in World War II, many of the CCC laborers were called to serve in the military, funding was reduced, and development slowed almost to a standstill. Nonetheless, planning for development of the monument continued.

Lands within the monument boundary were affected by a decision enabling the US Army to evacuate Indians and other residents from the portion of the monument known as the Pine Ridge Reservation in order to establish a bombing range. Because of the way in which this appropriation of land would affect grazing, park officials became concerned that a demand for grazing privileges within the monument would ensue. Indeed, stock farmers who had previously leased land within the reservation were left with no place to run their cattle once the Army had taken over the reservation.

In 1943, members of the 21st Service Group of the armed forces, constructed a bridge at the White River crossing west of Conata, a town severely damaged by the establishment of the Bombing Range in 1942 which eliminated travel to the south.

The bridge connected with an approach road that followed the water line from a point near the pumping station to join Highway 40 directly south of the monument headquarters area. From this junction, it was expected that traffic would go west to the town of Interior to reach the monument, but that some traffic would continue north along the monument service road through the utility and residential areas, and joining State Highway 40, (also referred to as the Badlands Highway), near Cedar Pass Lodge. Concern was expressed that, if this did not happen, the headquarters layout would be seriously affected. It was then decided to abandon the service road below the utility area, fencing it off at the pump house with the addition of a gate for employee use only. Thus, public access via this route to the utility and residential areas was severed. [41]

The proximity of the Bombing Range also adversely affected Scenic. A small town that provided services to locals as well as to the growing tourist industry, it boasted two filling stations, tourist cabins, three automotive garages with mechanics, two restaurants, and a bank, as well as agricultural and community facilities. [42]

The Badlands Bombing Range was officially called the Pine Ridge Aerial Gunnery Range and continues to simultaneously unite and divide the Pine Ridge Reservation and the Badlands National Park. A historic marker at the Badlands National Park White River Visitor Center reads:

> More than a third of a million acres of the Pine Ridge Indian Reservation, including much of what is now the South Unit of Badlands National Park, was set aside for gunnery and bombing practice by the US Army Air Corps at the start of World War II. Residents had to move on short notice. Some never returned.[43]

On average, payment to land owners, Indian and non-Indian alike, amounted to $2.85 per acre.[44]

Tribal lands were to be leased rather than condemned, but the Tribe was offered only a penny an acre per year—and they settled for three cents. The displaced refugees were given no compensation for the cost of relocation, and the scarcity of replacement land made it impossible for most to continue ranching. According to some sources, fewer than ten percent were able to resettle in the area. The displacement of people from the Gunnery Range had effects that extended well beyond the range itself, with agricultural support towns also affected.[45]

In all, 341,725 acres of land were taken for the Gunnery Range, and about 250 families were removed. Much damage was done to property, including cattle, and residents who refused to move were in constant danger. Once the range was closed and residents permitted to return, many reported having to pay too high a price for their lands than was initially indicated. [46]

A general sentiment of resentment continues to this day among many of the Indians who had established homes in the area as it was felt that even after the gunnery lands were returned, the NPS: “got the best part of the bombing range” and payment is made to the Tribe in the form of leases, the land is considered to be under the control of the Park Service. The Tribes also complain of “jeep clubs” that come in, and “run the cattle from one end to the other.”[47]

In 1963 and 1964, attempts to promote tourism prompted the concept of a land swap between the Oglala Sioux Tribe (OST) and NPS. The NPS report called for “a museum and campgrounds at Pine Ridge village, interpretation of the Wounded Knee historic site, a dance center in Kyle, a motel at Rockyford, a picnic area at Porcupine, and craft sales at Red Shirt.”[48]

Prior to disposal of the gunnery range lands, the Interior Department’s Bureau of Outdoor Recreation undertook a study “to identify the conservation and recreation potential of the Badlands Air Force Gunnery Range.” However, oral history suggests that the OST was excluded from the discussions. As a consequence the OST requested the land be returned to them as had originally been promised. They felt they would be able “to preserve the natural resources as effectively, or more effectively, than any segment of government or other public ownership.”[49] The OST made three proposals for use of the land, including the following: a tourism and recreation project, re-establishment of livestock operations, and development of irrigated agriculture by OST members.

The outcome appeared as follows:

> The Bureau of Outdoor Recreation incorporated these comments into their report but effectively ignored them in its recommendations. The only potential uses of the land that were analyzed were recreational in nature, and the final recommendation was that the surplus lands be divided up, administratively, between the Bureau of Sports Fisheries and Wildlife, and the National Park Service. The BIA agreed to this, pointing out that "tribal ownership of lands would not prevent the integration of appropriate areas into the Badlands National Monument." The recommendation was made "subject to a cooperative agreement to be worked out between the Tribe, the Bureau of Indian Affairs, and the National Park Service." [50]

With passage of Public Law 90-468 in 1968, Congress authorized a land swap between the Departments of Defense and Interior that would create a South Unit of Badlands National Monument.[51]

Mission 66 (1956-1966)

Ten years after the end of World War II, economic prosperity catapulted Americans into a lifestyle that had greater flexibility, wealth, mobility, and opportunities for recreation. This new lifestyle prompted visitation at state and national parks to rise to record numbers. In 1955, the number of visitors to national parks totaled 50 million, twice the number that the parks were equipped to accommodate. A strategy for how to address this issue became of paramount importance to the NPS. Mission 66 was a ten-year program in which Congress authorized a financial package that would support development in the National Parks, bringing them up to twentieth-century standards by the fiftieth anniversary of the creation of the National Park Service in 1966.

Changes had already begun to occur that were later incorporated into the Mission 66 plan, these changes built on ideas that began in the early 1930s. In a statement describing the Mission 66 program, the NPS noted that:

> Mission 66 is a forward looking program for the National Park System intended to so develop and staff these priceless possessions of the American people as to permit their wisest possible use; maximum enjoyment for those who use them; and maximum protection of the scenic, scientific, wilderness, and historic resources that give them distinction.[52]

At Badlands, a master plan created in 1950 built on ideas developed in the 1938 Master Plan, developing the Cedar Pass area as the place where visitors could find accommodation and information. After creating various proposals, the NPS chose to develop an area that had already been built on, with tourist cabins and a lodge, developed by Ben Millard. The NPS chose to further develop this site although the horseshoe form of the cabin placement appears to be slightly different, possibly due to the realignment of the road extending from Highway 40 in front of the Lodge.

Developments brought the Badlands National Monument up to modern standards with the construction of new roads, installation of signs and telephone service as well as new accommodations and walkways.

Modern landscape features included gradually graded ramps and wide entry walks that were intended to accommodate the movement of large numbers of people. Plans also included the design of broad elevated terraces with aggregate stone surfaces and protective walls that would provide safe, uncrowded viewpoints.[53]

By 1955, visitation had swelled beyond all expectations. The popularity of the Park, and public appreciation of its spectacular resources, fostered a new discussion in Congress regarding the need to increase the monument's size to have it designated as a national park. The number of campers and picnickers at the Park had increased by 200 percent since the end of the war. In May 1955, the Millard family donated two more tracts of land, totaling 18.5 acres, to the NPS. Of this total, 5.85 acres located in front of the Cedar Pass Lodge were donated for the relocated highway right-of-way; the remaining 12.65 acres made the development of the Cedar Pass campground possible.

In January 1956, a meeting was held to discuss Mission 66 and the development of Badlands National Monument; from this meeting, an executive committee was created for the purpose of steering development at the Park. The following month, a second meeting introduced the Mission 66 plan to members of the Wall Chamber of Commerce. Later that spring, the Superintendent of the Park spoke to the Commercial Club at Murdo, the Big Buffalo Farmers Union, and the Big Buffalo 4-H Club. This Mission 66 plan would greatly affect visitation, allowing far greater numbers than ever before to visit the Park, and likely providing benefits to local businesses. Consequently it was important for the NPS to keep the local population informed of their decisions.

Programmatic changes encompassed education and interpretation, informing the visitor but also using information to protect the physical environment. Information was relayed to the visitor through a building designed specifically for the purpose of explaining the significance of the Park's natural and cultural resources. Gathering of information by park historians and naturalists was therefore given greater importance. This information was used in interpretive programs but also as a tool to better understand how to protect and preserve the Park's resources.[54]

The new visitor information center became a focus point of the Mission 66 developments. Previously, the only contact visitors had with park staff had been via a small information station staffed by seasonal employees during the summer, with only 5.1 percent of park visitors actually stopping at this station.[55]

Visitor Center

During Mission 66, interpretive programs focused on providing information to visitors through comprehensive exhibits housed at central locations. Attempts to do this had occurred at various parks in the 1930s with the construction of early museums, which tended to be small, uncomfortable places that provided minimal information. During Mission 66, at Badlands, much thought went into how information encompassing

indigenous natural features and cultural resources could be presented in the most advantageous way. This was a primary feature of the Mission 66 Visitor Center concept.[56]

> An 'entrance' Visitor Center established the mood of the park and introduced the visitor to the total interpretation of park values; the 'en route' center posed the problem of simultaneously introducing the visitor to the park and providing information about the site to be visited; most common was the 'terminal' Visitor Center located at a popular destination which supplied the visitor with a summary of park values, while incorporating relevant information about the area.[57]

Placement of the Visitor Center was indeed crucial, as architects were encouraged to make use of surrounding views in their designs, and consider how the Visitor Center siting would influence the location of future buildings. It was felt that placement "affects how, in what sequence, the story is told as well as how much or how little." NPS Naturalist Paul Schultz commented: "a Visitor Center should be in touch with the feature it interprets."[58]

The concept of a Visitor Center at Badlands National Monument began with a 1956 prospectus documenting the significance of the Monument, the condition of its existing facilities, and the adjustments required to accommodate the growing number of visitors at Cedar Pass. Superintendent George B. Sholly also submitted a "museum prospectus" in 1957, specifically addressing the visitor services requirements. He felt that Cedar Pass was an ideal location that allowed visitors to arrive from either the east or west and experience some of the Badlands formations before arriving at the Visitor Center. After viewing the exhibits and information, the visitors would then be able to enjoy the rest of the Park with new appreciation and understanding. In the museum prospectus Sholly outlined, in detail, the necessary public spaces within the Visitor Center, providing rough dimensions for each.[59]

Cecil Doty, chief designer at the Western Office of Design and Construction (WODC) in San Francisco, California, incorporated much of this information into his preliminary drawing for the Visitor Center at Cedar Pass in February 1957. Using Sholly's suggestions, Doty oriented the Visitor Center to face the Badlands Wall and provided the lobby with a "picture window" view of the formations. A prominent raised porch glass-enclosed lobby, views were afforded north toward the badlands landforms. To shield it from climatic extremes, the public entrance was located on the building's north side at the rear of a large covered porch. The interior layout of spaces was intended to accommodate the programmatic requirements of the building and maintain separate visitor services and administrative functions. For example, public restrooms were constructed in a separate, exterior space, a corridor separated administrative functions from visitor space, and moveable partitions allowed for flexibility of space between the offices. A landscaping scheme consisted of porch planters and shrubs against the front façade.

An alternate design dated November 1957, displayed a 'z' shaped footprint and a porch spanning most of the front façade. As in the earlier design the glass lobby and other public functions were placed on the west side of the building; however, the visitor spaces appear more separated from the administrative zone, standing together as a suite at an angle to the main section. The restrooms are grouped together and placed at an opposite angle. Within this new geometry, the administrative corridor, still parallel to the highway and featuring storage to the north and offices to the south, takes on the additional function of connecting one angled section to the other.[60]

After several refinements to the preliminary design, Doty handed over the plans to the Rapid City architecture firm of Lucas, Craig, and Whitman. The basic final design deviated only slightly from its conservative rectangular footprint and spare detailing. Doty's "z"-shaped design was closer in many ways to an attempt to express Park Service Modern and would have been a strong rival in modern aesthetic design to other exemplary Visitor Centers had it been built. Lucas, Craig, and Whitman prepared and issued construction drawings with a few minor modifications such as reducing the number of skylights by half, and eliminating the planters at the porch, thus giving the porch a more utilitarian and severe appearance than originally intended. By May 1958, they had issued a complete set of construction drawings and two months later Corner, Howe, and Lee, also a local firm, began construction on the new Visitor Center at Cedar Pass. [61]

Extreme weather conditions caused a brief delay in construction of the Visitor Center when winds ripped the roof off the exhibit room portion of the building (consisting at that time of trusses and decking) from the walls, and it literally sailed across the access road, causing $8,000 worth of damage. With the roof gone, one interior wall and one exterior wall crumbled. Fortunately, no injuries were sustained. Work resumed, and the Visitor Center was completed in late 1958 and dedicated at a ceremony in 1959. It was the first Mission 66 Visitor Center to be completed in South Dakota.[62]

In 1958, the same building contractors—Corner, Howe and Lee, of Rapid City, South Dakota—also completed five new personnel residences at Cedar Pass. These new facilities permitted the addition of a permanent Park Naturalist and an Administrative Aide to the monument.

Camping

Although camping was a major component of parks from the 1930s on, it was only during the Mission 66 period that adequate financial support was provided for campground construction. Much damage had resulted from visitors camping in undesignated areas. Emilio P. Meinecke was the founder of the modern campground. As a plant pathologist, who discovered that human activity in the forests of California was killing the giant sequoias and redwoods, he developed planning concepts that were rooted in a concern to protect the natural environment. He advocated that campgrounds be divided up into individual campsites of legitimate sizes, each one offering approximately as much privacy, shade and other advantages as the other, based on the vegetation on the

ground and on the preservation of its essential features throughout the life of the campsite."[63]

Meinecke developed his ideas, expanding his theories in a publication, called Camp Planning and Camp Reconstruction, where he viewed the campground as "a community, of roofless cabins." The Mission 66 planners built on Meinecke's ideas for campgrounds, simultaneously expressing their own concerns to preserve the natural landscape, disturbing the land as little as possible by using the loop form to reduce development. At Badlands a campground was built to prevent further individual camping on random individually chosen sites. Signage provided effective direction to specific campsites. The layout and configuration allowed for panoramic views and protected the landscape by keeping traffic to a single access road. The campsites and associated utilities were clustered to minimize natural resource impacts.[64]

Planners and designers worked to delineate campgrounds where many people could comfortably congregate in one area. A well-organized and regulated site would ensure that a limited space could be used efficiently. Key to the site organization was fulfilling the campers' desire to feel immersed in the natural surroundings. Two characteristic elements of successful campsite planning were the campground road plan and division of the campground into individual sites. Other elements considered essential to the camping experience were automobile access; availability of picnic tables, shelters, and potable water; and sufficient spacing between sites. Meinecke, advocated the need to focus on the individual elements of the campsite to provide successful planning. He wrote:

> There can be no doubt that the one-way road system is the most desirable and serviceable, and that it should be adopted wherever possible within the camp grounds. It restrains fast driving, cuts down dust nuisance and saves a great deal of space that may more profitably be thrown into actual camping or into screens to insure a higher degree of privacy in the camps.
>
> and
>
> The best utilization of the whole camp ground is secured by a one-way road which is lined on both sides by campsites. In the simplest case, that of a relatively narrow strip, the road leads through its middle, serving lots on either side. On larger grounds the road may swing back at the end to serve another single or double tier parallel to the first. In broader camp grounds of rectangular or square outline connecting roads run back into the main road at such an angle that the driver is forced to continue in the one direction and large rocks or other obstacles are placed so that he will not attempt to run against the one-way travel.[65]

Campsite development became a priority at Badlands National Monument between 1956 and 1959. Picnic facilities were important daytime activity facilities that were part of the Mission 66 development. The Park Service employees installed thirty American Indian-inspired picnic shelters at the Cedar Pass campground as well as the necessary pit toilets, guard rails and timber barriers. Interpretive signs were also added around the site.

Camping had become very popular and as a result the campground road was extended by almost a half mile, and the campground itself expanded to accommodate a minimum of fifty more sites. It was then graded with parking spurs and covered with two to three inches of gravel.

Mission 66 campground development also included a campfire circle and amphitheater. The campfire program was an important feature of the campground and with the addition of evening programs consisting of lectures, slide-illustrated talks, and movies, it developed into a popular attraction.

Progress at Badlands was reported in a public presentation of the Mission 66 plan, covered by the local *Rapid City Journal* and *Yankton Press*, and in a report from the superintendent as follows:

> The coming year will see a great change take place at Badlands. For the first time, an adequate exhibit room will be available for our visitors. The latest development in audio visual aids will help the visitor decide where to go and what to see. Adequate housing for seasonal employees will enable us to recruit better qualified seasonal personnel. In short, a new era is beginning. The future visitor to Badlands will be exposed to more and better interpretive facilities than ever before. It is our duty to see that these facilities are properly used to provide the services without which these facilities are useless. We hope that we can measure up to the challenge that lies ahead.[66]

Trails were also an important feature of Mission 66 development. The original Monument road system traversed the Badlands Wall but during Mission 66 it was realigned and extended around the fringe of Sage Creek Basin to Sheep Mountain connecting to State highway 40 at the southwest corner of the Monument. Alterations to park roads included scenic overlooks with roadside parking located at intervals. Short lateral spurs were constructed to campgrounds, at Cedar Pass, Sage Creek and Dillon Pass Campgrounds, and Conata and Sage Creek Picnic Areas. Short, paved self-guided trails intended as a means to interpret natural features and allow the visitor to experience the 'feel' of the Badlands.[67]

Re-Designation of the Monument to National Park Status (1952-1985)

A further change that occurred was in boundary adjustments. When Custodian Howard Stricklin was returned in January 1946 from his role in the war, he found that approximately 14,000 acres of land within the monument, previously owned by Jackson and Pennington Counties, had been sold at auction, primarily to stockmen owning adjacent lands. At least one new owner began plowing, to plant grain crops.

J. Estes Suter replaced Custodian Stricklin who was transferred to Grand Canyon National Park in 1948, and in June 1952 Superintendent Suter noted boundary adjustments made to the monument in May of that year. Congress directed the Secretary of the Interior to adjust monument boundaries without exceeding the authorized 154,119

acres. The eventual adjustment, by order of the Secretary of the Interior, took place on October 3, 1952. The net result was a reduction of the monument to 121,883 acres, but within this, 3,954 acres on Sheep Mountain (individually allotted lands within Pine Ridge Reservation) were added to the monument.[68]

In 1952, Congress authorized a 27,000-acre reduction in the size of Badlands National Monument. This was to ensure that the monument conformed to federal standards for this type of designated park. The proposed reduction prompted a reassessment of the land needed for a significant National Monument at the Badlands. A memo stated:

> If it is found, as appears likely that our chief concern and purpose should be with the Badlands formations then the boundaries should be drawn accordingly, with due regard for the Badlands protection, interpretation, and attendant development needs. If we are to retain some or all of the grasslands we must have strong and valid justification for doing so and be prepared to disclose and defend what specific Monument purposes and uses they are to serve. [FN]

In 1966, NPS Director George B. Hartzog, Jr., wrote in a "National Geographic" article, "We are doing our level best to plan for tomorrow, as did the architects of the famous Mission 66, now completed." He spoke of a plan called 'Parkscape U.S.A.' that proposed to expand the National Park System by 1972 in order to meet the needs of a new generation of tourists. Expanding the parks meant the NPS would need to acquire more lands and to develop cooperative programs with other agencies to develop both outdoor recreation opportunities and approaches for better management and park preservation.[69]

The most recent development to occur in the park system since land had first been designated as worthy of conservation was increased development of recreation. George Hartzog emphasized the need to publicize these recreation areas, using the multitude of media now available. He predicted that by the year 2000, American workers would receive a month of vacation annually, and a three-day weekend. Increasingly, the majority of the population was urban, and therefore needed a means to escape to the fresh air and beautiful countryside. The emphasis within parks would be expanded opportunities for recreational activities. In order to avoid damaging park resources, new ways of accessing the interior of natural conservation areas were being considered; it was felt that roads were intrusive no matter how well they were designed. Helicopters, aerial tramways, or cog or funicular railways on steep slopes were also possibilities entertained as alternatives to automobile access.[70]

Hartzog's ideas were reflected in developments at the Badlands National Park where increased visitation from 1966, led to the need to expand facilities beyond the provisions of the Mission 66 program. Even before Mission 66 developments were completed, many areas showed signs of inadequacy and it was clear that the Park needed more land and larger facilities.

In 1968, Congress expanded the National Monument area by 133,000 acres, increasing the Monument acreage to 244,000. Much of this land had previously been part of the Pine Ridge Reservation.

