

Cedar Pass Developed Area
Badlands National Park
Cultural Landscape Report

June 2005

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Cedar Pass Developed Area
Badlands National Park
Cultural Landscape Report

Prepared for

National Park Service

Midwest Regional Office

and

Badlands National Park

Prepared by

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Chapter One

Introduction

CHAPTER ONE

INTRODUCTION

MANAGEMENT SUMMARY

Badlands National Park protects and preserves the unique landforms and scenery of the White River Badlands for the benefit, education, and inspiration of the public. Primarily associated with wilderness values, the park has continued to evolve since its establishment in 1939 to accommodate the needs of a fascinated public. The administration and operations developments and visitor amenities associated with Badlands National Park are generally clustered in Cedar Pass, a relatively level area along the park's southern boundary. This Cultural Landscape Report (CLR) and Environmental Analysis (EA) has been prepared to document and record the history and current conditions of the developed area at Cedar Pass, and guide its future treatment and use. John Milner Associates, Inc. (JMA) of Charlottesville, Virginia, in association with Bahr Vermeer Haecker Architects, Ltd. (BVH) of Lincoln, Nebraska, and Total Quality NEPA of Niwot, Colorado, have collaborated on the study of the Cedar Pass Developed Area at Badlands National Park for the National Park Service (NPS), which administers the site. In 1995, the NPS began planning for the rehabilitation of one of the primary features associated with the Cedar Pass Developed Area: the Ben Reifel Visitor Center. Other improvements planned for the site have included three new buildings: a fire cache (already constructed); a museum storage building southeast of the fire cache (under construction); and a resource management equipment storage building (not yet constructed). This project is intended to support NPS plans for change within Cedar Pass, particularly documentation of the Ben Reifel Visitor Center, which has been determined eligible for the National Register of Historic Places at the state level for its association with the NPS Mission 66 program. The Visitor Center is the only remaining such structure in South Dakota retaining substantial integrity. The CLR is intended to assess the significance and integrity of the landscape features associated with the visitor center and the surrounding developed area prior to establishment of these new facilities.

DESCRIPTION OF STUDY AREA BOUNDARY

Figures 1-1 and *1-2* (located at the end of this chapter) illustrate the location and vicinity of the park, and the CLR study area boundary.

Badlands National Park is located in the southwestern corner of South Dakota. Covering more than 242,756 acres, the park extends across portions of Shannon, Pennington, and Jackson Counties. The Cedar Pass Developed Area located in Jackson County comprises approximately 290 acres along the southern park boundary in the eastern portion of the park. It is located 70 miles east of Rapid City and just northeast of the town of Interior, South Dakota.

The Cedar Pass Developed Area encompasses the Ben Reifel Visitor Center, the park administration complex, Cedar Pass Lodge, a campground/amphitheater area, park employee housing including apartments and single-family residences, maintenance facilities, and the beginning of the Badlands Loop Road. The developed area project boundary begins just east of the Visitor Center on County Road 240. It then follows County Road 240 southwest for approximately 680 yards to the beginning of the Loop Road, and then continues in the same direction for another 615 yards to a stream corridor just west of the campground. The study area boundary follows the stream corridor due south for 365 yards until it intersects with the Badlands National Park boundary. At this point the study boundary follows the park boundary to the east for 660 yards, and, continuing along it, turns 90 degrees south and extends for another 885 yards in the same direction. The park and study area boundaries then make another 90 degree turn, this time to the east, and travel 445 yards, where they turn 90 degrees to the west. After an additional 250 yards, the study area boundary splits from the park boundary, turning north 90 degrees and running 1.4 miles along the top of a ridge until it reaches its point of origin at County Road 240. *Map 3-1*, located in Chapter 3, illustrates the boundary of the study area.

HISTORICAL SUMMARY

Although information regarding early American Indian use and occupation of the Cedar Pass area is scant, there is evidence of usage in the White River badlands beginning as early as the PaleoIndian Clovis Complex, ca. 11,000 years BP or about 9,000 BC. Some evidence found in archeological examination of the Johnny site in the Cedar Pass area reflects brief episodes of occupation or use by a variety of American Indian groups over the course of the last 1,200 years.

European contact began with French exploration during the 18th century. During this period, accounts of early European travelers, in particular fur traders and scientists, provide an impression of the challenges this land posed for occupation and discovery. Geologic and paleontological discoveries led to increasing scientific interest and investigation, and expeditions paralleled and fed into national westward expansion and settlement. In the 1880s the railroad reached the vicinity of the Badlands and Homesteading Acts provided the opportunities sought by immigrants from the eastern parts of the United States and Europe looking for land to cultivate and on which to settle.

After a long hard struggle on the part of individual and local government interest in developing the area as a public tourist destination, the Badlands was authorized as a national monument in 1929. Land that had been found to be sub-marginal and generally unsuited to agricultural development was obtained by the federal government and preserved. Recreational development was made possible through programs of the New Deal with the Civilian Conservation Corps (CCC) improving privately constructed infrastructure and roads. Later, during a financial boost

from the Mission 66 Program, a Visitor Center and other visitor-related facilities, and administrative, utility, and personnel features were built and improved. Today, although some of the earlier buildings do not survive, the Cedar Pass Developed Area continues to exhibit physical expressions of a 1930s planning philosophy, and tangible evidence of Mission 66 planning and design principles.

SCOPE OF WORK

The NPS utilizes CLRs as the primary guide for treatment of a cultural landscape. Based on the historical context provided in a historic resource study (HRS), a CLR documents and evaluates the character-defining features, materials, and qualities that make a landscape eligible for the National Register of Historic Places. It analyzes the landscape's development and evolution, geographic context, modification, materials, construction techniques, and use over time. A CLR provides a synthetic and cohesive view of a site's historic and existing features through comprehensive documentation, analysis, and evaluation. The team uses landscape evaluation as the basis for proposing thoughtful recommendations regarding historic preservation treatment. While CLRs vary in their emphasis and level of investigation, they are typically interdisciplinary in nature, drawing on information developed by historians, landscape architects, ecologists, botanists, architects, archeologists, as well as other related professions and disciplines. The level of investigation is determined by the historical significance and integrity of the site, identified management goals, past documentation efforts, and potential landscape alterations or changes under consideration by the owner.

Typically, a CLR is composed of three parts:

1. Part I includes a site physical history, existing conditions documentation, comparative analysis of historic and existing conditions, and National Register-level significance evaluation and integrity assessment.
2. Part II presents a treatment plan based on the information developed in Part I and on any identified management goals for the site.
3. Part III records the treatment, as implemented at a future date.

Parts I and II have been completed in this document, which also includes an Environmental Assessment as Appendix B.

NPS personnel from the Midwest Regional Office and Badlands National Park have identified several objectives for the project, including to:

- document the historical development of the site's cultural landscape;
- determine the integrity and significance of the site's historic landscape;
- conduct an environmental analysis; and
- complete a value analysis session to evaluate proposed alternatives.

The CLR scope of work included the following specific task elements:

1) Project Organization and Assistance with Public Meetings — The team participated in a pre-design conference and in public scoping meetings to solicit public input for the CLR/EA project.