In 1969 a new plan was developed showing the Cedar Pass Developed Area with extant headquarters, campground, and concession area, and the design for expanding the campground development began in 1967.

By 1970, visitation had caused crowding of all areas, in particular parking had become a severe problem. For example, makeshift parking was used for the fourth season in a row in an attempt to remove some of the overflow from the Visitor Center parking lot and from along US Highway 16A. The small twenty-eight-space parking area had been inadequate for peak season traffic since at least 1963 and indeed parking had begun to be problematic only a few years after the opening of the Visitor Center. At this time visitors parked on road shoulders and along the private access road to the residential and utility area.

Visitor parking intruded into zones set aside for administration and park personnel residences, and a change was made in the road that ran from the Visitor Center to the residential and utility area. A new parking lot was constructed at the Visitor Center and the access road to the residential area leading directly off the southeast rear side of the Visitor Center was obliterated in favor of a road that ran from the southeast rear of the Visitor Center parking lot to the utility/maintenance area. A short spur road was constructed off the main utility/maintenance road leading to the residential loop and dead-ending to the south in the apartment complex area.

At the campground too, parking had become a problem in the early sixties. In 1962 parking at the entrance to the campground had been realigned. A 1963 proposal for the expansion of the campground remained pending still in 1977. At the Cedar Pass Lodge, parking had also become a problem. In 1971, plans were drawn modifying the existing parking, adding a lot to the rear of the lodge.

As part of a response to increased visitation new cabins were planned for concession employees, a new restaurant and curio store, a possible swimming pool and horseback riding facilities. In the administration area expansion of interpretive and information services were identified as necessary expansion projects as well as office space and storage. Two new residential facilities, four apartments, and a vehicle storage structure were required and in the maintenance area an increased capacity for heavy motorized equipment and flammables was needed. At the campground an entrance kiosk, all season comfort station, and relocation of the amphitheater were indicated as planned. It was also proposed to realign US Highway 40 south of the campground to join US Highway 16A at a point further north of the developed area. This project was not executed however. Existing development in 1977 is shown to include new employee parking in the rear of the Visitor Center, as well as parking in the front of the Lodge.[71]

In November 1978, Badlands National Monument was re-designated Badlands National Park. To achieve National Park status, a site must meet the following criteria:

> Have relatively spacious land and water areas, so outstanding in quality and beauty as to make imperative their preservation by the federal government for the enjoyment, education and inspiration of all people. They should embrace a sufficiently comprehensive unit as to permit public use and enjoyment and effective management of a continuing representation of its flora and fauna. They should be adaptable to a type of management that can provide a range of opportunities for human enjoyment, such as camping, picnicking, hiking, horseback riding and sightseeing in a natural setting consistent with the preservation of the characteristics and features that merit their establishment. They will most often contain a diversity of resources and values, including scenic and scientific.

In contrast, monuments generally include larger acreages than parks, are concerned with preserving primarily scientific resources and are not of sufficient size to support a broad range of visitor services, as for example at national parks.[72]

Changes continued to occur within the Cedar Pass landscape during the 1980s: an extension was added to the lodge, improvements were made to the residences, and additional residences were built.

Ranger residences were built at Sage Creek Basin Ranger Station including one 3-bedroom house, two 2-bedroom houses and one 6-unit seasonal employee units.

Relations with American Indian Populations (1976-2006)

A 1976 Memorandum of Agreement between the Park Service and the Oglala Sioux Tribe established the right of Tribal members to hunt within the South Unit, however no management plan was developed, and hunting was not allowed. The Park Service reaffirmed the ban on hunting in 1987, stating that game populations were insufficient to sustain hunting.

The American Indian Religious Freedom Act of 1979 guaranteed OST members perpetual access to a number of spiritually important locations as specifically identified. Some members of the Tribe feel they should have a greater role in the running of the Park, however this has yet to be discussed fully. Currently, tribe members run the concession at Cedar Pass Lodge, sources agree they continue to hunt in the South Unit and use the lands in ways that their ancestors had, such as gathering plants. Complete agreement between the Oglala Sioux Tribe and the NPS has yet to be sealed on the use of the lands that are incorporated into the Badlands National Park.[73]

Recognizing the Historic Significance of Badlands National Park (1993-2006)

Research into the historic significance of various aspects of Badlands National Park has been undertaken primarily in the developed area of Cedar Pass. Individual resources that have been evaluated and found eligible for their significance include the Cedar Pass Road, the Cedar Pass to Northwest Entrance Road, and the Ben Reifel Visitor Center. In addition, a recent Cultural Landscape Report (CLR) prepared by John Milner Associates in 2005, found the Cedar Pass Developed Area to be eligible for listing in the National Register under Criteria C in the area of planning. The South Dakota State Historic Preservation Office (SDSHPO) concurred with the findings of the CLR.

Cedar Pass Road is a 2.2-mile long, approximately 22-foot wide corridor running from the intersection of the Loop Road with the road to Interior (SD 377) to the intersection of the Loop Road with the Old Northeast Entrance Road. The historic Cedar Pass to Northwest Entrance Road is a 30-mile long, approximately 22-foot wide corridor running along the Loop Road from the intersection of the Loop Road with the road to Interior (SD 377).

Draft National Register nominations for the two roads were prepared concurrently in 1993 in conjunction with a Multiple Property Documentation Form for Historic Roads Resources in Badlands National Park. Each of the roads was found to possess significance under National Register Criterion A in the areas of Conservation, Entertainment/Recreation, Landscape Architecture, Politics/Government, and Transportation. The Cedar Pass Road, also referred to as Route 2 to Cedar Pass Campground, was determined significant during the period 1935–40, and the Cedar Pass to Northwest Entrance Road during the period 1934–35.

Each of these roads was determined to be significant for its contribution to efforts conducted over three decades to establish Badlands National Monument. Indeed, the roads were considered a critical feature of the park because for visitors to fully enjoy and appreciate the scenic beauty and scientific value of the park's geologic formations in an age in which the automobile had become fundamental to tourism and recreation, visitors would have to experience the landscape via a motor trail. In addition, the roads were designed with the intent to expose the visitor to every possible scenic view, to minimize intrusion on the land, and to emphasize the uninhabited aura of the place. Also, the roads were designed to meet the high standards of landscape architecture embraced by the park since the early 1930s, when master planning first began.

The Ben Reifel Visitor Center at Cedar Pass was determined eligible for listing in the National Register of Historic places in 2002. It was deemed significant under National Register Criterion A for its association with the National Park Service's (NPS) Mission 66 program at the state level as the only remaining Mission 66 visitor center in South Dakota to retain substantial integrity.[74] Despite the fact that the Visitor Center is not yet 50 years old, it is considered significant because it displays characteristics of a building type and style introduced into the national parks during the Mission 66 era.

The Cedar Pass landscape is a complex of resources, including the lodge and cabins, the two campgrounds, the Visitor Center and parking, the seasonal and single-family residences, the maintenance area, and the roads within the Cedar Pass Developed Area. Together these resources can be understood as an expression of Mission 66 planning concepts, which were intended to achieve the following:

- improve access by developing interpretive facilities as close to the resource as possible;
- expand interpretive opportunities by extending interpretation into the landscape through a range of experiential activities;
- establish synergies between educational programs and signature park resources;
- use curvilinear forms to allow for multiple views and an unimpeded processional;
- manage visitor movement;
- cluster relatively dense site planning of new facilities and complexes;
- utilize a unifying design concept that made use of an armature or datum along which development occurred;
- employ zoning of like uses;
- practice the visual and physical separation of different uses;
- avoid fragile resources in site developments;
- incorporate existing features into new designs; and
- espouse the use of modern materials and construction methods and minimizing of detailing and ornamentation in order to avoid distraction from the surrounding natural or historic resource.[75]

As such the Cedar Pass Developed area is considered eligible for listing in the National Register under Criterion C (see Figure 8).[76]

In addition, it is likely that future research will find other, both surface and subsurface, resources within the Badlands National Park, that are eligible for listing in the National Register for their association with attempts to create a tourist attraction, conserve a nationally significant place of profound scenic and scientific value, and create a National Park.

National Park status for the Badlands was achieved after a long process and the determined efforts of a few individuals. Development progressed slowly, but proved to be sensitive to the natural resources, while concurrently offering greater numbers of visitor services and facilities. In the process of developing a National Park, a valuable resource

was protected and preserved, but new resources, such as the scenic roads, the Visitor Center, and entire Cedar Pass Developed Area, were created as concessions to tourism. These resources add to the value of the Park and should be preserved for future understanding and interpretation of how tourism has affected the landscape. They exemplify how tourism development and conservation of natural resources can be successfully balanced through well thought out and sensitive design and planning.

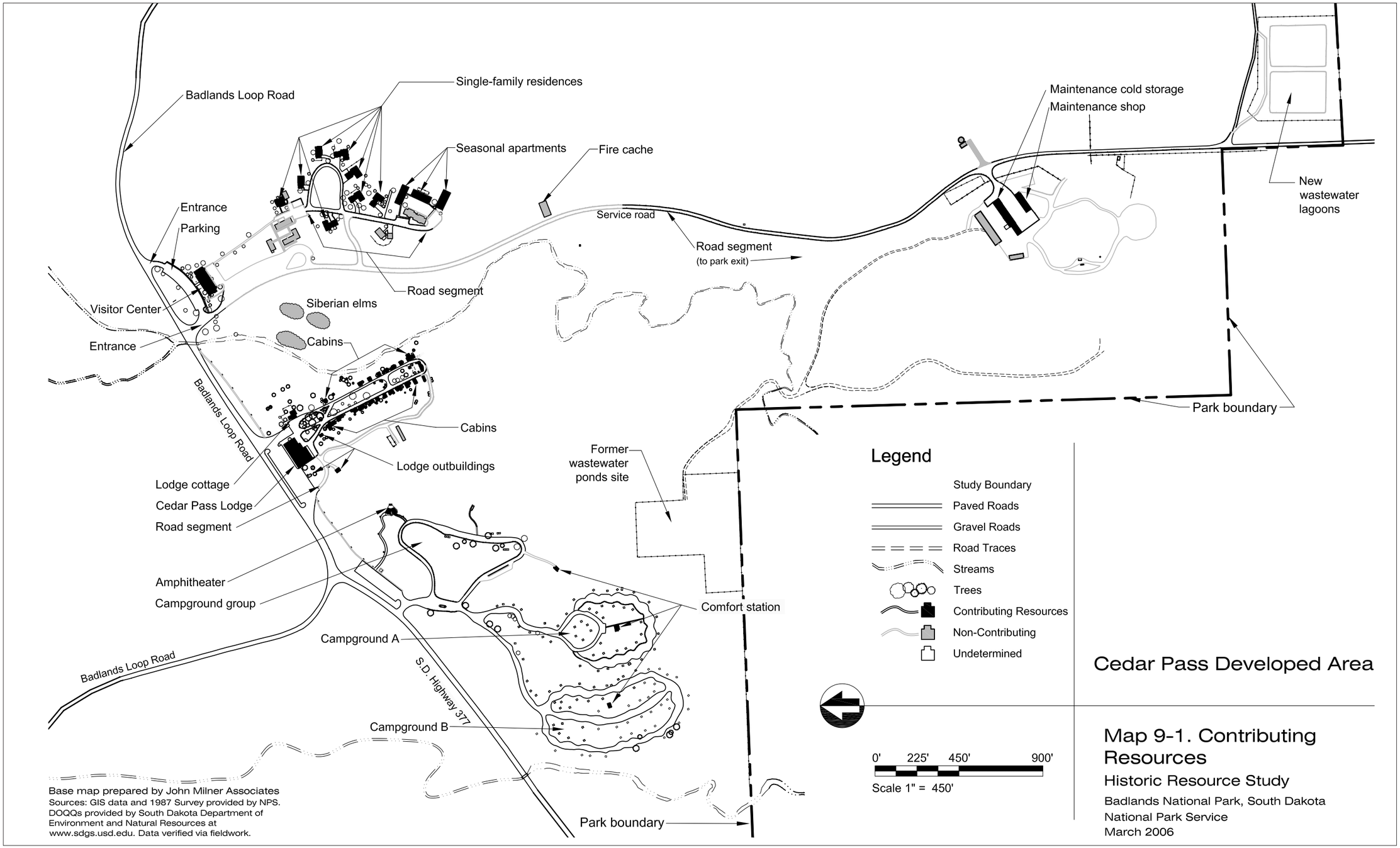


Figure 8: National Register eligible resources.

[1] See Sage Creek Campground Redevelopment Plan and Environmental Assessment, Badlands National Park, 2003.
[2] Gilbert Courtland Fite, *Peter Norbeck: Prairie Statesman* (Columbia, MI: University of Missouri, 1948).
[3] Senator Norbeck to J.W. Parker, Ipswich,SD, November 7, 1927, quoted in Ray H. Mattison and Robert A. Grom, *History of the Badlands National Monument*, Interior, SD, Badlands Natural History Association, 1968.
[4] Mattison and Grom, *History of Badlands National Monument*, 27; Jay A. Schuler, *A Revelation Called the Badlands: Building a National Park 1909–1939* (Interior, SD: Badlands Natural History Association, 1989), 8; Louis Knowles Report, Norbeck Collection of Papers, Badlands National Park Library, F656.N6N111 No. 1.
[5] Mattison and Grom, *History of Badlands National Monument*, 27.
[6] Schuler, *A Revelation Called the Badlands*, 13-18. Taken from John Milner Associates, Inc.,"Cedar Pass Developed Area Cultural Landscape Report," 2005.
[7] Senator Norbeck to Vice President H.E. Beebe, Bank of Ipswich (SD), May 5, 1924, Norbeck Collection of Papers, Badlands National Park Library F656.N6N111 No. 1, quoted in John Milner Associates, Inc., "Cedar Pass Developed Area Cultural Landscape Report," 2005.
[8] Senator Norbeck to J.W. Parmley, Ipswich, SD, November 7, 1927, Norbeck Collection of Papers, Badlands National Park Library F656.N6N111 No. 1.
[9] Mattison and Grom, *History of Badlands National Monument*, 31-32.
[10] House of Representatives Report No. 2607, 70th Congress, 2nd Session, quoted in Mattison and Grom, *History of the Badlands*, 34.
[11] See Chapter 8, BNP Historic Resource Study for clarification of accommodation in local towns.
[12] P.D. Peterson, *Through the Black Hills and Bad Lands of South Dakota* (Pierre, S.D.: J. Fred Olander Company, 1929), 26.
[13] P.D. Peterson, *Through the Black Hills and Bad Lands Of South Dakota* (Pierre, S.D. J. Fred Olander Co. 1929) 23.
[14] *Jackson-Washabaugh County 1889-1989, A Continuation of Jackson Washabaugh County History, 1915-1965*, published in 1966 (Kadoka, SD: History Book Committee of Kadoka Centennial Committee, 1989), 12.
[15] Ibid.
[16] Jay Schuler, *A Revelation Called the Badlands: Building a National Park, 1909-1939* (Interior, SD: Badlands Natural History Association, 1994), 26.
[17] P.D. Peterson, *Through the Black Hills and Bad Lands of South Dakota* (Pierre, S.D. J. Fred Olander Co. 1929) 23.
[18] Mattison and Grom, *History of Badlands National Monument*, 37.
[19] Quoted in Jay Schuler, *A Revelation Called the Badlands: Building a National Park, 1909-1939*, 29.
[20] South Dakota Unofficial Highways page, http://www.dm.net/~chris-g/sdhwy2.html (accessed October 27, 2005).
[21] Linda Flint McCLelland, *Building the National Parks* (Baltimore: Johns Hopkins University Press, 1998), 328.
[22] McClelland, *Building the National Parks*, 414.
[23] Sub-Marginal Land Program, Certificate of Recommendation for Land Acquisition, Jackson and Pennington Counties, South Dakota, April 5, 1935, Miscellaneous Papers, Badlands National Park Library.
[24] McClelland, *Building the National Parks*, 414-420.
[25] Herbert Maier, Regional Director to Land Program Division, RE: Badlands National Monument Extension, NPS, Washington, DC, April 2, 1935. John Milner Associates, CLR 2005.
[26] Sub-Marginal Land Committee Statement, April 5, 1935, Miscellaneous Records, BNP Library, quoted in John Milner Associates, CLR 2005.
[27] Land Program Division Regional Officer Herbert Maier, "Report on Badlands National Monument Extension Project," April 2, 1935, Miscellaneous Records, BNP Library.
[28] McClelland, *Building the National Parks*, 293.
[29] McClelland, *Building the National Parks*, 138.

[30] McClelland, *Building the National Parks*, 145-148.
[31] Howard W. Baker, Resident Landscape Architect, "Report to the Deputy Chief Architect, Branch of Plans and Design, Western Division, San Francisco, on Development of Proposed Badlands National Monument," November 13 and 14, 1935. The idea of adobe or sod buildings appears to have been dropped early on in the planning and design process.
[32] Oral History interview conducted with Dr. Ray Lemley, NPS, March 27, 1970.
[33] NPS 1938 Master Plan, Badlands National Monument.
[34] Karsmizki, DRAFT National Register Multiple Property Nomination, Section E, page 20; Mattison and Grom, *History of the Badlands*, 43.
[35] Superintendent's Reports for April 1941.
[36] National Park Service, "1938 Master Plan; Badlands National Monument, South Dakota" (Department of the Interior), no sheet #.
[37] Superintendent's/Custodian's Reports, September 1941.
[38] Superintendent's/Custodian's Reports, September 1941.
[39] Superintendent's/Custodian Reports called the ranger station a checking station not a check-in station, possibly because rangers were positioned to check on the needs of visitors.
[40] Richmond L. Clow, "Tribal Populations in Transition: Sioux Reservations and Federal Policy, 1934-1965," in South Dakota History, 387.
[41] Superintendent's Reports, September 1943.
[42] David R.M. White, "An Ethnographic Overview and Oral History of the Badlands National Park," 2001; Interview with Tony Kudnra, August 20, 2003.
[43] "An Ethnographic Overview," 304.
[44] Philip Burnham, Indian Country, God's Country: Native Americans and the National Parks (Washington DC: Island Press, 2000), 123-125, quoted in White, "An Ethnographic Overview," 303;
[45] Will Spindler, "Interior Celebrates Golden Anniversary," *Interior Index*, Special Golden Anniversary Edition (undated; hand-dated June 22, 1957, copy included in Current Events Club n.d.), quoted in White, "An Ethnographic Overview," 304.
[46] McCabe, n.d.: 7, quoted in "An Ethnographic Overview, Chapter 9, 304-308.
[47] (BADL-021) quoted in "An Ethnographic Overview," Chapter 9, 304 –308.
[48] Burnham, 136-137, quoted in An Ethnographic Overview, Chapter 11, 321.
[49] An Ethnographic Overview.
[50] Oglala Sioux Tribal Council Letter from Johnson Holy Rock, Chairman, to E.E. Allen, Regional Director of the Bureau of Outdoor Recreation, November 9; Position Statement on the Badlands Air Force Gunnery Range (GSA Control No. D-SD-467) by the Oglala Sioux Tribe. Correspondence on file at Badlands National Park, quoted in "An Ethnographic Overview, Chapter 11, 320.
[51] An Ethnographic Overview, Chapter 11, 321.
[52] "What is Mission 66," in Badlands National Park Mission 66 folder, National Archives – Plains, Kansas City, MO.
[53] McClelland, *Building the National Parks*, 466.
[54] McClelland, *Building the National Parks*, 466.
[55] This information station was moved to the Pinnacles area after the opening of the new Visitor Center at Cedar Pass. Superintendent's Notes, 1958.
[56] Wirth, *Parks, Politics, and the People*, 45.
[57] Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type* (Washington, DC: Government Printing Office, 2000), 28.
[58] Allaback, *Mission 66 Visitor Centers: The History of a Building Type*, 28.
[59] Carey and Co. Inc Architecture, "DRAFT Determination of Eligibility Cedar Pass Visitor Center," Badlands National Park, Interior South Dakota, 2002, 9: 21.
[60] Ibid., 25.
[61] Ibid., 22.
[62] Ibid., 25.
[63] E.P. Meinecke, *A Campground Policy* (Ogden, Utah: US Forest Service, US department of Agriculture, 1932) 10, quoted in McClelland, Building the National Parks, 278.
[64] McClelland, *Building the National Parks*, 282.

[65] E.P. Meinecke, *Camp Planning and Reconstruction* (California Region: US Forest Service, S.B. Shaw, 1933?), 7.
[66] Annual Report on Information and Interpretive Services, January 1959, Mission 66 Folder, BNP.
[67] "Mission 66 for the Badlands National Monument," (Interior, SD: NPS), 4.
[68] David R.M. White, "An Ethnographic and Oral History of the Badlands National Park, National Park Service," 2001, Part III, Chapter 11, p.318.
[69] George B. Hartzog, "Tomorrow in our National Parks," *National Geographic* 130, No.1 (July 1966): 48.
[70] Hartzog, "Tomorrow in our National Parks," 80.
[71] John Milner Associates, Inc., "Cedar Pass Developed Area Cultural Landscape Report," 2005.
[72] Ernest Allen Conally, Associate Director to Honorable George McGovern, United States Senate, December 4, 1972.
[73] "An Ethnographic Overview," Chapter 12, 328-335.
[74] Carey & Co., Inc. Architecture, "Determination of Eligibility; Cedar Pass Visitor Center, Badlands National Park; Interior, South Dakota" (San Francisco: prepared for the National Park Service, March 2002), 2.
[75] This eligibility is based on readings of Linda Flint McClelland's *Building the National Parks*, Conrad Wirth's *Parks, Politics, and the People*, Amanda Zehman's DRAFT *Multiple Property Determination of Eligibility for Grand Canyon Village Mission 66 Planning Effort*, and the drawings and plans of the 1950 Master Plan for Cedar Pass and their amendments.
[76] See John Milner Associates, Inc., "Cedar Pass Developed Area Cultural Landscape Report," 2005.

CHAPTER TEN

Selected Bibliography

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APPENDIX A

APPENDIX A

LAND PATENTS ISSUED IN THE VICINITY OF BADLANDS NATIONAL PARK (1900 to 1955)

Introduction

This appendix provides the names of those individuals who patented the federal lands located between 1900 and 1955 within Townships 1-4 South, Ranges 13-17 East in Pennington County and Townships 2-4 South, Ranges 18-19 East, in Jackson County. Those townships encompass the North Unit of Badlands National Park, plus lands immediately adjacent to it. It must be noted, that no comparable data is available for patented parcels in the South Unit or the Palmer Creek Unit of the Park. When a single claim covers multiple sections of land, a separate line is provided for each section. Note that most of the claims cover only a portion of the listed section, and most sections therefore have multiple claimants. The patent data do not provide specific information on the location of the farmsteads or ranch houses.

The data presented in this appendix are available online at www.glorecords.blm.gov/PatentSearch. This website also identifies the numbers of acres patented, the authority under which the land was claimed, and a complete legal description for each land patent.

Table A-1: Jackson County Homestead Patents to 1955

Patentee	Accession / Serial Number	Issue Date	Legal Description
ALWARD GEORGE P	42019	1/21/1909	20S 19E 15
ANDERSON AGNES L	135545	6/9/1910	30S 19E 4
ANDERSON WILLIAM W	385	9/26/1902	40S 19E 11
ANDERSON WILLIAM W	385	9/26/1902	40S 19E 14
ARGO CLARENCE S	2758	8/13/1907	40S 19E 13
ARGO CLARENCE S	2758	8/13/1907	40S 19E 14
ARGO CLARENCE S	2758	8/13/1907	40S 19E 19
BAKER HENRY R	9657	8/27/1908	20S 18E 13
BAKER SAMUEL B	4831	3/16/1908	20S 19E 33
BAKKE JOHN P	95061	12/9/1909	20S 18E 1
BARTELT ALBERT	194347	5/1/1911	20S 18E 31
BATEMAN GEORGE V	3582	7/16/1908	30S 19E 6
BATEMAN JAMES F	61337	5/14/1909	30S 19E 6
BATEMAN JAMES F	962411	6/26/1925	30S 18E 13
BATEMAN JOHN H	4456	1/13/1908	30S 19E 6
BAUMANN JACOB G	3865	11/9/1907	20S 19E 8
BEAVER PETER C	211487	6/26/1911	30S 19E 10
BEDLINGTON PETER	851247	2/23/1922	40S 18E 6
BELFORD GEORGE W	4116	12/16/1907	40S 19E 9
BELLOWS CLOSS G	61335	5/14/1909	20S 18E 32
BELLOWS MAUD	61334	5/14/1909	20S 18E 32
BERNASEK ANTON	194368	5/1/1911	30S 18E 14
BERNASEK ANTON	194368	5/1/1911	30S 18E 23
BIEVER JOHN	175567	2/3/1911	20S 18E 30
BIEVER NICHOLAS P	87508	11/4/1909	20S 18E 19
BLACKNEY ANNA S	150100	9/1/1910	20S 19E 6
BLACKNEY THOMAS C	150099	9/1/1910	20S 19E 5
BLAKE JOHN	5451	6/8/1908	20S 18E 22
BLANCHARD WILLIAM	288189	8/19/1912	20S 18E 2
BLUME LEWIS H	211499	6/26/1911	20S 19E 34
BOWERMAN FRANK P	295079	10/5/1912	20S 19E 1
BOWERMAN RAY E	4075	12/12/1907	20S 19E 12
BOWERMAN ROY W	9661	8/27/1908	20S 19E 1
BOYE CARL F	149072	8/25/1910	20S 18E 35
BRAUN ANTHONY F	4650	3/5/1908	20S 19E 9
BRION ENOS	3460	9/28/1907	40S 18E 2
BROOKENS GEORGE E	451752	1/5/1915	40S 19E 17
BROWN BERNARD J	2887	8/1/1907	20S 19E 9
BROWN CHARLES I	327242	4/19/1913	30S 19E 32
BROWN CHARLES I	327242	4/19/1913	40S 19E 5
BROWN EDGAR I	192937	4/24/1911	30S 18E 12
BROWN EDGAR I	763447	7/22/1920	30S 18E 1
BROWN EDGAR I	763447	7/22/1920	30S 18E 2

Patentee	Accession / Serial Number	Issue Date	Legal Description
BROWN GEORGE L	190312	4/13/1911	40S 18E 3
BROWN GEORGE L	190312	4/13/1911	40S 18E 10
BROWN WALTER E	192919	4/24/1911	30S 18E 34
BROWN WALTER E	437952	10/24/1914	30S 18E 34
BROWN WALTER E	987618	10/16/1926	30S 18E 20
BROWN WALTER E	987618	10/16/1926	30S 18E 21
BROWN WALTER E	987618	10/16/1926	30S 18E 22
BRUEGMAN WILLIAM R	192741	4/24/1911	30S 18E 11
BUCKNER OSCAR H	3528	9/3/1907	20S 18E 12
BULLARD LAURA	75407	8/9/1909	30S 18E 15
BULLARD MARVIN H	192934	4/24/1911	30S 18E 11
BURGETT FRANK C	4267	12/16/1907	20S 19E 21
BURK JOHN O	75593	8/12/1909	20S 18E 12
BURK RAYMOND W	87507	11/4/1909	20S 18E 12
BURKHOLDER MARTHA M	16180	9/24/1908	40S 18E 4
BURKHOLDER WILLIAM R	110905	2/11/1910	40S 18E 4
BURMA MATIE E	292109	9/16/1912	40S 18E 1
BURNS ALBERT E	42140	1/21/1909	20S 19E 1
BUSH JOHN J	126687	4/25/1910	40S 19E 4
CARVER HENRY R	400079	4/22/1914	30S 19E 5
CHELSON ELOF	417733	6/26/1914	40S 18E 13
CHELSON ELOF	746181	4/21/1920	40S 18E 13
CLOSE JOHNSON H	1014444	4/5/1928	40S 19E 3
CONNOLLY JAMES P	61323	5/14/1909	20S 18E 9
COTANT ELIZABETH	175900	2/6/1911	30S 19E 25
COTANT JOHN H	101429	1/6/1910	30S 18E 28
COTANT JOHN H	101429	1/6/1910	30S 18E 29
COVERSTON JULIA A	191178	4/17/1911	20S 19E 11
CRAVEN CORNELIUS T	420219	7/8/1914	40S 19E 12
CREW CLAUDE L	705672	9/8/1919	30S 19E 18
CREW LESLIE C	701491	8/1/1919	20S 18E 9
CROOKS CLARK	317602	2/27/1913	30S 19E 25
CROOKS CLARK	317602	2/27/1913	30S 19E 26
CROSS EUGENE C	75589	8/12/1909	20S 18E 10
CROWLEY WILLIAM T	87511	11/4/1909	20S 19E 14
CUNNINGHAM EVA L	65263	6/1/1909	20S 18E 2
DAVENPORT ABBIE L	2997	5/29/1907	20S 19E 23
DAVENPORT JENNIE L	2996	5/29/1907	20S 19E 23
DAVIDSON WALTER E	438966	10/27/1914	30S 19E 21
DOCK GILBERT N	608356	11/17/1917	30S 18E 1
DONNELLY MICHAEL J	174942	2/1/1911	40S 19E 4
DOSS HORACE W	261240	4/22/1912	30S 19E 24
DOWNES PATRICK R	540144	7/26/1916	30S 18E 34
DOWNES PATRICK R	814513	7/15/1921	30S 18E 28
DOWNES PATRICK R	814513	7/15/1921	30S 18E 33

Patentee	Accession / Serial Number	Issue Date	Legal Description
DOWNES PATRICK R	814513	7/15/1921	30S 18E 34
DREW GEORGE M	445096	11/27/1914	40S 19E 10
DREW HOMER P	90790	11/22/1909	40S 19E 10
DREW HOMER P	90790	11/22/1909	40S 19E 15
DURAND HARLEY G	227532	10/2/1911	20S 19E 11
DYRDAHL LEWIS	3859	11/9/1907	20S 18E 19
ELLIS SARAH ELIZA HEIRS OF	495233	10/22/1915	40S 18E 6
ELSHIRE JAY	3702	1/16/1908	20S 19E 12
ELVING JOSEPH E	3837	11/9/1907	20S 19E 17
ELVING OSCAR L	194295	5/1/1911	30S 19E 9
ENGER ELVA K	44217	1/28/1909	20S 19E 12
ENGER ENGEBRET	230292	10/16/1911	20S 19E 24
ESTES HOMER B	825977	9/27/1921	40S 18E 14
ETTER LEWIS	4454	1/13/1908	30S 18E 6
EVERETT JOHN A	501689	12/3/1915	30S 18E 32
EVERETT JOHN A	803299	4/15/1921	30S 18E 35
FAILEY CLARENCE W	209184	6/22/1911	20S 18E 25
FALK KARL	4829	3/16/1908	20S 19E 20
FAUSKE ALMER A	3862	11/9/1907	20S 18E 31
FAUSKE CONSTANCE M	400076	4/22/1914	20S 18E 30
FAUSKE GEORGE A	3863	11/9/1907	20S 18E 30
FAUSKE GEORGE A	3863	11/9/1907	20S 18E 31
FAUST BENJAMIN F	69085	6/24/1909	30S 18E 6
FAUST GEORGE W	28318	11/9/1908	20S 18E 23
FEES DAHL C	195408	5/3/1911	20S 19E 22
FLICK GUY R	334878	5/19/1913	40S 18E 7
FRIEDERICH EDWARD	61320	5/14/1909	20S 18E 8
FRIEDERICH GEORGE G	61321	5/14/1909	20S 18E 8
FROHMAN JOHN A	194328	5/1/1911	20S 19E 35
FROHMAN JULIUS A	209200	6/22/1911	20S 19E 35
FROST JOHN	4730	3/12/1908	20S 18E 28
FRY FRED S	4112	12/16/1907	30S 18E 1
FRY FRED S	4112	12/16/1907	30S 18E 2
GANTT KENNETH B	1023121	2/6/1929	30S 19E 32
GANTT KENNETH B	1023121	2/6/1929	30S 19E 33
GARDNER SARAH A HEIRS OF	5200	4/23/1908	20S 19E 2
GARNER JIM	134908	6/9/1910	20S 19E 21
GATES ANGA R	398790	4/17/1914	40S 19E 17
GOFF GEORGE W	4739	3/12/1908	30S 18E 12
GOFF LULU V	110910	2/11/1910	30S 18E 12
GOFF LULU V	110910	2/11/1910	30S 18E 13
GOODRICH BURTON W	3699	11/9/1907	20S 19E 4
GOODSELL ANDREW	25229	10/26/1908	30S 18E 5
GORE OTIS T	16683	9/28/1908	20S 18E 28
GRAFTON JESSE C	211480	6/26/1911	30S 18E 4

Patentee	Accession / Serial Number	Issue Date	Legal Description
GREEN FRANK W	194330	5/1/1911	30S 18E 14
GUEMMER ALBERT H	42826	1/25/1909	20S 19E 3
HAGERTY MICHAEL	5309	5/25/1908	20S 19E 10
HALL ROBERT T	123735	4/7/1910	30S 19E 20
HALL WILLIAM F	238330	12/14/1911	30S 19E 31
HALL WILLIAM F	238330	12/14/1911	30S 19E 32
HANSEN CHRISTOPHER	138182	6/16/1910	20S 18E 25
HARRIS ANNA	138177	6/16/1910	40S 18E 3
HASTING JOHN L	155911	10/6/1910	30S 18E 7
HERR MARY P	23471	10/19/1908	20S 19E 3
HERR MARY P	23471	10/19/1908	20S 19E 4
HIGHT JESSE LEO JR	238316	12/14/1911	30S 18E 30
HIGHT WILLARD B	43249	1/25/1909	40S 18E 5
HIGHT WILLARD B	43249	1/25/1909	40S 18E 8
HODGES JESSE A	175915	2/6/1911	30S 19E 27
HODGES JOHN A	252231	3/7/1912	30S 19E 28
HODGES JOHN A	252231	3/7/1912	30S 19E 33
HODGES JOHN A	252231	3/7/1912	30S 19E 34
HODGES MALINDA J	971357	12/23/1925	30S 19E 19
HODGES MALINDA J	971357	12/23/1925	30S 19E 29
HODGES MALINDA J	971357	12/23/1925	30S 19E 30
HOHN BEN	192963	4/24/1911	20S 18E 1
HOLLAND COLONEL B	226689	9/25/1911	20S 19E 31
HOPKINS ORVILLE L	2576	6/11/1907	20S 18E 2
HORTEN CHARLES R	149068	8/25/1910	30S 19E 29
HOWE MARTIN C	170048	1/12/1911	20S 18E 4
HUGHES WILLIAM S	458	12/1/1905	40S 18E 8
HUGHES WILLIAM S	458	12/1/1905	40S 18E 17
JACKSON GEORGE W	400077	4/22/1914	30S 18E 5
JACOBS HERMON	237955	12/11/1911	30S 18E 9
JAQUES MERRITT L	70586	7/6/1909	30S 18E 14
JENNINGS CLARA M	1089724	4/23/1937	30S 18E 34
JOHNSON CARRIE J	42064	1/21/1909	20S 19E 35
JOHNSON GEORGE L	516	5/1/1906	40S 18E 10
JOHNSON GEORGE L	516	5/1/1906	40S 18E 15
JOHNSON GEORGE L	23940	10/22/1908	40S 18E 10
JOHNSON GEORGE L	437953	10/24/1914	40S 18E 15
JOHNSON LOUIS A	174388	2/1/1911	30S 18E 10
JOHNSON LOUIS A	194787	5/1/1911	40S 18E 17
JONES EDWARD	540146	7/26/1916	40S 19E 18
JONES HUGH F	46906	2/15/1909	20S 19E 31
KAUS WILLIAM	243952	1/22/1912	20S 19E 9
KILEY THOMAS F	170361	1/12/1911	30S 18E 33
KINNEY GLEN W	4737	3/12/1908	30S 18E 6
KNUTH CARL	251445	3/4/1912	20S 19E 34

Patentee	Accession / Serial Number	Issue Date	Legal Description
KNUTSON EDWARD S	2763	5/29/1907	20S 19E 28
KOLENA JAMES	4741	3/12/1908	20S 19E 31
KRUGER ALBERT	277200	6/18/1912	30S 18E 14
LAMMON CHARLES E	857926	4/6/1922	30S 19E 31
LANGE FRED H	16183	9/24/1908	20S 19E 19
LARSEN OLE P	230264	10/16/1911	20S 19E 24
LEE JOHN	175936	2/6/1911	20S 19E 2
LEEDOM BOYD S	61331	5/14/1909	20S 18E 27
LIGGETT RAYMOND H	3401	9/3/1907	20S 18E 12
LINN JESSIE J	2914	7/14/1908	40S 19E 15
LITTLE HARLOW T	193564	4/27/1911	20S 18E 24
LITTLE HARRY E	230265	10/16/1911	20S 18E 24
LOGAN JOHANNA	751185	5/26/1920	30S 19E 1
LOGAN JOHANNA	751185	5/26/1920	30S 19E 12
MAGILL HENRY J	28321	11/9/1908	20S 19E 5
MAGILL HENRY J	28321	11/9/1908	20S 19E 8
MARSHALL CHARLES H	277198	6/18/1912	30S 18E 5
MATHER WILLIAM E	5069	4/9/1908	40S 19E 5
MCCONKEY ALDEN	61328	5/14/1909	20S 18E 17
MCDOWELL MARY E	76345	8/26/1909	20S 19E 21
MCHENRY JOHN	767015	8/5/1920	30S 19E 35
MCMAHON EDWARD	5308	5/25/1908	20S 19E 27
MENDENHALL HARRY E	9630	8/27/1908	30S 18E 3
MENDENHALL HARRY E	9630	8/27/1908	30S 18E 10
MENDENHALL JAMES H	230281	10/16/1911	30S 18E 3
MENDENHALL JAMES H	230281	10/16/1911	30S 18E 10
MENDENHALL WALTER W	4738	3/12/1908	30S 18E 10
MENDENHALL WILLIAM T	9631	8/27/1908	30S 18E 9
MENDENHALL WILLIAM T	9631	8/27/1908	30S 18E 10
MENDENHALL WILLIAM W	42561	1/25/1909	30S 18E 10
MEYER CHARLES F	4731	3/12/1908	20S 19E 6
MILLER DANIEL B	90179	11/18/1909	20S 18E 4
MILLER DANIEL B	176120	2/6/1911	30S 18E 1
MITCHELL GEORGE W	81290	9/28/1909	40S 18E 8
MITCHELL ROBERT E	5246	5/25/1908	20S 18E 33
MOORE ARTHUR T	227525	10/2/1911	40S 19E 9
MOORE ARTHUR T	827989	10/11/1921	40S 19E 4
MOORE ARTHUR T	827989	10/11/1921	40S 19E 8
MOORE ARTHUR T	827989	10/11/1921	40S 19E 9
MOORE ERIE A	230393	10/16/1911	40S 19E 9
MOORE ERIE A	230393	10/16/1911	40S 19E 10
MOORE JAMES H S	334646	5/17/1913	40S 18E 11
MOORE JAMES H S	334646	5/17/1913	40S 18E 14
MOORE RHEN B	4743	3/12/1908	40S 19E 4
MOORE RHEN B	4743	3/12/1908	40S 19E 5