2) Field Investigations and Research — Field investigations were conducted to document existing conditions in Cedar Pass. Potential historic landscape features and archeological resources were identified and their general condition was evaluated.

3) Report Narrative with Supporting Illustrative Graphics and Develop Recommendations, Conceptual Design Drawings, and Implementation Guidelines — JMA prepared a report organized into chapters as follows:

   — Chapter 1 Introduction: This chapter briefly documents the scope of the report, study area, methodologies used, and provides an abstract of the findings. It identifies A/E staff associated with project services and recommends areas and/or topics requiring further historical research, study, archeological, and/or physical investigation.

   — Chapter 2 Site History: The narrative component of this chapter describes the physical evolution of the site. It is illustrated with historic photographs, maps, drawings, and a period plan showing development at the end of the period of significance. Documentation utilized to develop the chapter included primary and secondary sources, interviews with park staff, photographs, and maps. The narrative includes:

      a) historic contexts for each major period of development using secondary sources to enable the reader's understanding of the historical and cultural significance of the site.

      b) a chronological description of the physical development and evolution of the landscape, including its environmental setting, layout, circulation, spatial organization, land use practices and resulting patterns, cultural or ethnic expressions, views and vistas, vegetation related to land use, and other characteristics and features associated with each major period.

   — Chapter 3 Existing Conditions: The narrative of this chapter describes and evaluates the general condition of existing landscape features, such as the site's environmental setting, spatial organization, land uses, circulation, buildings and structures, small-scale features, above-ground utilities, and potential archeological or paleontological resources. The chapter is illustrated with maps and existing conditions photographs. The existing conditions maps graphically document the locations of existing landscape features.

   — Chapter 4 Analysis and Evaluation: This chapter describes the National Register-level significance of the Cedar Pass landscape and evaluates the integrity of surviving landscape features. Maps and photographs illustrate the narrative analysis. A map showing "zones of relative integrity" is included. A period of significance is defined which augments the Visitor Center Determination of Eligibility, as defined in 2002. The narrative identifies contributing, non-contributing, and missing features.

— Chapter 5 Management Issues: This chapter describes the management issues to be addressed by the treatment recommendations. Management issues were identified through consultation with the Contracting Officer's Technical Representative (COTR) and park personnel.

— Chapter 6 Alternatives: This chapter defines three treatment alternatives for the developed area based on the EA investigation, including a "no action" and two action alternatives.

— Chapter 7 Treatment Recommendations for the Preferred Alternative: This chapter proposes specific treatment recommendations needed to achieve the preferred alternative. Treatment recommendations address natural and historic resource protection, life safety concerns, universal accessibility issues, visitor and staff parking needs, park-specific management issues identified in Chapter 5, and the results of the analysis presented in Chapter 4. Recommendations and guidelines are illustrated by drawings and photographs of suggested approaches. A conceptual design/treatment plan illustrates the preferred alternative.

— Chapter 8 Implementation Recommendations: This section of the report contains general recommendations for phasing the implementation of the preferred alternative. Project statements, using the Project Management Information System format, are included so the park can pursue funding for discrete portions of the preferred alternative. The statements include project descriptions, justifications, and planning level cost estimates.

— Appendix A Buildings/Structures Number Index: This table correlates the CLR feature identity number system with the park number system and indicates List of Classified Structures (LCS) numbers where available.

— Appendix B Environmental Assessment: The EA is appended in its entirety.

— Appendix C Finding of No Significant Impact, Environmental Assessment for Cedar Pass Developed Area Cultural Landscape Report: The Finding of No Significant Impact (FONSI) is appended in its entirety.

PROJECT METHODOLOGY

This CLR has been prepared in accordance with the guidance offered in the most recent versions of various federal standards documents, many of which are cited for their relevance in the project scope of work. Primary among these are:

— *NPS Guide to Cultural Landscape Reports: Contents, Process and Techniques* (1998);

— National Register Bulletin No. 30*: Guidelines for Evaluating and Documenting Rural Historic Landscapes;*

— *NPS Management Policies* (2001);

— *The Secretary of the Interior's Guidelines and Standards for Archeology and Historic Preservation;*

— NPS Director's Order No. 28: *Cultural Resources Management Guideline*s;

— *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995) with *Guidelines for the Treatment of Cultural Landscapes* (1996);

— *Uniform Federal Accessibility Standards* (UFAS) and the *Americans with Disabilities Act Accessibility Guidelines* (ADAAG), whichever provides greater levels of accessibility;

— NPS 77: *Natural Resources Management Guidelines;*

— NPS *Guiding Principles of Sustainable Design;*

— National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation;*

— National Register Bulletin 18: *Guidelines for Documenting and Evaluating Designed Historic Landscapes;*

— The National Environmental Policy Act of 1969;

— The Council on Environmental Quality (CEQ) Regulations;

— Director's Order No. 12: *Conservation Planning, Environmental Impact Analysis and Decision Making*;

— NAGPRA (Native American Graves Protection and Repatriation Act of 1990); and

— AIRFA (American Indian Religious Freedom Act of 1978).

Additionally, the project team referred on a regular basis to the following park-specific studies for guidance and information:

— Draft *General Management Plan/Environmental Impact Statement* (GMP/EIS) (February 2003);

— *National Register of Historic Places Multiple Property Documentation Form for Historic Roads Resources, Badlands National Park* (1994);

— "National Register of Historic Places Multiple Property Determination of Eligibility for Grand Canyon Village Mission 66 Planning Effort" (2003);

— National Register Bulletin, *Historic Residential Suburbs: Guidelines for Evaluation and Documentation for the National Register of Historic Places* (2002);

— "Determination of Eligibility, Cedar Pass Visitor Center, Badlands National Park" (2002);

— *Mission 66 Prospectus, Badlands National Monument* (1956);

— *Environmental Assessment* (EA) *for Site Development for new Fire Cache, Resource Management Storage Building, and Museum Storage Building at Cedar Pass Developed Area* (August 20, 2002);

— *USGS-NPS Vegetation Mapping Program*, Technical Memorandum No. 8260-00-02 (November 19, 1999); and

— GIS data for Badlands National Park including hydrography, surficial geology, and hypsography.

HISTORICAL RESEARCH AND SITE HISTORY NARRATIVE

Historical research to support the CLR was primarily limited to the archives at Badlands National Park and the Denver Service Center Technical Information Center (DSC TIC). Project historian Jacky Taylor collected information during a May 2003 visit to the park and documents were collected from DSC TIC online. Directed research was conducted in two stages. The first stage involved review of collected data and materials provided to JMA by the NPS, with a subsequent visit to the park's repository. Within the repository, materials reviewed included secondary sources such as books, reports, and other documents, as well as primary source maps, drawings, photographs, and additional documents. Pertinent materials were photocopied or temporarily borrowed from the park. The second stage involved a more in-depth analysis of the collected resources and materials. Each item was reviewed for information relevant to the physical development of the study area landscape. Gaps in documentation were sought through remote means from other NPS archives.

FIELD INVESTIGATIONS

JMA project personnel Rob McGinnis, Matt Whitaker, and Aaron Cross conducted site visits to document existing conditions in November 2002 and June 2003. During the November 2002 visit, historical landscape architects Rob McGinnis and Matt Whitaker conducted field investigations, met with park personnel, and gathered available documents and information from the park. During the week of June 16, 2003, Whitaker, and JMA cultural resource specialist Aaron Cross, returned to the site to collect additional photographs showing the site during the growing season.