Patentee	Accession / Serial Number	Issue Date	Legal Description
MOREY ANNA	302906	11/30/1912	30S 18E 15
MOREY ANNA	440168	11/4/1914	30S 18E 13
MOREY HERBERT C	459657	2/25/1915	30S 18E 13
MORTENSEN MARTIN	274155	6/11/1912	30S 19E 10
MOW WESLEY G	3170	8/13/1907	20S 18E 3
MUCKLER CHARLES H	4060	12/12/1907	40S 19E 14
MUCKLER CHARLES H	4060	12/12/1907	40S 19E 15
MUSILEK JOSEPH	3450	9/28/1907	20S 19E 34
NIEMAN MARY L	69062	6/24/1909	30S 18E 6
ODWYER JAMES CROAK	637255	6/20/1918	30S 18E 32
ODWYER JAMES CROAK	637255	6/20/1918	30S 18E 33
OEHLERT HERMAN	261273	4/22/1912	30S 18E 11
OELKE EWALD L	5068	4/9/1908	30S 18E 2
OLSON OTTO S	5195	4/23/1908	20S 18E 10
OMDAHL ISABEL M	244667	1/25/1912	20S 19E 18
OMDAHL MANDUS O	209197	6/22/1911	20S 19E 18
OMDAHL THOMAS O	209198	6/22/1911	20S 19E 18
OMDAHL THOMAS T	209199	6/22/1911	20S 19E 17
OMDAHL THOMAS T	209199	6/22/1911	20S 19E 18
OSHAUGHNESSY WILLIAM	23472	10/19/1908	20S 19E 9
OTTO WILLIAM E	42117	1/21/1909	20S 18E 29
PAESL ANTON	42143	1/21/1909	20S 19E 33
PALMER ALVIN H	5456	6/8/1908	30S 18E 4
PALMER ALVIN H	5456	6/8/1908	30S 18E 4
PALMER ELLA W	16182	9/24/1908	40S 18E 7
PALMER ELLA W	16182	9/24/1908	40S 18E 18
PECK HENRY H	120245	3/21/1910	20S 19E 18
PETERSON EMILY V	65247	6/1/1909	40S 19E 10
PETERSON EMILY V	65247	6/1/1909	40S 19E 11
PETTET WILLEY	208427	6/19/1911	30S 18E 23
PETTET WILLEY	208427	6/19/1911	30S 18E 24
PHILLIPS EVERETT W	5071	4/9/1908	20S 19E 31
PHILLIPS RUSSEL D	160432	11/7/1910	40S 18E 3
POTTS LETTIE L	2549	5/20/1907	20S 19E 22
POTTS MATTIE	2550	5/20/1907	20S 19E 22
POTTS WILLIAMS M	3838	11/18/1907	20S 19E 23
RAHDER PETER	230345	10/16/1911	20S 18E 26
REDMON JAMES C	170329	1/12/1911	20S 18E 4
REDMON JAMES C	344408	6/26/1913	20S 19E 8
REED ADDIE	210436	6/22/1911	20S 19E 28
REED EARNEST O	191175	4/17/1911	20S 19E 33
REED LOUIS B	42530	1/21/1909	30S 19E 4
REISER HENRY E	61333	5/14/1909	20S 18E 29
RICE SAMUEL W	93641	12/6/1909	30S 19E 10
RICHARDS CHARLES E	208436	6/19/1911	30S 19E 4

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RICHARDS CHARLES E	751424	5/26/1920	30S 19E 4
RICHARDS CHARLES E	820591	8/26/1921	30S 19E 4
RICHARDS CHARLES E	820591	8/26/1921	30S 19E 5
RICHMOND MERRICK E	155340	10/3/1910	30S 18E 29
RICHMOND MERRICK E	155340	10/3/1910	30S 18E 30
ROBINSON CLAUDE	3449	9/28/1907	20S 19E 35
ROSE HENRY	440174	11/4/1914	40S 19E 11
ROSE HENRY	440174	11/4/1914	40S 19E 12
ROSE HENRY	814511	7/15/1921	40S 19E 11
ROSE HENRY	814511	7/15/1921	40S 19E 12
ROUNDS JULIUS C	381419	1/30/1914	40S 19E 10
ROUSE IRA M	28703	11/9/1908	30S 18E 4
SACRE FRANK L	261272	4/22/1912	40S 19E 11
SACRE FRANK L	674877	4/21/1919	40S 19E 2
SACRE FRANK L	674877	4/21/1919	40S 19E 11
SACRE WILLIE	440172	11/4/1914	40S 19E 2
SACRE WILLIE	440172	11/4/1914	40S 19E 11
SALISBURY CHARLES C	451753	1/5/1915	40S 19E 20
SANTA FE PACIFIC RAILROAD CO	14499	8/15/1906	40S 18E 5
SAUNDERS LOUIS E	4735	3/12/1908	20S 18E 27
SAUNDERS LOUIS EDWARD	277748	6/20/1912	40S 18E 17
SCHAINOST ANDREW	42141	1/21/1909	20S 19E 30
SCHAINOST FRANK	4588	1/16/1908	20S 19E 33
SCHAINOST JOSEPH F	210440	6/22/1911	20S 19E 27
SCHEINOST ALBERT	2683	8/1/1907	20S 19E 28
SCHEINOST ALBERT	2683	8/1/1907	20S 19E 29
SCHULTZ EDWARD A	230365	10/16/1911	40S 19E 8
SCHULZ HEINRICH CARL	155929	10/6/1910	30S 18E 9
SCHULZ WILHELM	268144	5/20/1912	30S 18E 4
SCHULZ WILHELM	400078	4/22/1914	30S 18E 4
SCHULZ WILHELM	400078	4/22/1914	30S 18E 9
SERDAHL MARTIN	176840	2/9/1911	20S 19E 3
SHERWOOD FRANCIS B	199363	5/18/1911	20S 19E 7
SIGRIST LEOLA B	848472	2/10/1922	40S 18E 5
SIGRIST LEOLA B	848472	2/10/1922	40S 18E 6
SKOREPA ELMER	4450	1/13/1908	20S 18E 10
SKOTVOLD OLE L	175889	2/6/1911	20S 19E 6
SMITH VIRDO D	4651	3/5/1908	20S 19E 17
SORVAAG OLE G	28320	11/9/1908	20S 19E 4
SORVAAG OLE G	28320	11/9/1908	20S 19E 5
SPAULDING RICHARD C	61327	5/14/1909	20S 18E 15
STANTON WILLIAM E	274158	6/11/1912	30S 19E 13
STANTON WILLIAM E	274158	6/11/1912	30S 19E 14
STEPHENSON CLINTON W	148613	8/18/1910	20S 18E 3
STUART MATILDA E	2898	8/1/1907	20S 19E 17

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STUART OSCAR E	2899	8/1/1907	20S 19E 17
STUART OSCAR E	2899	8/1/1907	20S 19E 20
SULLIVAN JOSHUA F	42090	1/21/1909	30S 18E 33
SUTTON SAMUEL	194362	5/1/1911	30S 19E 13
SUTTON SAMUEL	902396	4/9/1923	30S 19E 13
SWAN JOHN B	398580	4/17/1914	30S 18E 32
SWAN JOHN B	398580	4/17/1914	30S 18E 33
SWANSEN CARL	155910	10/6/1910	30S 18E 5
SWARTOUT ANNA HEIRS OF	237956	12/11/1911	20S 18E 35
SWEET OLIVER E	3174	8/13/1907	20S 19E 26
SWENSON RALPH J	5783	7/1/1908	20S 18E 14
SWETT EMERY C	397328	4/9/1914	30S 19E 27
SWETT EMERY C	397328	4/9/1914	30S 19E 34
SWETT HATTIE A	16181	9/24/1908	40S 18E 5
SWETT LEE M	611289	12/10/1917	30S 19E 17
SWETT LEE M	611289	12/10/1917	30S 19E 19
SWETT LEE M	611289	12/10/1917	30S 19E 20
TECHEN MINNA	164504	12/5/1910	40S 18E 5
THOMAS JOHN H	9658	8/27/1908	30S 18E 1
THORN BURLIE M	194376	5/1/1911	30S 19E 33
TOLLEFSON LOUISE	5784	7/1/1908	20S 18E 23
TURNER FRANK E	102690	1/13/1910	40S 19E 17
TURNER FRANK E	102690	1/13/1910	40S 19E 20
TURNER FRANK E	102690	1/13/1910	40S 19E 21
TURNER MARY E	42144	1/21/1909	20S 18E 2
USA	1 1249B	11/13/1935	30S 19E 9
VALENTINE BILL HEIRS OF	75405	8/9/1909	40S 19E 13
WARD MARY D	44274	1/28/1909	20S 19E 12
WATKINS GRACE A	209189	6/22/1911	40S 18E 7
WATKINS GRACE A	209189	6/22/1911	40S 18E 8
WATKINS RAMSAY	2066	11/19/1906	40S 18E 7
WATKINS RAMSAY	2066	11/19/1906	40S 18E 8
WATKINS RAMSAY	2066	11/19/1906	40S 18E 17
WATKINS RAMSEY	194786	5/1/1911	40S 18E 8
WATKINS THOMAS H	1240	5/12/1905	40S 18E 7
WEEKS BENJAMIN C JR	211494	6/26/1911	20S 18E 31
WEEKS PHOEBE	290680	9/9/1912	20S 18E 31
WEESNER DENNIS C	295468	10/8/1912	40S 19E 1
WEESNER DENNIS C	295468	10/8/1912	40S 19E 2
WEST CHARLES H	2759	8/13/1907	40S 19E 13
WHITNEY LOID E	710454	10/2/1919	40S 19E 1
WHITNEY LOID E	710454	10/2/1919	40S 19E 12
WILDMAN WILLIAM H	144899	7/18/1910	20S 19E 8
WILLIAMS RICHARD M	487	6/30/1905	40S 19E 13
WILLIAMS RICHARD M	487	6/30/1905	40S 19E 14

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WILLIAMSON ALEXANDER	307187	1/3/1913	40S 19E 2
WILLIAMSON ALEXANDER	307187	1/3/1913	40S 19E 3
WILLIAMSON ALEXANDER	860903	4/25/1922	30S 19E 33
WILLIAMSON ALEXANDER	860903	4/25/1922	30S 19E 34
WILLIAMSON ALEXANDER	860904	4/25/1922	40S 19E 2
WILLIAMSON ALEXANDER	860904	4/25/1922	40S 19E 3
WILSON EDGAR H	4740	3/12/1908	20S 19E 19
WINEGARDEN DANIEL	243985	1/22/1912	30S 19E 20
WINEGARDEN DANIEL	243985	1/22/1912	30S 19E 29
WISTROM JOSEPH	155882	10/6/1910	30S 19E 3
WOOD HENRY EARL	956829	4/1/1925	30S 19E 13
WOOD HENRY EARL	956829	4/1/1925	30S 19E 14
WOOD HENRY EARL	956829	4/1/1925	30S 19E 23
WOODBURN ESLI A	561129	1/9/1917	40S 18E 7
WOODBURN ESLI A	968116	10/26/1925	30S 19E 26
YOLTON JAMES C	23542	10/19/1908	30S 19E 6
YOLTON MARIETTA O	4963	7/23/1908	30S 19E 7
YOUNG SAMUEL H	192725	4/24/1911	30S 19E 3
ZITEK WILLIAM	315962	2/17/1913	20S 18E 11

Table A-2: Pennington County Homestead Patents, to 1955

Patentee	Accession / Serial Number	Issue Date	Legal Description
ADAMS CLINTON A	55936	4/14/1909	20S 13E 25
ADELSTEIN ANNA	468858	4/17/1915	30S 17E 31
AGETON ROY R	508364	1/18/1916	40S 16E 2
AGETON SARAH E	442682	11/14/1914	30S 16E 35
AIZZIER EUGENE L	9730	8/27/1908	10S 17E 17
ALDEN LLOYD L	220975	8/14/1911	30S 15E 1
ALDEN ORVILLE AUSTEN	171858	1/19/1911	30S 15E 12
ALLEN LOLO M	285361	7/18/1912	10S 15E 1
ANDERSON ANDRES L	636543	6/17/1918	40S 14E 1
ANDERSON ANDRES L	636543	6/17/1918	40S 14E 12
ANDERSON ARTHUR O	283426	7/11/1912	10S 14E 29
ANDERSON CLARA E	149127	8/25/1910	10S 14E 29
ANDERSON ELMER E	157686	10/13/1910	10S 17E 26
ANDERSON IDA LOUISE	30561	11/19/1908	10S 17E 2
ANDERSON JOHN A	5470	3/23/1908	40S 17E 7
ANDERSON LAURA MARIE	30558	11/19/1908	10S 17E 13
ANDERSON LEWIS	518986	3/15/1916	30S 13E 7
ANDERSON LEWIS	518986	3/15/1916	30S 13E 8
ANDERSON MARY	23953	10/22/1908	10S 17E 2
ANDRE AMELIA E A	171849	1/19/1911	30S 13E 7
ARENZ ANNA	5515	3/23/1908	10S 14E 30
ARIOSO ANNIE V	186998	3/30/1911	20S 13E 33
ARSETH HANNA BOLETTE	445117	11/27/1914	20S 13E 18
ARSETH HANNA BOLETTE	856738	3/30/1922	20S 13E 7
ATHOW NEWTON	183674	3/13/1911	10S 13E 10
AUSHERMAN JOHN H	410466	6/2/1914	10S 14E 4
AUSHERMAN JOHN H	831099	11/5/1921	10S 14E 4
AUSHERMAN MABLE F	187062	3/30/1911	10S 14E 4
AUSHERMAN MABLE F	187062	3/30/1911	10S 14E 9
AUST ANTON W	5948	7/1/1908	10S 17E 10
AUST MARTIN	5645	4/6/1908	10S 17E 15
BACKSTROM CHRISTINA	222670	9/1/1911	20S 13E 28
BAILEY EVELYN B	279551	6/24/1912	40S 15E 20
BAILEY EVELYN B	279551	6/24/1912	40S 15E 21
BAILEY GEORGE EDWARD	55972	4/14/1909	30S 14E 9
BAIRD HARRISON E	1814		10S 13E 13
BAIRD HARRISON E	1814		10S 14E 18
BAIRD HARRISON E	1814		10S 14E 7
BAKER ROE	55974	4/14/1909	20S 15E 12
BAKER ROE	55974	4/14/1909	20S 16E 7
BAKKE CHRISTINE HEIRS OF	264370	5/6/1912	30S 17E 30
BALCH O EARL	5297	1/27/1908	10S 17E 4
BALCH O EARL	5297	1/27/1908	10S 17E 5

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BALCH WILLIAM W	5894	6/15/1908	10S 17E 5
BALL ROBERT D	62256	5/17/1909	30S 16E 21
BARBER QUINCY A	6060	7/1/1908	10S 17E 4
BARCLAY JOHN W	30502	11/19/1908	10S 16E 29
BARNES ARCHIE G	85338	10/25/1909	10S 16E 17
BARNES FRED R	85337	10/25/1909	10S 16E 20
BARNES JAMES M	1736		10S 13E 13
BARNES JAMES M	1736		10S 13E 14
BARNES MABLE	884229	10/21/1922	20S 14E 23
BARNES MABLE	884229	10/21/1922	20S 14E 24
BARNES MABLE	884229	10/21/1922	20S 14E 26
BATCHELDER FORREST	994773	1/24/1927	20S 14E 22
BATCHELDER FORREST	994773	1/24/1927	20S 14E 23
BAUDER JACOB	183795	3/13/1911	30S 15E 11
BAUDER JOHAN	472090	5/8/1915	30S 15E 12
BAYSINGER JAMES A	1035538	3/18/1930	40S 17E 12
BEAMAN GEORGE H	771205	9/2/1920	40S 17E 7
BEARDSHEAR MINNIE M	5344 1/2	2/13/1908	10S 14E 13
BEBIR JAKOB	31085	11/23/1908	20S 13E 31
BECK JAMES A	73320	7/22/1909	20S 17E 32
BECKER FRANK W	161938	11/17/1910	20S 13E 22
BECKER FRANK W	161938	11/17/1910	20S 13E 23
BECKWITH HARRY L	246528	2/5/1912	30S 17E 8
BEHRENS ALFRED	844138	1/19/1922	10S 13E 28
BEHRENS ALFRED	844139	1/19/1922	10S 13E 28
BEHRENS ALFRED	844138	1/19/1922	10S 13E 29
BELGARD AUGUST A	9716	8/27/1908	10S 14E 11
BELL JOHN	463738	3/19/1915	10S 14E 31
BELL JOHN	789040	1/3/1921	10S 14E 29
BENNETT LYLE EDGAR	162719	11/21/1910	20S 14E 4
BERGESON CLARENCE	777309	10/14/1920	10S 15E 10
BERGESON CLARENCE	777309	10/14/1920	10S 15E 11
BERGESON VERMUND	419613	7/6/1914	10S 15E 14
BERTELS ANNA	279557	6/24/1912	10S 13E 18
BERTELS ANNA	279557	6/24/1912	10S 13E 19
BERTELS JOHN M	222688	9/1/1911	10S 13E 19
BESSETTE BERT	11073	9/1/1908	20S 13E 9
BESSETTE JAMES L	807557	5/25/1921	20S 13E 4
BESSETTE JAMES L	807556	5/25/1921	20S 13E 9
BESSETTE MARY	11074	9/1/1908	20S 13E 10
BESSETTE TIMOTHY	285838	7/22/1912	20S 13E 10
BESSETTE TIMOTHY	986749	10/6/1926	30S 14E 13
BESSETTE TIMOTHY	986749	10/6/1926	30S 14E 14
BESSETTE WILLIAM	62261	5/17/1909	20S 13E 4
BESSETTE WILLIAM HEIRS OF	809445	6/9/1921	20S 13E 3

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BILY JACOB P	316350	2/20/1913	20S 15E 5
BILY JOE	558630	12/13/1916	10S 15E 31
BILY JOE	558630	12/13/1916	20S 15E 6
BILY LIZZIE HEIRS OF	558631	12/13/1916	10S 15E 31
BILY PETER P	92803	12/1/1909	10S 16E 3
BILY PETER P	940271	6/18/1924	20S 14E 1
BILY PETER P	940271	6/18/1924	20S 15E 6
BILY PETER P	940271	6/18/1924	20S 15E 7
BLATCHFORD JAMES	151748	9/12/1910	10S 17E 10
BLOOM SAMUEL E	93803	12/6/1909	10S 17E 15
BLOOM WILLIAM W	89568	11/15/1909	10S 17E 15
BLOWERS JAMES R	5843	6/8/1908	10S 15E 13
BOBIER JOHN R	697319	7/10/1919	20S 14E 1
BOBIER JOHN R	697320	7/10/1919	20S 14E 1
BOBIER JOHN R	697320	7/10/1919	20S 14E 12
BOEGEL WILLIAM	999706	4/6/1927	10S 13E 27
BOEGEL WILLIAM	999706	4/6/1927	10S 13E 34
BOEHM ALBERT J	9733	8/27/1908	20S 13E 29
BOLAND JAMES F	5644	4/6/1908	10S 17E 7
BOLAND JOHN E	5574	4/13/1908	10S 17E 18
BOLEYN JOHN E	196578	5/8/1911	20S 13E 14
BOLLMANN AUGUST	161808	11/17/1910	20S 14E 18
BOLLMANN AUGUST	161808	11/17/1910	20S 14E 19
BOLLMANN AUGUST	233203	11/9/1911	20S 14E 18
BORGELT THEODORE	3482	12/2/1907	40S 17E 7
BORLAND JESSE	3027		10S 14E 7
BORMAN JOHN	791684	1/24/1921	20S 15E 22
BORMAN JOHN	791684	1/24/1921	20S 15E 27
BORMAN JOHN	791685	1/24/1921	20S 15E 27
BORMANN EARNEST G	395832	3/30/1914	20S 15E 4
BORTLE JAMES ROY	5828	6/8/1908	10S 15E 5
BORTON HARRY W	749866	5/17/1920	20S 16E 31
BOSWELL IRA C	189467	4/10/1911	10S 16E 30
BOTHWELL CHARLES W	63522	5/24/1909	20S 16E 35
BOTHWELL RICHARD L	61377	5/14/1909	20S 16E 35
BOUCHARD EXORIA J	5735	6/15/1908	10S 14E 12
BOUGH PETER J	392789	3/14/1914	30S 17E 10
BOURQUIS JOHN	784549	11/29/1920	20S 14E 20
BOWEN ANNA E	296366	10/12/1912	30S 15E 11
BOWEN ANNA E	296366	10/12/1912	30S 15E 12
BOYCE CHARLES M	5469	3/23/1908	10S 15E 1
BOYD FANNY M	89549	11/15/1909	10S 15E 29
BOYD RALPH W E	34185	12/14/1908	20S 17E 28
BRADFIELD WILLIAM R	919154	10/4/1923	30S 16E 12
BRADFIELD WILLIAM R	919154	10/4/1923	30S 16E 2