JMA personnel photographed all primary landscape features as part of the fieldwork effort. Photographic station points and the direction of the views were noted on maps in the field and later added to the base map.

BASE MAP

JMA created existing conditions base maps in AutoCAD 2002 using a 1987 survey overlaid with an aerial and GIS data. Additions, deletions, and other corrections to the base information were noted during site visits and corrected in the map files.

EXISTING CONDITIONS DOCUMENTATION

Existing conditions documentation is provided through cross-referenced narratives, maps, and photographs. Landscape features are discussed within the framework established in *A Guide to Cultural Landscape Reports; Content, Process, and Techniques* that identifies various landscape characteristics through which existing features can be organized and presented. Existing base maps, field investigation notes and photographs, park planning documents, pertinent park files, and natural resource studies formed the foundation for the existing conditions documentation.

The Cedar Pass Developed Area landscape features were described according to the following landscape characteristic categories: natural systems, spatial organization, land use, circulation, topography, vegetation, buildings and structures, small-scale features, views and vistas, and archeological resources. Existing conditions documentation was prepared concurrently by JMA and BVH project personnel, with BVH completing existing conditions documentation for the site's buildings and structures. The condition of historic landscape features was assessed using the definitions associated with the Cultural Landscapes Inventory program; the definitions associated with the List of Classified Structures program were used for buildings and structures.

Photographs of representative landscape features are included in the existing conditions documentation chapter and are referenced in the text. JMA provided a documentation notebook containing all of the existing conditions photographs, slides, negatives, and digital image copies on CD to the NPS to supplement the representative photographic coverage included in the report at the completion of the project.

SIGNIFICANCE EVALUATION

A preliminary significance evaluation was prepared using a variety of sources for guidance. Current draft National Register Nominations for two road corridors that pass through the developed area, and a determination of eligibility for the Ben Reifel Visitor Center were used as the basis from which to develop the CLR significance evaluation of the Cedar Pass Developed Area landscape. Of particular importance was the consideration of Mission 66 design and planning principles, their applicability to Cedar Pass, and their physical expression in the landscape. Because a comprehensive context statement is available only for Mission 66 Visitor Centers, the project team reviewed various available examples of National Register nominations for Mission 66-era landscape design and planning efforts. In addition, JMA reviewed sources that provide an understanding of modern landscape design and National Park landscape design in

the Mission 66 era. These documents included Linda Flint McClelland's *Building the National Parks (1998)*; "Grand Canyon Village, Mission 66 Planning Effort" draft Multiple Property Documentation Form Determination of Eligibility (2003); information presented in the proceedings of the "Mission 66 Research Work Meeting," held in Washington, DC, May 28-29, 2003; NPS "Northeast Region Guidelines for Evaluating Mission 66 Park Development Excepting Visitor Centers" (2002); National Register Bulletin, "Historic Residential Suburbs;" Guidelines for Evaluation and Documentation for the National Register of Historic Places (2002); Richard Longstreth's "I Don't Understand It, It Doesn't Look Old to Me," printed in *Common Ground*, Summer 2003; *The Struggle for Modernism: Architecture, Landscape Architecture, and City Planning at Harvard*, 2002, and Marc Treib's *Modern Landscape Architecture: A Critical Review*, 1993.

COMPARATIVE ANALYSIS

The CLR team prepared a comparative analysis of historic and existing conditions to better understand the relationship between the historic and contemporary Cedar Pass landscape and determine how its character had changed since the period of significance. For the most part, the analysis focused on extant features and their dates of construction. The three primary goals of the comparative analysis were to:

1) understand which features survive from the period of significance;

2) establish the basis for an integrity assessment; and

3) provide an understanding of the similarities and differences between historic and existing conditions that would contribute to the development of a well-grounded treatment plan for the cultural landscape.

Through the development of the comparative analysis of historic and existing landscape conditions, three lists were prepared that identified contributing, non-contributing, and missing features. Contributing features survive from one of the periods of significance; non-contributing features originate after the last period of significance; and missing features are known or thought to have existed during one of the periods of significance but may only be evident in the archeological record. Conjectural information was indicated within the lists.

The CLR also provides an overall integrity summary and then assesses integrity in accordance with the seven aspects—location, design, setting, materials, workmanship, feeling, and association—described in National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation*.

MANAGEMENT ISSUES

The chapter entitled *Management Issues* was prepared from notes taken during the November 2002 CLR start-up meeting held at park headquarters. It draws from the discussions between members of the CLR/EA team, regional NPS personnel, and Badlands NP personnel. It also includes additional issues identified through field investigations and from review of current park

planning documents. The chapter was previewed NPS staff for review and comment prior to submission of the 75% draft CLR, and updated based on their input.

DEVELOPMENT OF ALTERNATIVES

Preliminary preservation alternatives were identified and developed through a series of discussions involving project team personnel prior to undertaking the Value Analysis (VA) and EA. NPS Midwest Region staff and CLR team members prepared conceptual-level descriptions of the preliminary alternatives, which were then refined by the CLR team and reviewed and approved by the NPS. Three alternatives were then explored in more detail narratively and graphically, including a "no-action" and two action alternatives for development. The alternatives were presented during a VA workshop and refined as part of the VA process. The revised alternatives were then used by the EA team to undertake the EA process. The alternatives were further refined during the early phase of the EA process to ensure compliance with NPS guidelines and policies.

EVALUATION OF ALTERNATIVES THROUGH VALUE ANALYSIS (VA)

The VA was an organized, creative process that focused on the issues to be addressed in the CLR for the purpose of achieving essential functions and attendant benefits at the lowest total costs for materials, equipment, staffing, energy usage, facilities, professional services, maintenance, etc. over the life of the project. A Certified Value Specialist (CVS) guided the VA study. A multi-disciplinary team comprised of members of the CLR and EA team and NPS personnel analyzed the functions of the preservation and other programmatic elements under study, identified high cost areas, ascertained the benefits sought, and proposed alternatives to those planned or currently being used. The VA was organized into three distinct parts: pre-study preparation, study workshop, and post-study implementation.

EVALUATION OF ALTERNATIVES THROUGH ENVIRONMENTAL ANALYSIS (EA)

The EA was undertaken in accordance with NPS Director's Order 12, NPS Management Policies, and the National Environmental Policy Act. The EA process included the review and assessment of a "no-action" and two action alternatives based on the alternatives developed as part of the CLR process described above. The EA team conducted two public scoping meetings, one in Kadoka, and one in Wall, South Dakota. The US Fish and Wildlife Service, the South Dakota Department of Game, Fish, and Parks, and the South Dakota State Historic Preservation officer were consulted. In addition, the EA was transmitted to several tribal governments and organizations, as well as local governments.

TREATMENT RECOMMENDATIONS

Management issues, the findings of the VA, and the preferred alternative preservation concept resulting from the EA process served as the basis and framework for developing the CLR treatment approach, guidelines, and recommendations. The treatment recommendations were prepared based upon guidance outlined in *The Secretary of the Interior's Standards for the Treatment of Historic Properties* with *Guidelines for the Treatment of Cultural Landscapes,* as

well as other relevant NPS guides and management policies associated with specific project recommendations.

IMPLEMENTATION RECOMMENDATIONS

Implementation recommendations include specific preservation documentation, planning, and treatment projects with planning-level cost estimates and phasing recommendations. These implementation project descriptions were developed using selected treatment recommendations determined to be feasible projects leading to preservation-related actions. Phasing recommendations were based on the CLR team's understanding of park priorities as well as facility and resource condition and use. Cost data was derived from NPS Class C cost information and cost data associated with the consultant's project experience.

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SUMMARY OF FINDINGS

SIGNIFICANCE AND INTEGRITY

Three landscape features associated with Badlands National Park have been determined eligible for listing in the National Register of Historic Places. These include two linear resources, the Cedar Pass Road and Cedar Pass to Northwest Entrance Road, both of which have been evaluated in draft National Register nominations. Both roads appear to possess significance under 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, is significant during the period 1935–40, while Cedar Pass to Northwest Entrance Road is significant during the period 1934–35. These roads are significant for their association with efforts to establish a national monument and later a national park at Badlands over three decades. These roads were

> a critical feature of the park because it was believed that the badlands environment was too formidable, too hot, and visitors would be too exposed unless they were able to experience it via a 'motor trail' through the park. However, an important feature of [these roads] was the fact that [they] met the design standards of landscape architecture embraced by the National Park Service. As a result, the [roads were] designed to be 'so located that tourists will be able to see the Scenery,' to minimize the man-made intrusions, and to emphasize the 'absolutely uninhabited' feeling of the region. The [roads themselves were] recognized as a man-made intrusion and the original design considered routes which 'would cause less damage to the formations' while still providing access to areas of major importance.[1]

The Cedar Pass Visitor Center was determined eligible for the National Register of Historic Places in 2002. The Determination of Eligibility (DOE) notes that the Visitor Center

> displays 11 of the 12 features characteristic of its building type and style (Allaback 2002, 274-275), including low, horizontal massing and a spare decorative scheme. Several elements of the design, such as the exterior restrooms and prominent covered porch, can be particularly attributed to the style of Cecil Doty, the building's designer and chief designer at the Western Office of Design and Construction (WODC). Like other visitor centers of the time, the interior spatial arrangement separates public visitor areas from more private park administration zones...The period of significance is 1958–66, beginning with the construction of the building and ending with the conclusion of the Mission 66 historic context.
>
> Although Cedar Pass Visitor Center is not yet fifty years old, it is Carey & Co.'s opinion that it has adequate historic significance to justify a NRHP listing under special Criteria Consideration G. It is significant under National Register Criteria A for its association with the National Park Service's Mission 66 program. It is exceptionally significant at the state level because it is the only remaining Mission 66 visitor center in South Dakota that retains substantial integrity.[2]

The South Dakota State Historic Preservation Officer and the CLR project team concur with the draft National Register nominations and determinations of eligibility. The CLR evaluation builds upon these documents to include landscape resources. Based on work conducted on behalf of the CLR, the Cedar Pass Developed Area appears to possess state-level significance as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the National Park Service's Mission 66 initiative within the areas of Architecture, Landscape Architecture, Social History/Tourism, Recreation and Community Planning and Development during the period 1928 through 1966. Although the Cedar Pass development is less that 50 years old, it

[1] Ken Karsmizki, "Draft National Register Nomination Cedar Pass to Northwest Entrance Road" (Bozeman, MT: Western History Research, 9/1993), 8, 2.
[2] 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.

appears to meet Criteria Consideration G eligibility requirements as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.

The extended period of significance reflects a continuum of use by various individuals and agencies to provide services and amenities for visitors at Cedar Pass. Early private tourism development efforts coexisted with federal attempts to establish park administration and maintenance functions. Each campaign attempts to more completely and comprehensively address visitor needs, and park administration infrastructure built upon previous efforts. The distillation of an approach to site development at Cedar Pass that would render the natural wonders of the park accessible yet not intrude upon their uniqueness culminated in the efforts conducted as part of the Mission 66 initiative. This then became a blueprint for Cedar Pass site development and resulted in a built environment that survives today with a high degree of integrity. Although seeds of the ideas from early tourism and New Deal-era development germinated in a more comprehensive plan during Mission 66, little of integrity remains from the earlier period of significance. Today, the developed area most closely approximates its character during the Mission 66 period.

Analysis and documentation prepared on behalf of this project also suggests that the Cedar Pass Developed Area landscape possesses integrity for the period of significance ending in 1966. With the exception of the Cedar Pass Lodge and relocated cabins, the site retains little integrity to the Early Tourism Period however. By 1966, although the landscape had been altered from its early 20th century appearance associated with tourism developments, the landscape that reflects a 1950s-era Mission 66 concept of zoned uses, and compactly developed site features within zones oriented to a strong regulating system, such as a linear spine or road corridor, had been implemented by the NPS. The road system, housing developments, Visitor Center, Cedar Pass Lodge, campground, and maintenance area that currently characterize the Cedar Pass landscape were also already in place by 1966.

The additions of contemporary buildings, realignment of the administration area service road, and removal of pre-1966 buildings have diminished slightly the integrity of the Cedar Pass landscape.

NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY

With a broad understanding of the historical significance of the development of the park and the Cedar Pass Developed Area, the CLR recommends the establishment of a National Register historic district encompassing Cedar Pass Developed Area. The district area and its justification are described below.

Cedar Pass Developed Area Historic District

See Map 4-5 at the end of Chapter 4.

Boundary

The CLR team recommends that a National Register historic district be considered for the current NPS-administered lands and facilities known as the Cedar Pass Developed Area. The boundary for this proposed historic district should follow the current park boundary to the south, extending from the wash west of the campground and east to the existing service road at the northwest corner of the existing wastewater lagoons. The boundary on the north should follow the north side of the Badlands Loop Road and SD 377. The historic district boundary on the west should follow the western edge of the wash. The boundary on the east should follow along the base of the steeper grades of the formations beginning at the Loop Road and running just east of the Visitor Center and Residential Area complexes and the service road, and ending just north of the wastewater lagoons. The wastewater lagoon facility should not be included in the proposed historic district.

Justification

Based on the CLR research, documentation, analysis, and evaluation, the site appears to possess significance at the state level as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the National Park Service's (NPS) Mission 66 initiative within the areas of Architecture, Landscape Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the period ca. 1928 through 1966. Despite the fact that Mission 66-era Cedar Pass development is less than fifty years of age, Cedar Pass appears to meet the eligibility requirements of Criterion Consideration G as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.

The extended period of significance reflects a continuum of use of Cedar Pass by various individuals and agencies to site services and amenities for visitors endeavoring to experience the dramatic Badlands landscape. Early private efforts to develop a tourist site eventually coexisted with federal initiatives to establish park administrative and maintenance functions. Each campaign to address visitor and park administrative needs built upon previous efforts. The approach to the Cedar Pass site development that rendered the park's natural wonders accessible—yet did not intrude upon their physical integrity—culminated in the efforts of the Mission 66 initiative.