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BRANCH ADA	726781	1/10/1920	10S 13E 17
BRANCH ADA	726782	1/10/1920	10S 13E 18
BRANCH FRED	726783	1/10/1920	10S 13E 17
BRANNAN WILLIAM A	251589	3/4/1912	10S 15E 3
BREESE NETTIE C	30578	11/19/1908	40S 16E 11
BRENN FRANK	296474	10/14/1912	10S 14E 17
BRENN FRANK	897969	3/5/1923	10S 14E 17
BRENN FRANK	897969	3/5/1923	10S 14E 18
BRENN FRANK	997036	3/4/1927	10S 14E 17
BRENN FRANK	997036	3/4/1927	10S 14E 18
BRENNAN EDWIN A	585	8/8/1902	10S 13E 1
BRENNAN EDWIN A	2123		10S 13E 12
BRENNAN MARY A	587	2/28/1902	10S 13E 12
BRENNAN MARY A	2121		10S 13E 11
BRENNAN WILLOUGHBY	4646	12/17/1906	10S 14E 18
BRENNAN WILLOUGHBY	4646	12/17/1906	10S 14E 7
BRENNAN WILLOUGHBY A	586	8/8/1902	10S 13E 11
BRENNAN WILLOUGHBY A	2122		10S 13E 11
BRENNER BETSEY ANN	72812	7/19/1909	20S 14E 31
BREWER JAMES M	183662	3/13/1911	10S 14E 1
BRIGGS EARNEST A H	185992	3/27/1911	30S 17E 11
BRIGHT GEORGE W	72318	7/15/1909	20S 17E 25
BRIGHT MARION F	30941	11/19/1908	40S 14E 23
BRINKLEY IRA	325016	4/9/1913	20S 16E 31
BRION JOHN H	223797	9/11/1911	20S 13E 19
BRODSKY JAMES HEIRS OF	923520	11/14/1923	10S 13E 5
BRODSKY JAMES HEIRS OF	923520	11/14/1923	10S 13E 8
BRODSKY JOSEPH C	870260	6/27/1922	10S 13E 15
BRODSKY JOSEPH C	870260	6/27/1922	10S 13E 21
BRODSKY JOSEPH C	870260	6/27/1922	10S 13E 22
BRODSKY KAREL	332979	5/12/1913	10S 13E 4
BRODSKY KAREL	725274	12/30/1919	10S 13E 4
BRODSKY KAREL	725274	12/30/1919	10S 13E 5
BROKOFSKY LAWRENCE L	255014	3/25/1912	10S 13E 15
BROKOFSKY LAWRENCE L	255014	3/25/1912	10S 13E 22
BROWN ALICE J	34944	12/17/1908	30S 14E 6
BROWN GEORGE N	198659	5/15/1911	40S 17E 2
BROWN GEORGE N	655030	11/30/1918	40S 17E 2
BROWN NORMAN	153399	9/22/1910	20S 16E 17
BROWNING ED	15239	9/21/1908	20S 17E 28
BROWNING LEWIS H	769716	8/26/1920	10S 13E 35
BRUCE RICHARD F	5413	2/27/1908	10S 15E 12
BRUCE RICHARD F	277793	6/20/1912	10S 15E 14
BRUCE RICHARD T	124376	4/11/1910	10S 15E 12
BRUCE RICHARD T	124376	4/11/1910	10S 15E 13

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BRUGET RASMUS	55953	4/14/1909	30S 14E 6
BUCHHOLZ ALEXANDER	281491	6/27/1912	10S 13E 31
BUCHHOLZ ALEXANDER	281491	6/27/1912	10S 13E 32
BUCK RENNIE P	151037	9/8/1910	20S 16E 18
BUCKMAN EMORY	6081	7/1/1908	20S 13E 31
BUCKMAN LINCOLN	13594	9/14/1908	20S 13E 31
BULLIS JOHN C	5448	2/27/1908	10S 17E 6
BUNNELL ARTHUR H	110795	2/11/1910	10S 14E 15
BURNER LERTIN M	222718	9/1/1911	20S 14E 19
BURNHAM ABRAHAM	196610	5/8/1911	10S 14E 3
BURNS JOHN	239253	12/14/1911	30S 13E 28
BURNS LYLE R	162712	11/21/1910	30S 17E 1
BURNS RAY G	73300	7/22/1909	30S 17E 8
BURNS RAY G	73300	7/22/1909	30S 17E 9
BURNS RAY G	211809	6/26/1911	30S 17E 17
BURNS RAY G	211809	6/26/1911	30S 17E 19
BURNS RAY G	211809	6/26/1911	30S 17E 20
BURNS WILSON	72338	7/15/1909	30S 17E 10
BURNS WILSON	72338	7/15/1909	30S 17E 9
BURR NEWTON P	243770	1/22/1912	10S 17E 19
BURROUGHS JOHN R	338015	5/29/1913	10S 13E 35
BURROUGHS JOHN R	884179	10/19/1922	10S 13E 26
BURROUGHS JOHN R	1109430	10/11/1940	10S 13E 26
BUTLER WILLIAM A	283482	7/11/1912	20S 16E 26
CALHOUND EDWARD	4610	6/30/1906	10S 15E 4
CALHOUND EDWARD	4610	6/30/1906	10S 15E 9
CAMERON N ELIZA	182752	3/9/1911	10S 13E 15
CARNES ADREN	171868	1/19/1911	10S 13E 34
CARSON EARL N	6082	7/1/1908	30S 13E 30
CARSTENSEN ELMER J	952549	1/31/1925	20S 15E 17
CARSTENSEN ELMER J	952549	1/31/1925	20S 15E 18
CARSTENSEN ELMER J	952549	1/31/1925	20S 15E 19
CARSTENSEN ELMER J	952549	1/31/1925	20S 15E 20
CARY SAMUEL T	221861	8/21/1911	30S 14E 8
CASEY LEB O	224150	9/11/1911	40S 17E 2
CASEY LEB O	224150	9/11/1911	40S 17E 3
CASTLE CHARLES K	280809	6/27/1912	20S 13E 19
CAVANAUGH JOHN	111187	2/14/1910	10S 17E 35
CHAMBERS HUGH	31098	11/23/1908	10S 15E 28
CHAMBERS JOHN E A	85329	10/25/1909	40S 13E 8
CHAROS JAMES	467279	4/6/1915	30S 13E 11
CHAROS JAMES	467279	4/6/1915	30S 13E 13
CHAROS JAMES	467279	4/6/1915	30S 13E 14
CHRISTENSEN LORENTZ W	249396	2/23/1912	40S 17E 10
CHRISTENSEN LORENTZ W	249396	2/23/1912	40S 17E 3

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CHRISTENSON JAMES C	5279	1/20/1908	10S 17E 14
CLARK GEORGE M	136234	6/13/1910	10S 16E 30
CLARK ISABELL A	390206	3/7/1914	20S 15E 3
CLARK ISABELL A	390206	3/7/1914	20S 15E 4
CLASEMAN MATHIAS H	86780	11/1/1909	20S 14E 32
CLASEMAN TONY	279350	6/24/1912	20S 14E 32
COKER FRANKLIN P	164144	12/5/1910	30S 17E 5
COKER FRANKLIN P	164144	12/5/1910	30S 17E 6
COLEMAN ORLIN M	61983	5/17/1909	10S 14E 11
COLLINS MARION F	374238	12/26/1913	30S 16E 28
COLLMANN FRED	246564	2/5/1912	20S 17E 9
COMP PARK L	5635	4/6/1908	20S 13E 7
CONKLIN PHOEBE	308973	1/10/1913	30S 14E 21
CONKLIN THOMAS J	334934	5/19/1913	30S 14E 21
CONKLIN VIRN J	61376	5/14/1909	40S 13E 4
COOK CAROLINE	55969	4/14/1909	30S 16E 1
COWEN GEORGE WARREN	5287	1/20/1908	10S 17E 12
COX ALBERT R	63550	5/24/1909	20S 16E 7
COX ARTHUR E	46	5/2/1903	10S 13E 33
COX ARTHUR E	46	5/2/1903	20S 13E 4
COX ISAAC	92788	12/1/1909	20S 15E 12
COX ISAAC	92788	12/1/1909	20S 16E 7
COX MARK	31	4/22/1901	10S 13E 33
COX MARK	31	4/22/1901	20S 13E 4
CRABTREE CHARLES C	283879	7/11/1912	10S 13E 6
CRAWFORD CLARA M	526106	4/24/1916	30S 17E 35
CRAWFORD CLARA M	832183	11/14/1921	30S 17E 35
CRAWFORD CLARA M HEIRS OF	986746	10/6/1926	30S 17E 34
CRAWFORD CLARA M HEIRS OF	986746	10/6/1926	40S 17E 2
CRAWFORD CLARA M HEIRS OF	986746	10/6/1926	40S 17E 3
CRAWFORD GEORGE H	987234	10/12/1926	30S 17E 19
CREW EDD	153415	9/22/1910	30S 13E 18
CROSMER HARRY D	308708	1/9/1913	20S 13E 30
CROTTY PATRICK	255027	3/25/1912	20S 17E 31
CROTTY PATRICK	277806	6/20/1912	20S 17E 31
CROWHURST HALE M	162691	11/21/1910	30S 16E 6
CUNNINGHAM JOHN THOMAS	837573	12/7/1921	10S 14E 19
CUNNINGHAM JOHN THOMAS	837573	12/7/1921	10S 14E 30
CUNNINGHAM LILA A	940273	6/18/1924	10S 14E 18
CUNNINGHAM LILA A	940273	6/18/1924	10S 14E 19
CUNNINGHAM LILA A	940273	6/18/1924	10S 14E 30
DAGHER JOSEPH	126831	4/25/1910	10S 15E 9
DAVIS ELIAS	5402	2/13/1908	10S 17E 17
DAVIS FLOYD E	34947	12/17/1908	10S 16E 3
DAVIS SAMUEL W	126833	4/25/1910	30S 17E 6

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DAY HOWARD F	61977	5/17/1909	30S 13E 15
DEHARTY EMMET A	224119	9/11/1911	10S 15E 8
DEKRAAY HARRY	5832	6/8/1908	10S 15E 3
DENNIS ROYAL	243791	1/22/1912	30S 14E 35
DENOMA SARAH E	31114	11/23/1908	10S 15E 25
DERANLEAU JOSEPH	73372	7/22/1909	30S 13E 21
DILGER WILLIAM A	289480	8/26/1912	30S 15E 35
DILLON WILLIE D	929743	1/22/1924	20S 16E 21
DILLON WILLIE D	929743	1/22/1924	20S 16E 22
DILLON WILLIE D	929743	1/22/1924	20S 16E 27
DIMMOCK JOSEPH R	386585	2/20/1914	20S 14E 34
DITTIR XERVAR	30565	11/19/1908	10S 17E 26
DONALDSON ARTHUR F	60801	5/11/1909	20S 13E 20
DOOLITTLE JOHN RAY	223782	9/11/1911	10S 15E 20
DREY GEORGE	808538	5/31/1921	10S 16E 32
DREY GEORGE	808538	5/31/1921	10S 16E 33
DROSTE HERMAN	423426	7/23/1914	20S 14E 33
DROSTE HERMAN	423426	7/23/1914	30S 14E 4
DUNNING FRANK L	159803	11/3/1910	20S 15E 2
DUSTER PETER	182720	3/9/1911	10S 13E 32
DUSTMAN WILLIAM L	198752	5/15/1911	30S 14E 5
DWIGHT HATTIE S	378762	1/22/1914	10S 17E 4
DYSART MARIE J	503358	12/13/1915	10S 15E 1
EAGLEN MARTIN A	5196	12/16/1907	10S 14E 15
EDAR GEORGE	2		10S 13E 26
EDAR GEORGE	2		10S 13E 27
EDGINGTON HUGH B	147328	8/1/1910	10S 13E 34
EDGINGTON ULRIC G	63529	5/24/1909	20S 13E 2
EDGINGTON WILLIAM S	230437	10/16/1911	20S 13E 3
EHRLER GEORGE C	236410	12/4/1911	10S 13E 14
EHRLER GEORGE C	236410	12/4/1911	10S 13E 23
EILERT CARL V	93804	12/6/1909	10S 15E 11
EILERT KAROLINE SOPHIA	124382	4/11/1910	10S 15E 12
ELAM JOHN J	5277	1/27/1908	10S 16E 1
ELAM MINTA V	61370	5/14/1909	10S 16E 2
ELFES MARY F	5392	2/13/1908	10S 16E 6
ELLIOTT ROLLAND B	92792	12/1/1909	20S 14E 17
ELLIOTT ROLLAND B	92792	12/1/1909	20S 14E 20
ELLIS CARL V	72339	7/15/1909	30S 17E 9
ELLIS FORREST W	72409	7/15/1909	30S 17E 11
ENGSTROM GIDEON E	853292	3/4/1922	30S 15E 26
ERICKSON ANNA	455518	1/25/1915	30S 13E 21
ERICKSON ANNA	743721	4/8/1920	30S 13E 21
ESTES PANSY A	1014446	4/5/1928	40S 17E 14
ESTES PANSY A	1014446	4/5/1928	40S 17E 22

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ESTES PANSY A	1014446	4/5/1928	40S 17E 23
EVANS CHARLES I	153455	9/22/1910	10S 15E 12
EVENSON EVEN	844111	1/19/1922	10S 13E 6
EVENSON EVEN	844111	1/19/1922	10S 13E 7
EVENSON JOHN G	801308	3/30/1921	10S 13E 6
EVENSON JOHN G	801308	3/30/1921	10S 13E 7
FAGER ABBIE R	308715	1/9/1913	20S 14E 8
FALLON JOHN WALTER R	89554	11/15/1909	10S 15E 32
FARNSWORTH CHARLES	164143	12/5/1910	10S 17E 1
FERGUSON EDWARD HIRAM	506973	1/11/1916	10S 15E 27
FERGUSON EDWARD HIRAM	506973	1/11/1916	10S 15E 28
FETTERS WILLIS A	257993	4/8/1912	20S 13E 21
FETTERS WILLIS A	257993	4/8/1912	20S 13E 28
FIELDS ALEXANDER	31094	11/23/1908	10S 16E 19
FIELDS JOHN A	72324	7/15/1909	10S 15E 2
FIERSTINE J GAGE	856743	3/30/1922	20S 14E 29
FIERSTINE J GAGE	856742	3/30/1922	20S 14E 31
FIERSTINE J GAGE	856742	3/30/1922	20S 14E 32
FIERSTINE J GAGE	856743	3/30/1922	20S 14E 32
FILLBACK GEORGE F	153452	9/22/1910	10S 15E 10
FILLBACK GEORGE F	153452	9/22/1910	10S 15E 11
FISHER BESSA	5478	3/23/1908	20S 13E 24
FISK WILLIAM R	311821	1/27/1913	20S 14E 33
FISK WILLIAM R	311821	1/27/1913	30S 14E 4
FITCH EDWIN S	26245	10/29/1908	20S 13E 32
FODE AUGUST	162718	11/21/1910	10S 13E 19
FORD FRED W	5966	7/1/1908	20S 17E 29
FORD FRED W	30654	11/19/1908	20S 17E 29
FORD MICHAEL H	45	8/12/1902	20S 13E 11
FORSCH CARL C	465059	3/26/1915	30S 15E 11
FORSOM CARL C	246587	2/5/1912	30S 15E 11
FRANKLIN MELVILLE F	808530	5/31/1921	20S 16E 24
FREMEL WESLEY	244714	1/25/1912	20S 13E 15
FREMEL WESLEY	867847	6/13/1922	20S 13E 21
FREMEL WESLEY	867847	6/13/1922	20S 13E 22
FRIET THOMAS	987233	10/12/1926	20S 14E 12
FRIET THOMAS	987233	10/12/1926	20S 15E 7
FRONK JOSIE	323925	4/4/1913	20S 15E 4
FRONK JOSIE	323925	4/4/1913	20S 15E 8
FRONK JOSIE	323925	4/4/1913	20S 15E 9
FRY GEORGE E	92793	12/1/1909	20S 14E 17
FUCHS FRANZ H HEIRS OF	216081	7/10/1911	30S 16E 7
FUERST BALTHASER JR	155378	10/3/1910	10S 13E 30
FULLER HARRY CHARLES	92809	12/1/1909	10S 16E 6
GAGE FRANK J	742769	4/2/1920	30S 17E 6

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GALL BERNARD	909592	6/18/1923	10S 13E 20
GALL BERNARD	909592	6/18/1923	10S 13E 21
GALL GUSTAVE FREAD	388363	2/27/1914	10S 13E 31
GANTENBEIN WILLIAM	1050735	10/19/1931	20S 14E 20
GANTENBEIN WILLIAM	1050735	10/19/1931	20S 14E 21
GANTENBEIN WILLIAM	1050735	10/19/1931	20S 14E 28
GANTENBEIN WILLIAM	1050735	10/19/1931	20S 14E 29
GEE GILBERT	5278	1/20/1908	10S 17E 7
GEE GILBERT	5278	1/20/1908	10S 17E 8
GEORGE ANNA B	11049	9/1/1908	10S 15E 7
GEORGE JOE S	89570	11/15/1909	10S 14E 1
GEORGE JOE S	89570	11/15/1909	10S 15E 6
GEREAUX WILLIAM	5517	3/23/1908	10S 14E 30
GERMAN HOWARD MAGILL	391826	3/12/1914	30S 14E 34
GERMAN HOWARD MAGILL	391826	3/12/1914	30S 14E 35
GILLIHAN LIZZIE	72390	7/15/1909	10S 16E 23
GILLIS GEORGE A	395419	3/27/1914	40S 17E 3
GILLIS GEORGE A	395419	3/27/1914	40S 17E 4
GILMAN MAUD E	131129	5/19/1910	10S 15E 18
GILMAN MYRTLE B	138195	6/16/1910	10S 15E 18
GILMAN WILLIAM H	110276	2/10/1910	10S 15E 20
GOCHENOUER ALBERT E	316348	2/20/1913	40S 17E 6
GOCHENOUER ALBERT E	316348	2/20/1913	40S 17E 7
GODFREY JOHN R	13010	9/10/1908	10S 14E 3
GODFREY NELLIE B	311920	1/27/1913	10S 14E 3
GODSIL MARY A	395830	3/30/1914	40S 16E 11
GOOD CHARLEY J	63517	5/24/1909	30S 14E 17
GOOD CHARLEY J	63517	5/24/1909	30S 14E 18
GORE HANNAH	222708	9/1/1911	20S 13E 6
GORSETH ERIK A	396988	4/7/1914	10S 15E 10
GORSETH ERIK A	396988	4/7/1914	10S 15E 15
GRANZ HEINRICH	224132	9/11/1911	20S 13E 1
GRANZ HEINRICH	224132	9/11/1911	20S 13E 12
GREEN WILBERT L	61993	5/17/1909	10S 15E 3
GREGERSEN ALBERT C JR	11046	9/1/1908	20S 13E 33
GREGERSEN ANDREW C	11047	9/1/1908	20S 13E 28
GREGSON JOSEPH W	197577	5/11/1911	10S 17E 12
GREGSON MERRITT	153436	9/22/1910	10S 17E 13
GREMMELS WILLIAM	311808	1/27/1913	10S 16E 31
GRIFFIN ALMOND	5		10S 13E 32
GRIFFIN ALMOND	5		10S 13E 33
GRIFFIN HORACE H	39	4/22/1901	20S 13E 5
GRIFFITH ANNA M	171880	1/19/1911	40S 15E 13
GUDERIAN HENRY G	72366	7/15/1909	30S 14E 18
GUDERIAN HENRY G	72366	7/15/1909	30S 14E 7

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GUILLAUME ALFRED A	5893	6/15/1908	20S 17E 33
GUMM FRED S	61375	5/14/1909	20S 15E 2
GUNDERSON ANDREW G	5291	1/27/1908	10S 17E 12
GUNDERSON ESTHER MARIE	30524	11/19/1908	10S 17E 13
GURDY SETH G	76165	8/19/1909	10S 15E 33
HAAKENAASEN OLE	153438	9/22/1910	30S 13E 18
HAEDT ROSELLA A	703930	8/27/1919	20S 13E 6
HAEDT ROSELLA A	703930	8/27/1919	20S 13E 7
HAEDT ROSELLA A	817020	8/1/1921	20S 13E 8
HAFT JAMES	760		10S 13E 1
HAFT JAMES	760		10S 13E 2
HALL HATTIE FISHER	465252	3/27/1915	40S 17E 11
HALL HATTIE FISHER	465252	3/27/1915	40S 17E 12
HALL THOMAS P	122359	4/1/1910	10S 17E 1
HALLEY WILLIAM	395831	3/30/1914	10S 17E 5
HALLEY WILLIAM F	214050	6/29/1911	10S 17E 5
HAMILTON WILLIAM H	426975	8/25/1914	40S 16E 6
HAMLETT LOREE O	5831	6/8/1908	10S 15E 10
HAMLETT LOREE O	5831	6/8/1908	10S 15E 4
HAMLETT LOREE O	5831	6/8/1908	10S 15E 9
HAMM JOHN N	8		20S 13E 26
HANIFAN CONNIE	5728	6/8/1908	30S 13E 18
HANIFAN CONNIE	5728	6/8/1908	30S 13E 7
HANKINS LILLIAN M	29	4/22/1901	30S 14E 35
HANOLD BURTON S	242960	1/17/1912	40S 15E 5
HANSEN ANDREW	451523	1/4/1915	10S 17E 2
HANSEN ANDREW	451523	1/4/1915	10S 17E 3
HANSEN NELS B	85278	10/25/1909	10S 15E 6
HAPPEL JOHN B	11079	9/1/1908	20S 13E 35
HARRIS ANDREW J	778509	10/22/1920	20S 14E 11
HARRIS ANDREW J	778510	10/22/1920	20S 14E 11
HARRIS ANDREW J	778509	10/22/1920	20S 14E 14
HARRIS ANDREW J	778510	10/22/1920	20S 14E 14
HARRIS ANDREW J	778509	10/22/1920	20S 14E 23
HARRIS ANDREW J	778510	10/22/1920	20S 14E 23
HARRIS CARLTON E	994775	1/24/1927	20S 14E 26
HARRIS CARLTON E	994775	1/24/1927	20S 14E 35
HARRIS EDWARD W	13011	9/10/1908	10S 17E 13
HARRIS JESSE A	103098	1/13/1910	20S 14E 2
HARRIS JESSE A	240689	1/4/1912	20S 14E 2
HARRIS JESSE A	782666	11/18/1920	20S 14E 2
HARRIS JESSE A	782666	11/18/1920	20S 14E 3
HARRIS NELLIE N	784788	11/30/1920	20S 15E 19
HARRIS NELLIE N	784788	11/30/1920	20S 15E 30
HARRIS RALPH L	124389	4/11/1910	10S 14E 1

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HARRIS WILLIAM	91185	11/22/1909	10S 15E 12
HARRISON WILLIAM H	233045	11/6/1911	30S 16E 32
HART JOHN W	77	5/15/1903	40S 13E 17
HART JOHN W	77	5/15/1903	40S 13E 8
HART MARY E	451526	1/4/1915	20S 16E 10
HART MARY E	451526	1/4/1915	20S 16E 11
HART RICHARD F	63	7/3/1902	30S 13E 6
HART RICHARD F	63	7/3/1902	30S 13E 7
HASTINGS CHARLES A	198715	5/15/1911	10S 14E 31
HAUPERT ALBERT F	5240	1/27/1908	10S 14E 2
HEFFERNAN CORA E	186995	3/30/1911	10S 15E 5
HEFNER EMA I	73359	7/22/1909	10S 14E 9
HEFNER JOHN A	207126	6/17/1911	10S 14E 9
HEIMARK PAUL OLSEN	442171	11/12/1914	30S 17E 2
HEIMARK PAUL OLSON	968537	10/28/1925	30S 17E 11
HEINRICHSON CHRISTIAN	61371	5/14/1909	20S 13E 17
HEITMAN AUGUST W H	224161	9/11/1911	10S 15E 5
HEITMANN FREDERICK	187007	3/30/1911	10S 15E 32
HELGERSON AUSTEN N	5296	1/27/1908	10S 17E 11
HELGERSON TOLLEF O	5288	1/20/1908	10S 17E 11
HENDRICKSON JESSE C	5125	12/9/1907	10S 14E 10
HENDRICKSON LENORA A	112694	2/17/1910	10S 14E 11
HENDRICKSON NORRIS J	5123	12/9/1907	10S 14E 10
HENWOOD OLIVER P	72843	7/19/1909	10S 15E 1
HERLEY CHARLES L	3483	12/2/1907	40S 17E 14
HERLEY CHARLES L	3483	12/2/1907	40S 17E 15
HERLEY HENRY	146761	7/26/1910	40S 17E 11
HERLEY HENRY	146761	7/26/1910	40S 17E 14
HERLEY HENRY	146761	7/26/1910	40S 17E 15
HERLEY HENRY	729288	1/20/1920	40S 17E 10
HERLEY HENRY	729288	1/20/1920	40S 17E 11
HERLEY HENRY	729288	1/20/1920	40S 17E 14
HICKMAN MAYME E	283422	7/11/1912	30S 15E 2
HICKS WARREN	419601	7/6/1914	10S 13E 5
HICKS WARREN J	817008	8/1/1921	10S 13E 5
HIGGINS ELSIE M	281893	7/1/1912	10S 13E 34
HIGGINS JACK M	292661	9/19/1912	10S 13E 32
HIGGINS JACK M	292661	9/19/1912	10S 13E 33
HIGGINS JACKSON M	21	10/13/1900	10S 13E 33
HIGGINS JACKSON M	62340	5/17/1909	10S 13E 13
HIGGINS JACKSON M	165043	12/8/1910	10S 13E 13
HIGGINS JACKSON M	389972	3/6/1914	10S 13E 12
HIGGINS JACKSON M	461899	3/10/1915	10S 13E 14
HIGGINS JACKSON M	461899	3/10/1915	10S 13E 15
HIGGINS JACKSON M	963883	7/28/1925	10S 13E 12

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HIGGINS MAURICE D	842279	1/11/1922	10S 13E 34
HIGGINS MAURICE D	842280	1/11/1922	10S 13E 34
HIGGINS MAURICE D	842279	1/11/1922	20S 13E 3
HIGGINS MAURICE D	842279	1/11/1922	20S 13E 4
HIGGINS MORRIS	16	10/13/1900	10S 13E 28
HIGGINS MORRIS	16	10/13/1900	10S 13E 33
HIGGINS MORRIS	350914	8/18/1913	10S 13E 28
HIGGINS MORRIS	350914	8/18/1913	10S 13E 33
HIGGINS MORRIS	3031		20S 13E 6
HIGHT ADOLPHUS	233557	11/13/1911	20S 17E 31
HIGHT GOLDIE	593537	7/23/1917	20S 16E 23
HIGHT GOLDIE	593537	7/23/1917	20S 16E 26
HIGHT JAMES S	327115	4/19/1913	20S 17E 33
HIGHT JAMES S	832191	11/14/1921	20S 17E 33
HIGHT JOSEPH B	124370	4/11/1910	20S 17E 32
HIGHT THOMAS	30600	11/19/1908	20S 17E 32
HIGHT WILLARD B JR	153447	9/22/1910	20S 17E 29
HILLERY MILTON	193714	4/27/1911	30S 17E 5
HILLERY MILTON	193714	4/27/1911	30S 17E 8
HILLERY WILLIAM E	164135	12/5/1910	30S 17E 5
HILLERY WILLIAM E	164135	12/5/1910	30S 17E 8
HILLERY WILLIAM E	968139	10/26/1925	30S 17E 19
HILLERY WILLIAM E	968139	10/26/1925	30S 17E 20
HILLERY WILLIAM E	968139	10/26/1925	30S 17E 21
HILLMER FRED	780099	11/3/1920	10S 14E 22
HILLMER FRED	780099	11/3/1920	10S 14E 26
HINES ALONZO A	336498	5/23/1913	20S 14E 30
HINES ALONZO A	835619	11/29/1921	20S 14E 29
HINZMAN DAVID D	233574	11/13/1911	10S 13E 27
HINZMAN WILLIAM J	216006	7/10/1911	10S 13E 20
HOAG FRED L	5841	6/8/1908	10S 14E 15
HOBART HENRY W	193710	4/27/1911	40S 17E 4
HOESLY FRANK R	92760	12/1/1909	10S 16E 30
HOETTCHEN ELIZABETH	147271	8/1/1910	10S 17E 1
HOIRIIS ERHARD A H	149116	8/25/1910	10S 14E 32
HOWE CHARLES A	429821	9/9/1914	20S 17E 1
HUBSCH FRED O	63341	5/20/1909	30S 14E 4
HUBSCH FRED O	63341	5/20/1909	30S 14E 9
HUETHER CHRISTIAN	729986	1/22/1920	20S 15E 34
HUETHER CHRISTIAN	729986	1/22/1920	20S 15E 35
HUETHER CHRISTIAN	729986	1/22/1920	30S 15E 2
HUETHER CHRISTIAN	729986	1/22/1920	30S 15E 3
HUETHER CHRISTIAN	965564	8/24/1925	30S 15E 1
HUETHER CHRISTIAN	965564	8/24/1925	30S 15E 2
HUETHER CHRISTIAN	965564	8/24/1925	30S 15E 3

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HULL JOHN K	221403	8/17/1911	20S 13E 2
HULL JOHN K	255253	3/25/1912	10S 13E 29
HUNT ROY W	266322	5/13/1912	40S 14E 9
HYNES CLARENCE EDGAR	229458	10/12/1911	40S 13E 21
HYNES CLARENCE EDGAR	681728	6/3/1919	40S 13E 8
HYNES MARY	322432	3/29/1913	40S 13E 17
HYNES MARY	322432	3/29/1913	40S 13E 8
HYNES MARY	842273	1/11/1922	40S 13E 5
HYNES MARY	842273	1/11/1922	40S 13E 8
HYNES MARY	842273	1/11/1922	40S 13E 9
IKE BENJAMIN F	369926	12/9/1913	40S 15E 6
IKE BENJAMIN F	369926	12/9/1913	40S 15E 7
IMSLAND CHRIST	5719	6/8/1908	20S 14E 7
IMSLAND HENRY	92773	12/1/1909	20S 14E 6
INGERSOLL FRANK W	5637	4/6/1908	20S 13E 24
IVERS HENRY J	231896	10/30/1911	10S 13E 9
IVERS HENRY J	606869	11/8/1917	10S 13E 8
IVERS HENRY J	606869	11/8/1917	10S 13E 9
IVERS HENRY J	826764	10/3/1921	10S 13E 6
IVERS HENRY J	826764	10/3/1921	10S 13E 9
JACOBSON ANDREW	5128	12/9/1907	10S 14E 13
JANDA ANTON	602369	10/1/1917	10S 13E 2
JANDA ANTON	602369	10/1/1917	10S 13E 3
JARISCH FRITZ R	5780	6/8/1908	20S 13E 13
JARISCH HANS L	262373	4/29/1912	20S 13E 11
JARISCH JULIUS K	313163	2/4/1913	20S 13E 11
JARVIS MARTIN O	725281	12/30/1919	20S 16E 24
JEFFERSON AB	76	9/11/1903	10S 14E 2
JEFFERSON AB	76	9/11/1903	10S 14E 3
JEFFREY MELVIN T H	388371	2/27/1914	20S 17E 33
JEFFREY MELVIN T H	388371	2/27/1914	30S 17E 4
JENSEN JOHN	558637	12/13/1916	20S 13E 24
JOBGEN FRANK	215992	7/10/1911	20S 14E 28
JOBGEN FRANK	215992	7/10/1911	20S 14E 29
JOBGEN FRANK	215992	7/10/1911	20S 14E 33
JOBGEN MAT	155369	10/3/1910	30S 14E 4
JOBGEN MAT	155369	10/3/1910	30S 14E 5
JOBGEN MAT	835621	11/29/1921	30S 14E 5
JOHNSON HANS P	259459	4/15/1912	10S 14E 2
JOHNSON OLIVER	1010363	12/27/1927	10S 13E 18
JOHNSON OLIVER	1010363	12/27/1927	10S 13E 7
JOHNSON ROBERT H	956837	4/1/1925	30S 16E 7
JOHNSTON BRAFFORD	2211		10S 13E 2
JOHNSTON EDWARD S	57661	4/20/1909	10S 16E 3
JOHNSTON EDWARD S	57663	4/20/1909	10S 16E 3

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JOHNSTON EDWARD S	311796	1/27/1913	10S 16E 3
JOHNSTON EDWARD S	804211	4/22/1921	10S 16E 4
JOHNSTON NELLIE C	291646	9/16/1912	20S 17E 25
JOHNSTON RALPH O	196470	5/8/1911	20S 13E 18
JOHNSTON RALPH O	196470	5/8/1911	20S 13E 19
JONES MINNIE	3604	4/9/1908	30S 13E 7
JONES WILLIAM	221863	8/21/1911	20S 16E 18
JONES WILLIAM N	182723	3/9/1911	10S 13E 31
JONES WILLIAM N	182723	3/9/1911	10S 13E 32
JOST BENEDICT	401448	4/28/1914	20S 13E 2
JOST BENEDICT	867868	6/13/1922	20S 13E 2
JOST HENRY	34928	12/17/1908	20S 13E 2
JOST THEODOR J	322430	3/29/1913	20S 14E 33
JURISCH ERNEST T	1126791	7/20/1949	20S 13E 7
KABERNA JOHN	34949	12/17/1908	20S 17E 19
KAMMOS OTTO E	86764	11/1/1909	10S 15E 33
KAPPHAHN FRANK A	149120	8/25/1910	20S 14E 6
KASULKA LILLIE C	61990	5/17/1909	10S 15E 9
KAVANAUGH THOMAS L	34940	12/17/1908	10S 17E 26
KEAN RALPH W	272490	6/6/1912	40S 17E 11
KEAN RALPH W	272490	6/6/1912	40S 17E 2
KEAN RALPH W	792142	1/26/1921	40S 17E 10
KEAN RALPH W	792142	1/26/1921	40S 17E 11
KEAN RALPH W	792142	1/26/1921	40S 17E 2
KEESTER HARRY	889444	12/4/1922	40S 14E 10
KEESTER HARRY	889444	12/4/1922	40S 14E 11
KEESTER HARRY	889444	12/4/1922	40S 14E 14
KEESTER HARRY	889444	12/4/1922	40S 14E 15
KEESTER WILLIAM H	526076	4/24/1916	40S 14E 10
KEESTER WILLIAM H	526076	4/24/1916	40S 14E 11
KEESTER WILLIAM H	837582	12/7/1921	40S 14E 10
KEESTER WILLIAM H	837582	12/7/1921	40S 14E 11
KEESTER WILLIAM H	959245	5/11/1925	40S 14E 10
KEESTER WILLIAM H	959245	5/11/1925	40S 14E 15
KELIHER MAURICE	194718	5/1/1911	40S 13E 17
KELINER RAY	246568	2/5/1912	40S 16E 14
KELINER RAY	246568	2/5/1912	40S 16E 15
KELLER WILLIAM H	5124	12/9/1907	10S 14E 10
KENASTON WILLIAM G	5327	1/20/1908	10S 17E 1
KENASTON WILLIAM G	5267	1/27/1908	10S 17E 1
KENNEDY ANN ELIZABETH	34191	12/14/1908	20S 13E 13
KENNEDY CALEB GUY	104327	1/17/1910	20S 13E 7
KENNEDY CALEB GUY	104327	1/17/1910	20S 13E 8
KENNEDY CHARLES G	182717	3/9/1911	20S 16E 32
KENNEDY CHARLES G	182717	3/9/1911	20S 16E 33

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KENNEDY HERBERT L	5638	4/6/1908	20S 13E 13
KENNEDY THOMAS C	72337	7/15/1909	30S 17E 8
KENT LEE	267820	5/20/1912	10S 14E 2
KENT LEE	267820	5/20/1912	10S 14E 3
KING EBENEZER W	155358	10/3/1910	20S 13E 34
KING LIBBIE M	72333	7/15/1909	20S 13E 22
KING MYRTLE A	72334	7/15/1909	20S 13E 15
KINSEL EMILY	662975	1/29/1919	20S 15E 5
KIRKPATRICK ALBERT	11		10S 13E 22
KIRKPATRICK ALBERT	11		10S 13E 23
KIRSCHBAUM OTTO H	34182	12/14/1908	10S 16E 17
KIRSCHBAUM OTTO H	34182	12/14/1908	10S 16E 18
KNAPP CHARLES D	196513	5/8/1911	10S 13E 14
KNAPP HANNAH T	147287	8/1/1910	10S 15E 2
KNAPP MARY E	91186	11/22/1909	10S 15E 2
KNAPP THEODORE E	281472	6/27/1912	10S 15E 4
KNORR SADIE M	34183	12/14/1908	10S 17E 4
KOCHER ABBIE	641602	7/26/1918	30S 14E 12
KOCHER ABBIE	641602	7/26/1918	30S 14E 13
KOCHER ABBIE R	852693	3/2/1922	30S 14E 12
KOCHER ABBIE R	868765	6/19/1922	30S 14E 1
KOCHER ALBERT E	857265	4/3/1922	30S 14E 1
KOCHER ALBERT E	857265	4/3/1922	30S 15E 6
KOCHER ALI E	322419	3/29/1913	10S 13E 23
KOCHER ALI E	884176	10/19/1922	10S 13E 23
KOCHER ALI E	884176	10/19/1922	10S 13E 24
KOONS CLARK R	308707	1/9/1913	20S 13E 20
KOONS DANIEL	121451	3/28/1910	30S 13E 5
KRUSE CHARLES D	206221	6/15/1911	10S 17E 11
KRUSE FRED	206222	6/15/1911	10S 17E 12
KRUSE WALTER W	1153946	8/30/1955	40S 17E 16
KRUSE WALTER W	1153946	8/30/1955	40S 17E 3
KUDRNA JOSEF	491449	9/24/1915	30S 14E 27
KUDRNA JOSEF	491449	9/24/1915	30S 14E 28
KUDRNA JOSEF	491449	9/24/1915	30S 14E 34
KUDRNA JOSEF	919155	10/4/1923	30S 14E 27
KUDRNA JOSEF	919155	10/4/1923	30S 14E 28
KUDRNA JOSEF	919155	10/4/1923	30S 14E 33
KUDRNA MARIE	802717	4/11/1921	30S 14E 28
LAIR GEORGE	189471	4/10/1911	30S 13E 1
LAMOUR JOHN V	5350	1/30/1908	20S 14E 9
LANDROCK LOUIS	92810	12/1/1909	10S 14E 13
LANE FRED W	261470	4/22/1912	40S 15E 11
LANE FRED W	261470	4/22/1912	40S 15E 12
LANE WILLIAM H	261468	4/22/1912	40S 15E 13

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LANE WILLIAM H	261468	4/22/1912	40S 15E 24
LANGE AGNES	1131553	4/4/1951	40S 16E 15
LANGE WILLARD H	1131553	4/4/1951	40S 16E 15
LARSEN ADELBERT B	207122	6/17/1911	20S 13E 35
LARSEN CHESTER A	153454	9/22/1910	30S 14E 5
LARSEN LAWRENCE J	1140732	9/14/1953	20S 14E 21
LARSEN LAWRENCE J	1140732	9/14/1953	20S 14E 28
LARSEN LAWRENCE J	1140732	9/14/1953	20S 14E 29
LARSEN MABEL	261464	4/22/1912	20S 13E 35
LARSEN OWEN I	198673	5/15/1911	30S 13E 1
LARSEN ROLAND R	215973	7/10/1911	20S 13E 26
LARSEN ROLAND R	215973	7/10/1911	20S 13E 27
LARSEN ROLAND R	895747	2/12/1923	20S 13E 34
LATTIN GEORGE F	308955	1/10/1913	20S 15E 1
LATTIN GEORGE F	308955	1/10/1913	20S 15E 12
LAUER NICHOLAS	818957	8/11/1921	20S 15E 1
LAZIO JOSEPH	187078	3/30/1911	10S 13E 30
LEE EDNA PEARL KEEFER	470658	4/29/1915	20S 13E 17
LEE EDNA PEARL KEEFER	470658	4/29/1915	20S 13E 8
LEE ELBERT L	13614	9/14/1908	20S 13E 17
LEE ELBERT L	13614	9/14/1908	20S 13E 8
LEE FRANK	67267	6/14/1909	10S 14E 7
LEE FRANK	150328	9/6/1910	10S 14E 7
LEE INEZ	784550	11/29/1920	10S 14E 7
LEE WILLIAM M	926274	12/11/1923	10S 14E 5
LEE WILLIAM M	926274	12/11/1923	10S 14E 8
LEMLEY PETER	72508	7/15/1909	20S 13E 5
LEVY WILLIAM H	57676	4/20/1909	30S 13E 4
LEVY WILLIAM H	155371	10/3/1910	30S 13E 3
LEVY WILLIAM H	155371	10/3/1910	30S 13E 4
LEVY WILLIAM H	914614	8/22/1923	20S 13E 34
LEVY WILLIAM H	914614	8/22/1923	20S 13E 35
LEVY WILLIAM H	914614	8/22/1923	30S 13E 2
LEVY WILLIAM H	914614	8/22/1923	30S 13E 3
LEWIS BENJAMIN F	196447	5/8/1911	30S 17E 10
LEWIS FRANK E	262356	4/29/1912	20S 13E 19
LINK EMANUEL	5374	2/13/1908	20S 13E 33
LLOYD BURTON W	86742	11/1/1909	20S 13E 23
LOCKETT CLINTON	56233	4/14/1909	10S 17E 9
LOGSDON HENRY	182775	3/9/1911	30S 16E 19
LOGSDON HENRY	779539	10/29/1920	40S 16E 21
LONSTAD MARTIN	6083	7/1/1908	20S 13E 30
LORENZEN ERNST B	136244	6/13/1910	30S 16E 31
LORENZEN ROBERT W	136243	6/13/1910	30S 16E 31
LOSSING ALPHA A	921234	10/18/1923	30S 17E 12