Cedar Pass Road and Cedar Pass to Northwest Entrance Road Corridors

This CLR also recommends that consideration be given to completing the process for evaluating the Cedar Pass Road historic road corridor and the Cedar Pass to Northwest Entrance historic road corridor. These two potential historic resources are closely associated with the Cedar Pass Developed Area. Both properties terminate at the Cedar Pass Developed Area.

Archeological and Ethnographic Resources

The CLR scope did not include identifying and evaluating archeological resources and ethnographic resources. Potential archeological districts or sites were not considered by this CLR. Future work in this area may be supported by the Historic Resource Study currently under way for the park.

ENVIRONMENTAL ASSESSMENT AND SECTION 106 REVIEW

(The EA is appended to this CLR.)

The Cedar Pass Developed Area cultural landscape, located within Badlands National Park, is considered eligible for the National Register of Historic Places. The EA presents and analyzes three alternatives proposed in the Cedar Pass Developed Area CLR for the management of the landscape over the next fifteen to twenty years.

The majority of development within Badlands National Park associated with park administration, park operations, and visitor amenities is clustered in the Cedar Pass Developed Area. In 1995, Badlands National Park began planning for the rehabilitation of the Ben Reifel Visitor Center and the construction of several new buildings, all located within the Cedar Pass Developed Area. As a result of these planned improvements, the Visitors Center's determination of eligibility for the National Register of Historic Places, and the recognized need for future improvements within the Cedar Pass Developed Area, the NPS believed additional study was needed to guide future treatment and use of the area. This CLR was prepared to aid in decision making for the future management and use of the Cedar Pass Developed Area.

The CLR proposes three options for future management and use of the Cedar Pass Developed Area. Alternative A, the no-action alternative, would result in the continuation of the current management strategies without management guidance specific to the cultural landscape. Alternatives B and C both include historic landscape management options for the Cedar Pass Developed Area designed to guide how the future needs of the park would be met. Cultural landscape concerns include cultural resources, vegetation, wildlife, special status species, paleontology, visitor experience, and park operations.

Under Alternative A, the Cedar Pass Developed Area would be managed as it currently is (in 2004), without management guidance related to the cultural landscape. The cultural landscape would be managed as a historic landscape, in compliance with the National Historic Preservation Act and Director's Order No. 28. To meet park needs, continuing development and alterations within the landscape would be expected. Though the district would be managed for historic

resource values, a minimum application of available preservation knowledge and technology would be utilized. New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. It is not expected that historic preservation specialists would be used to complete work within the area. No policies, strategies, or implementation initiatives would be available to lend a comprehensive and sustained program of the historic landscape and building preservation as outlined in the CLR. Potential impacts under this alternative include minor to major adverse impacts to the cultural landscape; minor adverse and beneficial effects to archeological resources; minor to moderate adverse impacts and moderate benefits to native vegetation; minor to moderate adverse impacts to wildlife; minor to moderate adverse impacts to paleontological resources; minor to moderate adverse impacts and benefits to visitor experience; and minor adverse impacts and minor to moderate benefits to park operations.

Under Alternative B, referred to as the preservation alternative, management guidance would be focused on preserving the Cedar Pass Developed Area cultural landscape. Historic resources would be protected and maintained with only minor changes to meet identified facility and operational needs within the Cedar Pass Developed Area. Intrusive landscape features may be mitigated or removed after their useful lives. Open space and natural systems would be protected. New development would occur off site within the Pinnacles area, about twenty miles northwest of the Cedar Pass Developed Area. Potential impacts under this alternative include minor benefits to the cultural landscape; minor adverse impacts and minor benefits to archeological resources; minor to moderate adverse impacts and benefits to native vegetation; minor benefits and minor to possibly major adverse impacts to wildlife; minor to moderate adverse impacts and minor benefits to paleontological resources; minor to moderate adverse and beneficial impacts to visitor experience; and minor adverse impacts and benefits to park operations. Under this alternative, there is also the potential to adversely affect the black-tailed prairie dog (federal candidate species) and create minor to major adverse impacts to the swift fox (state threatened species) population.

Alternative C, referred to as the rehabilitation alternative, proposes adaptation of the historic landscape for limited new uses, while protecting, to the greatest extent possible, the significant historic fabric and landscape relationships. New development would be limited to critical park needs, would occur within defined and distinct areas (development sites), and would be compatible or non-intrusive with the historic landscape. Open space and natural systems would generally be protected though minor development that does not jeopardize the historic character of the landscape is possible. Some existing non-contributing structures that are compatible with the cultural landscape would be retained/used. Intrusive landscape features would be mitigated or removed. Potential impacts under this alternative include minor adverse impacts and minor to moderate benefits to the cultural landscape; minor adverse and beneficial effects to archeological resources; minor to moderate adverse impacts and benefits to native vegetation; minor to possibly major adverse impacts and minor benefits to wildlife; minor to moderate adverse impacts and minor benefits to paleontological resources; minor to moderate benefits to visitor experience; and minor to moderate benefits and adverse impacts to park operations. Alternative C is presented as both the environmentally preferred and the preferred alternative.

The selected alternative identified in the EA and proposed for selection in the FONSI does not constitute an action that normally requires the preparation of an environmental impact statement (EIS), and the selected alternative will not have a significant effect on the human environment. Adverse environmental impacts that could occur are negligible to moderate. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. In addition, no highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence have been identified. Implementation of the selected alternative will not violate any federal, state, or local environmental protection law and will not result in impairment of park resources or values.

Based on the foregoing, the NPS has determined the selected alternative will not have a significant effect on the human environment and that an environmental impact statement is not required for this project and this will not be prepared.

The South Dakota State Historic Preservation Officer (SHPO) reviewed the EA as part of the Section 106 review process. The SHPO determined, based on the information provided in the EA, that the alternatives described in the EA would not have an adverse impact on historic properties.

TREATMENT

Based upon the park's need to improve the functionality of the Cedar Pass Developed Area for visitor and administration needs, the recommended primary treatment approach to guide the treatment of the site is **rehabilitation**. This approach is consistent with the preferred alternative—Alternative C: Rehabilitation, established in the Environmental Assessment (EA)—and will allow the park to meet current and future needs as well as protect the area's resources. Preservation of the essential character-defining features of a cultural landscape is always a critical component of rehabilitation. The action alternatives proposed by the CLR treatment plan primarily reflect variations within the overarching approach of rehabilitation.

In addition to the preservation of the overall historic landscape character and individual historic features, rehabilitation allows for the improvement of facilities to enhance the visitor experience, and the careful implementation of necessary functional site improvements as identified in park planning documents. Rehabilitation also allows managers to pursue resource management initiatives intended to promote sustainability.

Overarching Recommendation for the Rehabilitation Alternative

See Map 7-1 at the end of Chapter 7.