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LUDWIGSON PETER L	283463	7/11/1912	10S 13E 30
LYNCH CLARA	72357	7/15/1909	10S 15E 8
LYNCH DANIEL CHARLES	61385	5/14/1909	10S 15E 7
LYNCH JOHN M	367509	11/26/1913	20S 14E 19
MACKRILL ARTHUR D	5308	1/27/1908	10S 16E 7
MACKRILL WILLIAM A	5731	6/8/1908	10S 16E 5
MADDING WILLIAM	30580	11/19/1908	10S 16E 5
MADDING WILLIAM	30580	11/19/1908	10S 16E 8
MAHANY ELLA M	5179	12/9/1907	10S 15E 18
MAHANY MAX M	216977	7/13/1911	10S 15E 11
MAIN JOSHUA	55970	4/14/1909	10S 15E 3
MALLOW ALBERT	802718	4/11/1921	20S 13E 12
MALLOW ALBERT J	323894	4/4/1913	10S 13E 26
MALLOW ALBERT J	323894	4/4/1913	10S 13E 35
MALLOW ALBERT J	856731	3/30/1922	10S 13E 35
MALLOW AUGUST	194761	5/1/1911	10S 13E 35
MALLOW AUGUST	416524	6/23/1914	10S 13E 26
MALLOW AUGUST HEIRS OF	813247	7/5/1921	20S 13E 1
MALLOW AUGUST HEIRS OF	813247	7/5/1921	20S 13E 12
MALLOY JAMES E	5367	1/30/1908	20S 13E 30
MALLOY JAMES H	331633	5/7/1913	30S 13E 15
MANARY DAVID	5543	10/26/1908	20S 13E 19
MANKE ANNA	5688	6/8/1908	10S 15E 19
MANKE GEORGE	32199	12/3/1908	10S 15E 20
MANKE GEORGE W	6033	7/1/1908	10S 15E 19
MANKE GEORGE W	6033	7/1/1908	10S 15E 20
MANNING EDWARD PATRICK	155386	10/3/1910	20S 17E 33
MARLER DOCTOR A	215984	7/10/1911	10S 16E 20
MARSDEN JAMES C	213059	6/26/1911	10S 14E 1
MARSHALL GUY I	5029	10/26/1907	10S 13E 2
MARSHALL OLNEY C	153442	9/22/1910	10S 16E 7
MARTIN CHARLES J	200479	5/22/1911	20S 14E 20
MARTIN CHARLES J	200479	5/22/1911	20S 14E 21
MARTIN EUGENE	369395	12/2/1913	20S 14E 9
MARTIN MADGE R	72336	7/15/1909	30S 17E 10
MARTIN MADGE R	72336	7/15/1909	30S 17E 9
MARTIN ROCK	187075	3/30/1911	30S 13E 12
MARVIN DON C	62260	5/17/1909	20S 13E 15
MASH WILLIAM H	231537	10/26/1911	30S 13E 3
MATSON BERNARD V	226729	9/25/1911	40S 15E 5
MATSON BERNARD V	226729	9/25/1911	40S 15E 8
MATSON IDA M	245037	1/29/1912	40S 14E 1
MATSON IDA M	245037	1/29/1912	40S 15E 6
MATSON OLOF KARL	488643	8/31/1915	40S 14E 1
MATSON OLOF KARL	827992	10/11/1921	40S 14E 12

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MATTIS JOHN M	215972	7/10/1911	20S 13E 20
MATTIS THEODORE	1145675	7/22/1954	20S 14E 29
MATTIS THEODORE	1145675	7/22/1954	20S 14E 31
MATTIS THEODORE M	215977	7/10/1911	20S 14E 30
MATTIS WILLIAM M	244702	1/25/1912	20S 13E 20
MCCABE JULIA C	11075	9/1/1908	10S 17E 3
MCCAULEY DANIEL BEARD	172698	1/23/1911	40S 16E 6
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 15
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 18
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 19
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 22
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 27
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 31
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 32
MCCLUSKEY PORTER B	1129864	8/31/1950	10S 13E 33
MCCLUSKEY PORTER B	1129864	8/31/1950	20S 13E 6
MCCURDY WILLIAM DEE	196462	5/8/1911	20S 14E 30
MCDANIEL NOAH N	233585	11/13/1911	40S 17E 4
MCDANIEL NOAH N	233585	11/13/1911	40S 17E 9
MCDONALD C ANSELM	244704	1/25/1912	10S 15E 33
MCDONALD MICHAEL	244705	1/25/1912	10S 15E 33
MCDONALD MICHAEL	244705	1/25/1912	20S 15E 4
MCFARLAND M VIOLA	421791	7/13/1914	20S 13E 10
MCGRATH GERALD J	30507	11/19/1908	10S 16E 30
MCINTYRE AULORA R	9735	8/27/1908	20S 14E 30
MCKAY JOHN W	599828	9/11/1917	30S 13E 34
MCKAY JOHN W	599828	9/11/1917	30S 13E 35
MCKELVIE CLARK H	232996	11/6/1911	30S 14E 28
MCLELLAND NANCY A	60826	5/11/1909	30S 17E 6
MCLELLAND ROBERT A	55968	4/14/1909	30S 16E 1
MCLELLAND ROBERT A	55968	4/14/1909	30S 17E 6
MEACHAM BARBARA	4395	4/17/1905	40S 14E 14
MEACHAM BARBARA	4395	4/17/1905	40S 14E 23
MERRITT BERTHA A	198714	5/15/1911	20S 14E 31
MERRITT WESLEY P	131128	5/19/1910	20S 13E 17
MERRITT WESLEY P	131128	5/19/1910	20S 13E 18
MERRYWEATHER HARRY	198709	5/15/1911	10S 16E 24
MEWHIRTER CLARENCE B	200531	5/22/1911	20S 17E 19
MEYER ALBERT	332938	5/12/1913	10S 16E 7
MEYER ANNA A	296475	10/14/1912	10S 16E 18
MEYER ANNA A	296475	10/14/1912	10S 16E 7
MEYERS CHARLES H	92768	12/1/1909	20S 14E 4
MEYERS LUCIAN G	136227	6/13/1910	10S 14E 32
MEYERS WILLIAM E	111196	2/14/1910	20S 14E 6
MILES CARRADINE L	924705	11/27/1923	30S 15E 7

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MILES CARRADINE L	924705	11/27/1923	30S 15E 8
MILLER CHARLES	1008164	10/3/1927	20S 14E 10
MILLER CHARLES	1008164	10/3/1927	20S 14E 15
MILLER CHARLES	1008164	10/3/1927	20S 14E 22
MILLER FRANK	198716	5/15/1911	20S 14E 5
MILLER FRANK C	85306	10/25/1909	10S 16E 5
MILLER FRANK C	85306	10/25/1909	10S 16E 8
MILLER JACOB A JR	5266	1/27/1908	10S 17E 3
MILLER JEROME A	246561	2/5/1912	30S 16E 3
MILLER JOHN H	5632	4/6/1908	40S 16E 12
MILLER PETER E	232988	11/6/1911	30S 16E 1
MILLER PETER E	232988	11/6/1911	30S 16E 2
MILLER WILLIAM H	785363	12/8/1920	10S 16E 4
MINOR MAYBELL	236411	12/4/1911	20S 16E 35
MINTENER BENJAMIN D	162243	11/17/1910	40S 15E 17
MONK CHARLES N	73333	7/22/1909	10S 15E 7
MOORE JAMES E	246550	2/5/1912	30S 13E 8
MOORE JAMES E	246550	2/5/1912	30S 13E 9
MOREHOUS PARKER A	112149	2/17/1910	10S 13E 10
MORGAN HAZEN C	586047	5/25/1917	40S 16E 21
MORKERT BENJAMIN F	263862	5/6/1912	10S 16E 1
MORRIS ARTHUR	2251	8/1/1901	10S 13E 14
MORRIS ARTHUR	2251	8/1/1901	10S 13E 23
MORRIS ARTHUR	2251	8/1/1901	10S 13E 24
MORRIS RICHARD E	19	10/13/1900	10S 13E 23
MORRIS WILLIAM F	2535	8/22/1902	10S 13E 13
MORSE WILLIAM R	92288	11/29/1909	40S 15E 17
MORSE WILLIAM R	92288	11/29/1909	40S 15E 18
MORSE WILLIAM R	92288	11/29/1909	40S 15E 19
MORSE WILLIAM R	92288	11/29/1909	40S 15E 20
MOSER LOUIS W	90252	11/18/1909	20S 15E 1
MOSER LOUIS W	259441	4/15/1912	20S 15E 1
MOSER LOUIS W	277766	6/20/1912	20S 15E 1
MOSES JOHN Z	787052	12/15/1920	10S 13E 19
MOTTER DAVID E	890718	12/14/1922	30S 13E 28
MOYE WALTER G	60820	5/11/1909	20S 13E 12
MUEHL JACOB	202555	6/1/1911	20S 17E 8
MULHOLLAND JAMES E	332930	5/12/1913	30S 13E 12
MULHOLLAND JAMES E	332930	5/12/1913	30S 14E 18
MULHOLLAND JAMES E	332930	5/12/1913	30S 14E 7
MURDOCK ELIZA	147429	8/1/1910	20S 17E 18
MURDOCK ELIZA	147429	8/1/1910	20S 17E 19
MYRES LEONIDAS	240486	1/4/1912	20S 16E 31
MYRES LEONIDAS	240486	1/4/1912	20S 16E 32
NELSON JOHN AUGUST	5424	2/27/1908	10S 17E 2

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NEUMANN FREDERICK	280811	6/27/1912	10S 14E 21
NEUMANN FRIEDRICH	813243	7/5/1921	10S 14E 21
NEUROTH MICHAEL	198703	5/15/1911	40S 15E 5
NEWCOMER JOHN D	111169	2/14/1910	20S 14E 5
NEWSAM HERBERT	299524	11/9/1912	30S 17E 22
NEWTON ALBERT A	164149	12/5/1910	10S 17E 3
NICHOLLS CLARENCE P	63526	5/24/1909	20S 13E 3
NIETERT FRANK	262369	4/29/1912	20S 13E 24
NOBLE FANNIE M	201677	5/25/1911	10S 13E 8
NOBLE SIMEON A	196603	5/8/1911	10S 13E 5
NOBLE SIMEON A	196603	5/8/1911	10S 13E 6
NORMAN ERNEST F	307218	1/3/1913	10S 13E 10
NORMAN ERNEST F	307218	1/3/1913	10S 13E 14
NORMAN ERNEST F	307218	1/3/1913	10S 13E 15
NORMENT MARTHA S HEIRS OF	291226	9/12/1912	10S 13E 9
NORRIS ALICE	13618	9/14/1908	20S 17E 10
OHMIT EARL CLARENCE	153418	9/22/1910	40S 15E 17
OKLAND EDWIN	5646	4/6/1908	10S 17E 10
OKLAND EDWIN	5646	4/6/1908	10S 17E 15
OLIC FRANK	279357	6/24/1912	30S 14E 35
OLIC FRANK	279357	6/24/1912	40S 14E 2
OLIC FRANK	624506	4/11/1918	40S 14E 2
OLIC FRANK	764550	7/28/1920	30S 14E 35
OLIC FRANK	764550	7/28/1920	40S 14E 2
OLINGER EMMA S	55933	4/14/1909	30S 14E 7
OLINGER ROSA A	55934	4/14/1909	30S 14E 8
OLMSTEAD HELEN	23573	10/19/1908	10S 15E 6
OLSEN CHRISTOPHER	726784	1/10/1920	10S 13E 19
OLSEN CHRISTOPHER	726784	1/10/1920	10S 13E 20
OLSON ELLEN G	388360	2/27/1914	10S 13E 10
OLSON INGRID	419617	7/6/1914	10S 13E 10
OLSON INGRID	419617	7/6/1914	10S 13E 3
OLSON INGRID	710459	10/2/1919	10S 13E 3
OLSON JOHN W	378761	1/22/1914	10S 14E 32
OLSON O ERNER	72424	7/15/1909	10S 17E 4
OPPLIGER JOHN	264371	5/6/1912	20S 14E 17
OPPLIGER JOHN	989292	11/16/1926	10S 14E 35
OPPLIGER JOHN	989292	11/16/1926	20S 14E 2
OPPLIGER JULIUS	62153	5/17/1909	20S 14E 17
OPPLIGER JULIUS	334684	5/17/1913	20S 14E 17
OPPLIGER JULIUS	763632	7/22/1920	30S 14E 1
OPPLIGER JULIUS	763632	7/22/1920	30S 14E 12
OPPLIGER JULIUS	763632	7/22/1920	30S 15E 7
ORR ALGERNON S	2463		10S 13E 11
OSBORN EUGENE	183655	3/13/1911	20S 17E 31

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OSBORN JAMES LEROY	63540	5/24/1909	20S 16E 26
OSBORN MABEL M	136242	6/13/1910	20S 17E 30
OSBORNE OLUFF HERBERT	5639	4/6/1908	20S 13E 14
OSBURN ARTHUR	5445	3/23/1908	10S 14E 1
OSBURN ARTHUR	5445	3/23/1908	10S 14E 12
OVERTON EDWARD	280808	6/27/1912	20S 14E 4
OVERTON FRIEDA E	797704	3/3/1921	20S 15E 18
OVERTON FRIEDA E	797705	3/3/1921	20S 15E 18
OVERTON FRIEDA E	797704	3/3/1921	20S 15E 7
OVERTON FRIEDA E	797705	3/3/1921	20S 15E 7
OVERTON MARY	398601	4/17/1914	20S 14E 11
OWENS WILBER C	4532	6/30/1906	40S 15E 18
OWENS WILBER C	4532	6/30/1906	40S 15E 19
PAEPER NETTIE KINZLER	430978	9/14/1914	10S 15E 6
PALMER ARTHUR F	270024	5/27/1912	30S 16E 8
PARDEE BENJAMIN H	223796	9/11/1911	20S 13E 30
PARSON DAISY B	182957	3/9/1911	20S 16E 1
PARSONS CHARLES A	331481	5/7/1913	10S 16E 24
PARSONS WILLIAM L	62278	5/17/1909	10S 17E 25
PAYNE REASON V	112145	2/17/1910	10S 13E 13
PAYNE REASON V	112145	2/17/1910	10S 14E 18
PEASE EMMA R	323900	4/4/1913	10S 13E 6
PECK AUGUST	5486	3/23/1908	10S 17E 23
PECK CHARLES A	152929	9/19/1910	30S 14E 6
PECK WILLIE E	68299	6/21/1909	30S 14E 7
PECKHAM JOHN H	322405	3/29/1913	30S 13E 6
PELLONI THEODORICO	196374	5/8/1911	40S 16E 6
PELLONI VINCENZO	397340	4/9/1914	40S 16E 13
PELLONI VINCENZO	397340	4/9/1914	40S 17E 18
PELTON FRANK S	124388	4/11/1910	20S 13E 15
PELZ ANNA	133631	6/2/1910	20S 13E 25
PENCE ABNER C	136228	6/13/1910	10S 17E 22
PENCE ERNEST C	136246	6/13/1910	10S 17E 15
PENQUITE EDGAR E	104303	1/17/1910	10S 17E 29
PERLI JOHN	443840	11/20/1914	40S 17E 17
PERLI JOHN	443840	11/20/1914	40S 17E 8
PHILLIPS CHARLES H	5829	6/8/1908	10S 15E 5
PICKTON WALTER R	63332	5/20/1909	20S 13E 25
PICOTTE HERBERT T	232902	11/6/1911	10S 13E 31
PIPAL FRANK	171856	1/19/1911	10S 13E 25
PIPAL FRANK J	339715	6/7/1913	10S 14E 33
PIPAL FRANK J	767031	8/5/1920	10S 14E 28
PIPAL FRANK J	767030	8/5/1920	10S 14E 33
PIPAL FRANK J	767031	8/5/1920	10S 14E 33
PIPAL FRANK J	767031	8/5/1920	10S 14E 34

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PIPAL GUENA	279343	6/24/1912	10S 13E 25
PIPAL HERMAN	182750	3/9/1911	10S 13E 25
PIPAL MAMYE	211685	6/26/1911	10S 14E 34
PIPAL MAMYE	211685	6/26/1911	10S 14E 35
PIPAL VAN W	149516	8/29/1910	10S 14E 19
PIPAL VAN W	149516	8/29/1910	10S 14E 30
PLUM HIRAM	72355	7/15/1909	20S 14E 8
PORTER LOGAN	5073	12/9/1907	10S 17E 6
PORTER PEARL L	317031	2/25/1913	10S 17E 6
POTTER STELLA M	6006	6/25/1908	10S 14E 2
PRATT FRANK	200548	5/22/1911	10S 16E 17
PRATT FRANK	200548	5/22/1911	10S 16E 7
PRATT FRANK	200548	5/22/1911	10S 16E 8
PRATT GEORGE W	31100	11/23/1908	10S 16E 31
PREMUS FRED J	110807	2/11/1910	30S 14E 8
PRESTON WINNIE	172723	1/23/1911	30S 16E 6
PREW GRACE M	6084	7/1/1908	20S 13E 26
PREW THEOPHILE B	11041	9/1/1908	20S 13E 35
PREW THEOPHILE B	62341	5/17/1909	20S 13E 35
PREW THEOPHILE B	502760	12/9/1915	30S 13E 1
PUTMAN HENRY F	163741	12/1/1910	10S 17E 11
PYGMAN JOSEPH	31125	11/23/1908	10S 15E 10
QUINN MICHAEL	12202	2/10/1906	10S 17E 10
QUINN MICHAEL	12202	2/10/1906	10S 17E 4
QUINN MICHAEL	155	6/15/1907	10S 17E 8
QUINN MICHAEL	155	6/15/1907	10S 17E 9
RANDALL FRANK A	72356	7/15/1909	10S 14E 32
RANDALL FRANK A	72356	7/15/1909	10S 14E 33
RANDOLPH ANDREW	7	5/4/1900	20S 14E 10
RANDOLPH ANDREW	7	5/4/1900	20S 14E 9
RASMUSSEN JOHN	60807	5/11/1909	30S 16E 26
RASMUSSEN LAWRENCE H	62258	5/17/1909	30S 16E 26
RATHBUN WILLIAM D	125963	4/21/1910	20S 14E 5
RAYMAN HENRY	781490	11/15/1920	40S 15E 4
RAYMAN HENRY	781490	11/15/1920	40S 15E 9
REDBERG OSCAR A	220956	8/14/1911	30S 17E 9
REECY FRANK M	230438	10/16/1911	10S 13E 21
REECY FRANK M	230438	10/16/1911	10S 13E 22
REED HARRIETT E	585864	5/24/1917	20S 17E 27
REED MAGGIE	85352	10/25/1909	20S 15E 12
REED SHELBY D	5		10S 17E 7
REED SHELBY D	5		10S 17E 8
REED W ALBERT	34952	12/17/1908	20S 17E 29
REED W ALBERT	34952	12/17/1908	20S 17E 30
REGANS JOHN	196614	5/8/1911	40S 16E 7

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REID WILLIAM A	227326	9/28/1911	10S 13E 3
REID WILLIAM A	227326	9/28/1911	10S 13E 4
RICARD HERMAN M	5967	7/1/1908	30S 17E 2
RICE ANNA R	73375	7/22/1909	30S 13E 10
RICE ANNA R	73375	7/22/1909	30S 13E 15
RICE ANNA R	73375	7/22/1909	30S 13E 9
RICE HANNAH	31086	11/23/1908	20S 13E 33
RICHARDSON HORACE L	5342 1/2	1/20/1908	10S 14E 33
RILEY MARY	218086	7/20/1911	20S 13E 10
ROACH VESTA G	63530	5/24/1909	20S 14E 5
ROBERTS CHARLES A	816330	7/26/1921	10S 15E 31
ROBERTSON FRED	5355	1/30/1908	10S 15E 7
ROBISON KELLY	48	6/22/1903	20S 14E 3
RODDAN OSCAR F	946306	10/14/1924	40S 17E 14
ROGERS FRED N	224143	9/11/1911	10S 13E 29
ROMANS CHARLES H	868792	6/19/1922	10S 15E 6
ROWLAND BENJAMIN H	5280	1/20/1908	10S 17E 6
RUSSELL HUBERT V	207110	6/17/1911	10S 14E 17
RUSSELL HUBERT V	207110	6/17/1911	10S 14E 18
RUSSELL HUBERT V	207110	6/17/1911	10S 14E 7
RUSSELL HUBERT V	207110	6/17/1911	10S 14E 8
RUSTAD BERNHARD OLSEN	60830	5/11/1909	10S 16E 20
SALISBURY CHARLES C	279607	6/24/1912	40S 17E 1
SANTA FE PACIFIC RAILROAD CO	4559	7/20/1908	30S 13E 15
SANTA FE PACIFIC RAILROAD CO	4559	7/20/1908	30S 13E 22
SAUNDERS JAMES M	6010	6/25/1908	10S 15E 9
SAUTTER NELLIE S	5546	3/23/1908	10S 14E 13
SAXTON NANCY I	496216	10/28/1915	30S 14E 25
SCANLON WILLIAM M	171881	1/19/1911	40S 15E 13
SCHAFER WILHELM	5372	1/30/1908	30S 13E 4
SCHALLER WILLIAM P	55962	4/14/1909	20S 16E 6
SCHELL WILHELM	261438	4/22/1912	30S 15E 1
SCHELL WILHELM	261438	4/22/1912	30S 15E 2
SCHIURRING HANS CARL	149096	8/25/1910	10S 14E 14
SCHNEIDER GERTRUDE C	368410	12/2/1913	10S 13E 12
SCHUMACHER FRANK	5373	1/30/1908	30S 13E 4
SCOTT ORA E	196476	5/8/1911	20S 17E 9
SEARS FRED H	290099	9/5/1912	40S 17E 20
SEARS FRED H	290099	9/5/1912	40S 17E 21
SEEBOLD ROBERT A	86766	11/1/1909	20S 13E 14
SEEFELD ALBERT G	344129	6/26/1913	10S 17E 8
SEIBERT SYLVIA E	110818	2/11/1910	30S 16E 13
SENESAC PRUDENT	263870	5/6/1912	20S 14E 9
SEXTON ANNA M	259602	4/15/1912	40S 15E 24
SHANE FORD	34933	12/17/1908	20S 13E 32

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SHANE FRED	34934	12/17/1908	20S 13E 22
SHANE VIDA	34960	12/17/1908	20S 13E 32
SHARRATTS LOREN C	331466	5/7/1913	20S 14E 4
SHARRATTS MAMIE M	662966	1/29/1919	20S 14E 10
SHARRATTS MAMIE M	662966	1/29/1919	20S 14E 15
SHARRATTS MAMIE M	910139	6/26/1923	20S 14E 15
SHARRATTS MAMIE M	910139	6/26/1923	20S 14E 22
SHELLEDAY HANNAH A	85286	10/25/1909	20S 15E 3
SHELLITO ALEXANDER H	221850	8/21/1911	20S 13E 6
SHELLITO ALEXANDER H	221850	8/21/1911	20S 13E 7
SHERWOOD GEORGE	233019	11/6/1911	30S 14E 18
SHULL EDWARD O	62249	5/17/1909	10S 15E 13
SHULL EDWARD O	62249	5/17/1909	10S 16E 18
SINKEY JOHN J	5417	2/27/1908	20S 14E 20
SISSON DELOS F	74	5/15/1903	10S 14E 5
SISSON DELOS F	4630	6/30/1906	10S 14E 5
SISSON DELOS F	240561	1/4/1912	10S 14E 4
SISSON DELOS F	357871	10/3/1913	10S 14E 4
SISSON GEORGE H	449180	12/16/1914	20S 15E 21
SISSON GEORGE H	449180	12/16/1914	20S 15E 22
SISSON GEORGE H	449180	12/16/1914	20S 15E 27
SISSON GEORGE H	449180	12/16/1914	20S 15E 28
SISSON JAMES H	6007	6/25/1908	10S 14E 3
SKINNER GEORGE B	93114	12/1/1909	20S 13E 18
SKINNER GEORGE B	410463	6/2/1914	20S 13E 18
SKINNER GEORGE LEE	868788	6/19/1922	20S 13E 17
SKLUZAK FRANK	171850	1/19/1911	20S 14E 7
SLATER CHARLES S	72808	7/19/1909	10S 14E 10
SLATER JOHN J	214047	6/29/1911	10S 14E 11
SMITH BARNEY E	740499	3/19/1920	10S 13E 14
SMITH DELIA	279646	6/24/1912	20S 13E 8
SMITH JAMES J	182735	3/9/1911	40S 14E 11
SMITH JOHN CALVIN	6037	7/1/1908	10S 14E 12
SMITH JOHN L	55957	4/14/1909	20S 13E 29
SNELL CHARLES W	526081	4/24/1916	10S 15E 10
SNELL CHARLES W	737053	2/26/1920	10S 15E 10
SNIDER FRED R	30597	11/19/1908	10S 15E 25
SNIVELY WILL L	196478	5/8/1911	20S 14E 8
SNYDER FRED J	85277	10/25/1909	10S 14E 20
SNYDER FRED J	85277	10/25/1909	10S 14E 29
SOREIDE CHRISTIAN H	392527	3/14/1914	30S 17E 2
SOREIDE CHRISTIAN H	779304	10/27/1920	30S 17E 2
SORENSEN SOREN	92801	12/1/1909	10S 15E 8
SPAULDING CORBAN C	198691	5/15/1911	20S 14E 19
SPAULDING CORBAN C	198691	5/15/1911	20S 14E 20

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SPAULDING CORBAN C	198691	5/15/1911	20S 14E 29
SPAULDING CORBAN C	855440	3/21/1922	20S 14E 20
SPAULDING CORBAN C	855440	3/21/1922	20S 14E 29
SPAULDING CORBAN C	855441	3/21/1922	20S 14E 29
SPAULDING OLIVE MAY	703928	8/27/1919	20S 14E 17
SPAULDING OLIVE MAY	703928	8/27/1919	20S 14E 18
SPAULDING OLIVE MAY	703928	8/27/1919	20S 14E 19
SPAULDING OLIVE MAY	703928	8/27/1919	20S 14E 20
SPECHT GEORGE	13598	9/14/1908	10S 17E 24
SPITTELL JABEZ	31111	11/23/1908	30S 13E 5
STANDARD POLISH CO	683741	6/6/1919	30S 15E 2
STEMPEL KATHRINA	162711	11/21/1910	30S 15E 12
STEPHENSON GEORGE FREDRICK	351686	8/21/1913	10S 17E 25
STEVENS ESTHER	5604	4/13/1908	10S 13E 2
STOECKEL JOSEPH S	222327	8/28/1911	20S 14E 6
STOECKEL WINIFRED	369927	12/9/1913	20S 13E 9
STONE JESSIE	929230	1/15/1924	20S 14E 18
STRAND ESTHER A	5391	2/13/1908	10S 15E 1
STREET JOHN	831096	11/5/1921	10S 17E 35
STREETER GEORGE B	6020	6/25/1908	10S 14E 12
STREETER GEORGE B	57674	4/20/1909	10S 14E 12
STREHLOW EMIL J	633771	6/6/1918	10S 13E 1
STREHLOW EMILE J	385395	3/27/1914	10S 13E 3
STROM ALEXANDER J	92786	12/1/1909	20S 13E 23
STROM ALEXANDER J	584045	5/11/1917	10S 14E 29
STROM GINA	420230	7/8/1914	20S 13E 13
STROM PETER F	72330	7/15/1909	20S 13E 23
STUNKEL CHARLES B	3639	5/26/1908	40S 17E 17
STUNKEL CHARLES B	3639	5/26/1908	40S 17E 20
SULLIVAN ELLEN B	410471	6/2/1914	40S 16E 22
SULLIVAN ELLEN B	410471	6/2/1914	40S 16E 23
SULLIVAN ROSALLA A	604249	10/19/1917	20S 13E 8
SULLIVAN TIMOTHY	516313	2/29/1916	20S 13E 5
SULLIVAN TIMOTHY	516313	2/29/1916	20S 13E 8
SULLIVAN TIMOTHY	703929	8/27/1919	20S 13E 4
SULLIVAN TIMOTHY	817513	8/5/1921	20S 13E 5
SULLIVAN TIMOTHY	817513	8/5/1921	20S 13E 6
SVOBODA WENCLE J	286853	8/1/1912	20S 14E 11
SVOBODA WENCLE J	286853	8/1/1912	20S 14E 14
SVOBODA WENCLE J	286853	8/1/1912	20S 14E 15
SWETT WILBER W	237536	12/11/1911	40S 17E 17
SWINDLER HAYES C	554314	11/14/1916	30S 13E 1
SWINDLER HAYES C	554314	11/14/1916	30S 13E 12
SWINEHART EDWIN DAVIS	182253	3/6/1911	20S 13E 21
SWINEHART LEMUEL E	126	1/30/1906	20S 13E 21

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SWINEHART LEMUEL E	126	1/30/1906	20S 13E 28
SWINEHART OWEN P	3363	5/1/1907	10S 15E 14
SWINEHART OWEN P	3363	5/1/1907	10S 15E 23
TALTY ESTHER	369422	12/2/1913	10S 13E 25
TALTY FRANCIS W	196383	5/8/1911	20S 14E 7
TALTY FRANCIS W	867816	6/13/1922	20S 13E 12
TALTY FRANCIS W	867816	6/13/1922	20S 14E 7
TALTY FRANCIS W	937681	5/6/1924	20S 13E 12
TALTY FRANCIS W	937681	5/6/1924	20S 14E 7
TALTY JOHN	962421	6/26/1925	10S 13E 13
TALTY JOHN	962421	6/26/1925	10S 13E 24
TAYLOR EDWIN A	125944	4/21/1910	20S 13E 18
TEFFT JOHN Q	264365	5/6/1912	10S 16E 5
TENNIS EXZILDA	136230	6/13/1910	20S 14E 8
TEUBNER ORVILLE M	22631	10/15/1908	10S 15E 8
TEUBNER WINDOM I	172694	1/23/1911	10S 15E 20
THELEN STEPHAN	5182	12/9/1907	10S 14E 31
THOMPSON BESSIE M	187095	3/30/1911	10S 13E 4
THOMPSON HENRY	196422	5/8/1911	40S 17E 1
THOMPSON HENRY	196422	5/8/1911	40S 17E 12
THOMPSON HENRY	196422	5/8/1911	40S 17E 2
THOMPSON WILLIAM M	147291	8/1/1910	10S 17E 10
THORSON BENT B	93800	12/6/1909	10S 17E 9
THORSON MARIE	155363	10/3/1910	10S 17E 9
THORSON THOMAS M	182740	3/9/1911	10S 17E 9
TICE WILLIAM R	5178	12/9/1907	10S 15E 18
TIMMINS WILLIAMS	86787	11/1/1909	10S 17E 5
TIMMONS EDGAR JOSEPH	466119	3/31/1915	10S 16E 15
TIMMONS GEORGE E	593517	7/23/1917	10S 16E 15
TODD GEORGE B	198672	5/15/1911	10S 15E 10
TODD GEORGE B	198672	5/15/1911	10S 15E 11
TONNESEN HALVER	456840	2/5/1915	10S 17E 9
TONNESEN OLE	499055	11/13/1915	10S 17E 8
TONNESEN OLE	499055	11/13/1915	10S 17E 9
TREAT FRANCIS A	269264	5/23/1912	10S 14E 31
TRIMBLE CHARLES F	5798	6/18/1908	40S 17E 12
TURNBULL GEORGE A	161937	11/17/1910	20S 13E 25
TURNER BERTHA L	75	5/15/1903	40S 17E 14
TURNER PRENTISS C	5343 1/2	1/20/1908	10S 14E 32
TYREE WALTER L	916061	9/5/1923	20S 15E 33
TYREE WALTER L	916061	9/5/1923	20S 15E 34
TYREE WALTER L	916061	9/5/1923	30S 15E 3
TYREE WALTER L	916061	9/5/1923	30S 15E 4
UTLEY ARTHUR E	339728	6/7/1913	30S 16E 21
UTLEY LAWRENCE C	5329	1/27/1908	10S 16E 6

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VANDALL LAWRENCE S	213036	6/26/1911	10S 13E 29
VANDERWILT HENRY P	924701	11/27/1923	40S 16E 10
VANKIRK IMOGENE	111213	2/14/1910	30S 17E 35
VANREES EDWARD	928527	1/8/1924	10S 16E 27
VANREES EDWARD	928527	1/8/1924	10S 16E 28
VAUGHAN EMERSON	7		20S 14E 18
VAUGHAN EMERSON	7		20S 14E 19
VILLBRANDT THEODOR	5971	7/1/1908	10S 15E 4
VILLBRANDT THEODOR	90250	11/18/1909	10S 15E 9
VILLBRANDT THEODORE	172058	1/23/1911	10S 15E 9
VONDRA JOHN	279603	6/24/1912	30S 14E 21
VOTROUBEK BEN	249377	2/23/1912	20S 17E 30
WADSWORTH GEORGE W	233003	11/6/1911	30S 14E 22
WADSWORTH GEORGE W	233003	11/6/1911	30S 14E 27
WALKER JAMES V	182996	3/9/1911	30S 16E 30
WALKER JOE	136236	6/13/1910	30S 16E 6
WALRAVEN TENNIS H	71140	7/8/1909	30S 13E 18
WALRAVEN TENNIS H	393939	3/20/1914	30S 13E 7
WALTERS STEPHEN	62581	5/17/1909	10S 15E 32
WALTON ALVA N	187061	3/30/1911	20S 13E 26
WANNER ALEXANDER	1313		10S 13E 1
WARD WHEELER T	149089	8/25/1910	20S 13E 11
WARNER HELENA	5721	6/8/1908	20S 13E 14
WARNER JOSEPH	9717	8/27/1908	20S 13E 26
WARNER JOSEPH	9717	8/27/1908	20S 13E 27
WARNER MERL A	456826	2/5/1915	20S 16E 35
WARNER VERNICE M	5290	1/27/1908	10S 17E 3
WARREN GEORGE	182734	3/9/1911	30S 17E 23
WEATHERS LEONIDAS H	11058	9/1/1908	20S 17E 15
WEAVER JOHN F	60823	5/11/1909	10S 15E 2
WEED MARGARET ELIZA	147327	8/1/1910	20S 16E 31
WEED MARGARET ELIZA	147327	8/1/1910	20S 16E 32
WEEKS ELMER E	26259	10/29/1908	20S 13E 32
WELCH DORA MABLE	310920	1/21/1913	10S 16E 5
WELCH OSCAR W	6015	6/25/1908	10S 15E 15
WELLS LANGDON	297203	10/18/1912	30S 17E 10
WELSH JAMES R	279335	6/24/1912	10S 13E 6
WENDT JOHN	182782	3/9/1911	20S 13E 1
WENTZY ALBERT B	558638	12/13/1916	20S 13E 31
WEST ALLEN E	2599	9/26/1902	10S 13E 32
WEST ALLEN E	2599	9/26/1902	20S 13E 5
WEST MYRON B	23579	10/19/1908	10S 17E 20
WESTERLUND CHARLEY F	5157	3/23/1908	10S 17E 2
WHALEY ADRAIN J	236412	12/4/1911	10S 13E 14
WHALLEY JOHN	147426	8/1/1910	30S 16E 27

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WHITE ARTHUR E	263884	5/6/1912	20S 13E 29
WHITE INA J	30942	11/19/1908	30S 14E 6
WHITE JOHN A	60828	5/11/1909	10S 17E 14
WHITE SUSAN A	1136216	8/21/1952	20S 13E 28
WHITE WAYNE A	1136216	8/21/1952	20S 13E 28
WHITTEMORE CLARENCE S	234106	11/13/1911	10S 16E 19
WHITTEMORE CLARENCE S	234106	11/13/1911	10S 16E 30
WILEY WILLIAM P	111170	2/14/1910	10S 15E 21
WILLIAMS ALBERT H	5722	6/8/1908	10S 15E 4
WILLIAMS ALBERT H	30550	11/19/1908	10S 15E 4
WILLIAMS ALFRED H	61368	5/14/1909	20S 13E 29
WILLIAMS BETTY H	153422	9/22/1910	40S 15E 18
WILLIAMS FRANK L	395387	3/27/1914	20S 13E 27
WILLIAMS FRANK L	842719	1/12/1922	20S 13E 27
WILLIAMS FRANK L	842719	1/12/1922	20S 13E 28
WILLIAMS FRANK L	842719	1/12/1922	20S 13E 34
WILLIAMS LILLIE E	72340	7/15/1909	20S 13E 27
WILLIAMS LILLIE E	1023187	2/6/1929	20S 13E 21
WILLIAMS LILLIE E	1023187	2/6/1929	20S 13E 22
WILLIAMS LILLIE E	1023187	2/6/1929	20S 13E 27
WILLIAMS LILLIE E	1023187	2/6/1929	20S 13E 34
WILLIAMS RAY T	421790	7/13/1914	20S 13E 22
WILLIAMS RAY T	421790	7/13/1914	20S 13E 23
WILLIAMSON LOTTIE	233547	11/13/1911	10S 13E 2
WILLIS ROBERT	61380	5/14/1909	20S 17E 19
WILLIS ROBERT	61380	5/14/1909	20S 17E 30
WILSON HIRAM K	2809	5/15/1903	10S 13E 27
WILSON HIRAM K	2809	5/15/1903	10S 13E 28
WININGER MARY A	183693	3/13/1911	40S 14E 1
WININGER MARY A	183693	3/13/1911	40S 15E 6
WINNER JESSE B	198719	5/15/1911	20S 15E 2
WOLFF LYDIA A	63339	5/20/1909	30S 14E 9
WOOD GILBERT R	211672	6/26/1911	30S 15E 1
WOOD WALTER W	251616	3/4/1912	40S 17E 12
WOOD WALTER W	251616	3/4/1912	40S 17E 13
WOOD WALTER W	251616	3/4/1912	40S 17E 14
WOODS LESTER	234096	11/13/1911	20S 14E 10
WOODS LESTER	234096	11/13/1911	20S 14E 3
WOODWARD RALPH W	198729	5/15/1911	20S 17E 24
WOODWARD RALPH W	198729	5/15/1911	20S 17E 25
WRIGHT ROSE	73378	7/22/1909	30S 13E 33
WRIGHT ROSE	73378	7/22/1909	40S 13E 4
WRIGHT WINFRED C	62262	5/17/1909	40S 13E 4
WRIGHT WINFRED C	62262	5/17/1909	40S 13E 5
WRIGHT WINFRED C	110722	2/11/1910	30S 13E 33

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WYANT CHARLES	585892	5/24/1917	20S 15E 9
WYANT CHARLES	940951	6/30/1924	20S 15E 4
WYANT CHARLES	940951	6/30/1924	20S 15E 9
WYANT CHARLES	996494	2/25/1927	20S 15E 8
WYANT CLIVE	1001878	5/19/1927	20S 15E 20
WYANT CLIVE	1001878	5/19/1927	20S 15E 21
WYANT JOSHUA E	147275	8/1/1910	10S 15E 23
WYANT JOSHUA E	147275	8/1/1910	10S 15E 24
WYANT JOSHUA E	147275	8/1/1910	10S 15E 26
WYANT LAWRENCE V	604245	10/19/1917	20S 15E 10
WYANT LAWRENCE V	604245	10/19/1917	20S 15E 3
WYANT LAWRENCE V	604245	10/19/1917	20S 15E 9
WYANT LAWRENCE V	987238	10/12/1926	20S 15E 10
WYANT LAWRENCE V	987238	10/12/1926	20S 15E 3
YEAGER EDWARD J	279651	6/24/1912	10S 13E 29
YEAGER EDWARD J	662218	1/27/1919	10S 13E 20
YEAGER EDWARD J	787668	12/16/1920	10S 13E 30
YOUNG JOHN	20	10/13/1900	10S 13E 22
YOUNG JOHN	20	10/13/1900	10S 13E 23
YOUNG JOHN	20	10/13/1900	10S 13E 27
YOUNGLOVE ROY C	34941	12/17/1908	10S 17E 7
YOUNGLOVE ROY C	34941	12/17/1908	10S 17E 8