- All contributing features of the Cedar Pass Developed Area should be identified, retained, and preserved to the greatest extent feasible.
- The site's overall spatial character derived from the siting of buildings, the road and drive patterns, pedestrian circulation patterns, and vegetation patterns should be maintained by preserving essential features and character and utilizing Mission 66 design principles in the placement of limited compatible new features.
- Historic features and materials should be maintained and repairs performed when necessary.
- In-kind replacement or the use of compatible materials for replacement of deteriorated historic building/structure features should be allowed.
- Changes to the cultural landscape that have acquired historic significance in their own right should be retained and maintained.
- Compatible landscape and site features (buildings, roads, small-scale features, etc.) that post-date the period of significance should be retained and used.
- Missing historic features, which were critical to historic character, should be replaced if adequate historical, pictorial, and physical documentation exist so the feature can be accurately reproduced. Using a new compatible feature to replace a missing feature is an option.
- Archeological resources should be protected and preserved.
- Natural systems and features should be protected and preserved.
- Alterations to a cultural landscape that are deemed necessary to assure its continued use should be allowed as long as these alterations do not destroy historic character such as spatial organization, land patterns, features, and materials.
- The removal of incompatible landscape and site features (buildings, roads, small-scale features, etc.) that post-date the period of significance should be considered.
- Mitigation measures to reduce the visual impact of intrusive non-historic buildings should be used and removal of these buildings at the end of their useful life should be considered.
- Intrusive, non-historic buildings that cannot be made to be compatible with the historic landscape should be removed after their useful life.

— New building developments should be limited to meet critical space needs and, when possible, should be sited where non-extant buildings were located during the period of significance.

— New or altered facilities should be non-intrusive and allow maximum access. New construction that would destroy historic character should not be permitted.

— New design should be differentiated from existing historic resources. New additions and alterations should be a product of their time but compatible with the historic resources in materials, size, scale and proportion, and massing. A clear differentiation between historic and modern features should be maintained

— New additions to the landscape that create a false sense of history or historic character should not be permitted.

— New additions and alterations should ensure accessibility, and protection of public and staff health and safety, and environmental protection and energy efficiency should be considered.

— Historic structures and features should be documented using appropriate and accepted procedures prior to change.

— Archeological resources should be protected and preserved in place. If such resources are disturbed, mitigation measures should be undertaken.

Phasing Recommendations

Phasing recommendations, developed in concert with park personnel during the VA workshop, focus on three primary phases of implementation that span a fifteen year period. Each phase relates to a five year period. The goals and specific recommended treatments for each phase are identified in Chapter 7. A limited number of recommendations were not included in the phasing plan; these consist of issues that were introduced as considerations for long-range planning that are most likely beyond the fifteen year time-frame of the phasing plan. Depending on such factors as funding, the goals for park management and interpretation, and the completion of related planning documents, other projects may ultimately shift into subsequent phases.

Phase One (Years 1-5)

During Phase One, the following projects should be implemented:

— Prepare Historic Structure Reports for all historic buildings and structures

— Prepare a Historic Buildings and Structures Maintenance Plan

— Prepare a Historic Landscape Maintenance Plan for developed area vegetation

— Complete/update the List of Classified Structures and Cultural Landscapes Inventory for the park

— Complete a park-wide archeological survey to gather baseline prehistoric and historic archeological information

— Complete additional directed research regarding historic period plantings in all areas of the developed area

— Complete the Visitor Center renovation and expansion project

— Develop bus parking on the west side of the service road proximate to the Visitor Center including a pedestrian path connecting the bus parking with the Visitor Center

— Develop the vehicle hail protection structures and associated sitework south of the Visitor Center

— Complete the Museum Storage Facility at the Fire Cache site

— Undertake exterior rehabilitation of Cedar Pass Lodge to be compatible with the historic developed area landscape

— Rehabilitate the Lodge Maintenance Building to serve as a bicycle rental facility

— Develop a new historically-compatible Lodge Maintenance and Laundry facility including site development south of the Lodge

— Rehabilitate and expand the campground Amphitheater

— Develop historically-compatible visitor shower/laundry facilities in the Campground near the existing comfort stations

— Develop a new historically-compatible campground host storage facility

— Develop an interpretive trail loop at the Campground

— Develop the alternative fuel refueling facility at the Maintenance Area

— Develop the wash rack and maintenance office facility in the Maintenance Area

— Reorganize the materials storage area ("bone yard") within the Maintenance Area

— Develop a staff picnic facility just north of the Maintenance Area

— Rehabilitate the Visitor Center plantings based on additional research to enhance landscape integrity

— Rehabilitate the Residential Area plantings based on additional research to enhance landscape integrity

— Rehabilitate the Cedar Pass Lodge Area plantings based on additional research to enhance landscape integrity including removal and replacement of Siberian elms

— Develop a pedestrian path along the former alignment of the service road to connect the Residential Area with the Visitor/Administration Area

— Install plantings to screen the Fire Cache and future facilities

— Continue programs for controlling and eradicating invasive plant species

Phase Two (Years 6-10)

During Phase Two, the following projects should be implemented:

— Construct staff housing (single-family or duplex units) in the Residential Area in locations identified for future housing in historic period master plans

— Complete ADA accessibility modifications of three existing single-family residences and one or more units in the seasonal staff apartment buildings

— Develop four RV sites between the Residential Area and the Fire Cache Area to support researchers

— Continue the program of exterior renovations of residences

— Develop a walking and bicycle trail linking the Visitor/Administrative Area, the Residential Area, the future researcher RV area, the Fire Cache Area, and the Maintenance Area to promote safety, reduction of vehicle use, and staff recreation

— Construct three new historically-compatible cabins in the Cedar Pass Lodge Area in locations of former cabins

— Develop the seasonal concessionaire staff dormitory and associated site development just to the south of the cabins in the Cedar Pass Lodge Area

— Develop measures to control unauthorized access to the formations at the Campground Area to slow their deterioration

— Construct the Angel Butte Trail starting at the Campground Area including the spur trail linking the Campground Area with the Maintenance Area

— Continue programs for controlling and eradicating invasive plant species

Phase Three (Years 11-15)

During Phase Three, the following projects should be implemented:

— Construct an administration addition on the south end of the Visitor Center

— Develop an administration building or complex south of the Visitor Center

— Develop a staff picnic shelter within the central open space of the Residential Area

— Develop a facility within the Cedar Pass Lodge Area to serve as a dance hall/special events venue

— Develop an outdoor special events/demonstration facility within the Campground Area

— Continue programs for controlling and eradicating invasive plant species

— Replace existing shade/picnic structures with structures based on the historic designs

— Begin developing a program for experimenting with the establishment of shade trees in the Campground Area

RECOMMENDATIONS FOR FURTHER RESEARCH

Research for this project focused on archives at Badlands National Park and the DSC TIC's online service. Additional research in the National Archives could explore locating records pertaining to early NPS development at Badlands National Park.

In particular, it would be helpful to locate correspondence between the landscape architects and planners regarding their justification for the siting of various features; and any recommendations they make for planning or design concepts. Although the work of the architect, Cecil Doty, responsible for the Visitor Center is well-documented, specific details regarding individuals responsible for the landscape design and planning of Cedar Pass are less well-documented. According to Conrad Wirth, committees were set up to make decisions regarding development at individual parks during the Mission 66 initiative, so it is likely that several individuals had a hand in the design and planning of Cedar Pass. Available meeting records begin to suggest who the individuals involved in the committee to design and plan Cedar Pass were; further records could reveal more specific information. Although these records are not available at Badlands National Park, it is possible they are archived at the National Archives, College Park, Maryland, in Record Group 79.3.3 Miscellaneous records, Mission 66 records.

In addition, research and documentation of the history of property ownership and land transactions (in particular, property owned and operated by the Millard family) would also provide important clues to the early history of the area that influenced later park development. Of further interest would be more detailed documentation relating to development implemented after 1985. This would potentially clarify development at Cedar Pass area where it is not always

possible to discern between early activity by concessionaire Ben Millard and that undertaken by the NPS. It is possible that this could be available at the National Archives, College Park, Maryland, in Record Group 79.4.2 Records of the Branch of Plans and Design.

Historical aerial photographs, if available, might help to shed light on completion dates for various construction efforts suggested in the numerous master plans prepared for the park, for which as-built documentation is scarce. Further information regarding the administrative history of the park might be searched in the National Archives, College Park, Maryland in Record Group 79.1 Administrative History and Records of the Office of the Secretary of the Interior, Record Group 48. Much of this documentation could be gathered and organized as part of a detailed *Administrative History* for Badlands National Park.

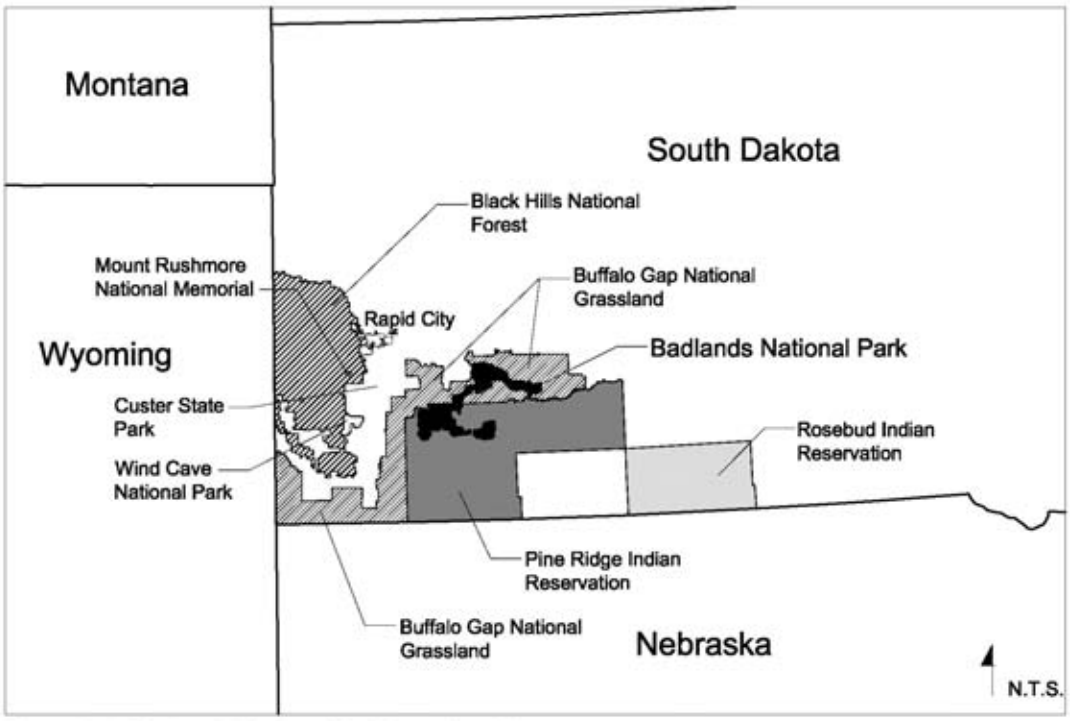


Figure 1-1. Badlands National Park Location Map

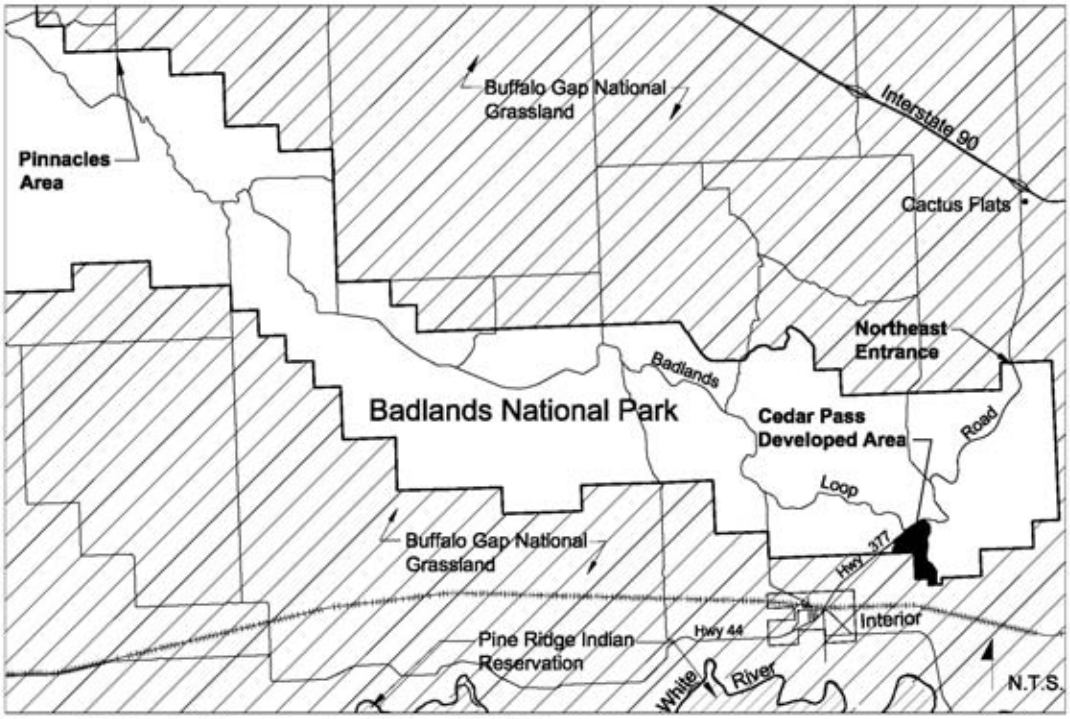


Figure 1-2. Cedar Pass Developed Area Vicinity Map



Chapter Two

Site History

CHAPTER TWO

SITE HISTORY

INTRODUCTION

This documentation of the history of the Cedar Pass Developed Area at Badlands National Park is organized into a series of chronological periods reflecting changes to the landscape over time. Periodization also takes into account regional and national trends. Each period is discussed in a separate section and illustrated with maps, plans, and photographs representative of the period. The periods that comprise the Cedar Pass site physical history are as follows:

Period I: PaleoIndian Period, ca. 12,000–7,500 before present (BP);
Period II: Archaic, Plains Woodland, and Plains Village Periods, ca. 7,500–300 BP;
Period III: Early European-American Contact Period, ca. 1700–1803;
Period IV: European-American Exploration, Trade, and Settlement, 1803–1890;
Period V: Federal Development/Land Ownership, 1890–1909;
Period VI: Concessionaire Development and Monument Establishment, 1909–1938;
Period VII: Initial Master Plan, and CCC Development, 1938–1941;
Period VIII: World War II, 1942–1945;
Period IX: Post WWII era, 1945–1956;
Period X: Mission 66, 1956–1966; and
Period XI: Further Expansion and National Park Designation, 1966–2003.

The Badlands' most significant feature is its vivid portrayal of the erosion process, which, through time, has created the colorful grandeur of the landscape seen today. No less important is the story told by the fossil bones of prehistoric animals, and the physical evidence of continuing human occupation. This despite the fact that fluctuating extreme seasonal temperatures and high wind speeds, combined with the harsh physical features of sod tables, eroded buttes, and deeply etched drainageways have made for decidedly inhospitable living conditions in the area. The name "Badlands" has been perpetuated through descriptions of the place by early travelers, inhabitants, and other visitors, many of whom gave it names with dark connotations: American Indians named the Badlands region *Mako Sica*, while French explorers referred to it as *Mauvais Terres*, both of which can be directly translated as 'bad lands.'

Although evidence of regional land usage prior to the 19th century is scant, the accounts of early European travelers, in conjunction with recently completed archeological investigations, help to suggest the ways in which humans have used this challenging land. European contact began with French exploration during the 18th century. These geologic and paleontological discoveries led to more serious scientific investigation. Scientific investigation and expeditions paralleled and fed into national westward expansion and settlement. Later, these in turn led to a growing tourist

industry as scientists published their findings and a more general public became aware of the wonder to be found in the Badlands.

During the early 1900s, two men in particular—State Senator Peter Norbeck, and Ben Millard, a prominent local businessman—laid the groundwork for creating a national park at the Badlands; Senator Norbeck focused on enabling legislation, while Millard focused on creating visitor facilities.[1] Much of this early work strongly influenced the planning of Cedar Pass during later years. Norbeck's plan for the loop road, which began at Cedar Pass and wound up into the Badlands, provided a logical place at which to develop facilities. Once Ben Millard had constructed concessionaire facilities at Cedar Pass it seemed appropriate to continue development at this same site rather than establishing a new site further into the Badlands. Today, much of the Cedar Pass development reflects decisions made during the New Deal era when the Civilian Conservation Corps (CCC) constructed infrastructure for the National Monument. Even though many of the earlier buildings do not survive, planning at Cedar Pass still follows the tenets of 1930s planning principles. Mission 66 design and planning efforts in the 1950s and 1960s built on this earlier work, and helped to establish the site's contemporary landscape character.

SITE HISTORY BY CHRONOLOGICAL PERIOD

PALEOINDIAN PERIOD, CA. 12,000–7,500 BP

South Dakota falls within the area of the Plains culture that is governed by a reliance on bison for food, clothing, and other human needs. Archeological records suggest that human activity followed the gradual warming of the northern part of the North American continent when glaciers retreated northward and expansive ice sheets melted, creating a wetter and cooler climate with increased biodiversity. Boreal coniferous forests, with spruce predominating, became more widespread and grew at much lower elevations. A deciduous forest soon replaced this, and, by about 10,000 to 8,000 years BP, grasslands dominated the region.[2]

Over the approximately 4,500 years that define the PaleoIndian period in this region, the climate changed dramatically. After the glacial retreat, the region gradually began to turn both warmer and dryer, and it is thought that at this time, ca. 11,000 BP, Asiatic peoples migrated across the Bering Strait (Beringia).[3]

The earliest human occupation of North America can be dated to the PaleoIndian period. PaleoIndian peoples were required to adapt to a rapidly changing environment. Like many of the subsequent occupants of the northwestern Great Plains, PaleoIndian peoples were migratory

[1] Peter Norbeck was elected as a State Senator in 1908 and a US Senator in 1920. Ray Mattison and Robert A. Grom, *History of Badlands National Monument* (Interior, SD: Badlands Natural History Association, 1968), 27.
[2] James C. Chatters, "Environment," in *Handbook of North American Indians* 12 (1998): 43; Waldo C. Wedel and George C. Frison, "Environment and Subsistence," in *Handbook of North American Indians* 13 (2001): 46, 48; James C. Chatters and David L. Pokotylo, "Prehistory: Introduction," in *Handbook of North American Indians* 12 (1998): 73.
[3] Within the larger US, the PaleoIndian period is roughly defined as between 13,000–9,000 BP. In the Custer County vicinity, however, strong evidence for PaleoIndian occupation of the area occurs only between 12,000–7,500 BP.

groups that followed seasonally adaptive subsistence strategies. Based on the scarce material culture left behind, archeologists believe that these peoples were predominantly hunters and scavengers, who relied upon the killing and opportunistic scavenging of large mammals.

Contrary to archeological findings, however, many American Indians maintain through their creation stories that their peoples originated in North America. For the Lakota of the Great Plains, currently inhabiting western South Dakota, creation stories place their early ancestors near Wind Cave in the Black Hills, Mille Lacs in Minnesota, or as far east as North Carolina.

Generally divided up into two distinct cultural entities, early and late, the PaleoIndian period is defined by the material culture remains of the peoples who occupied the area. The earliest PaleoIndian complex is characterized by the Clovis and subsequent Folsom cultures.

The types of material culture most commonly identified from these cultures are distinctive fluted, lanceolate projectile points found predominantly at Plains kill and butchering sites associated with extinct megafauna. Archeologists believe that Clovis and Folsom peoples were highly nomadic foragers traveling in small groups and following a generalized subsistence with an emphasis on hunting. Because they depended to a large degree on hunting, they likely followed the migrations of regional fauna. Towards the end of the early PaleoIndian period, as Folsom peoples began to more efficiently utilize native flora, it is likely that specific ecological niches were repeatedly visited on a seasonal basis and that plant gathering may have been initiated on a seasonal basis. Habitations most likely consisted of temporary camps in the open and in caves and rock shelters. Mammoth, bison, and pronghorn antelope dominated the larger mammal species hunted by PaleoIndians in the northwestern plains.[4]

Various archeological investigations have been undertaken in the park to determine American Indian occupation. In 1980–81, an investigation by Hannus and Ferguson produced the first evidence of PaleoIndian Clovis hunters' remains in the park's South Unit. While little evidence of PaleoIndian activities has been found in the Cedar Pass Developed Area, archeologists determined that it is possible that groups followed bison throughout the region.[5]

[4] Wedel and Frison, "Environment and Subsistence," 50; Chatters and Pokotylo, "Prehistory," 73-74; Tom E. Roll and Steven Hackenberger, "Prehistory of the Eastern Plateau," in *Handbook of North American Indians* 12 (1998): 123-124.
[5] Bruce A. Jones, "Archeological Investigations at Cedar Pass Slide, Badlands National Park" (Lincoln, NE: Midwest Archeological Center, Technical Report No. 75, 2002.)

ARCHAIC, PLAINS WOODLAND, AND PLAINS VILLAGE PERIODS, CA. 7,500–300 BP

About 7,000 BP, during the Plains Archaic period, the regional climate became drier, with more frequent droughts of longer duration. While the bison remained the primary game animal of local peoples, the supply diminished. American Indians began making increased use of plant foods; developed more elaborate methods of long-term food storage; and depended on smaller game, even rodents. Primarily nomadic, the region's peoples generally lived in very small groups. Several sites associated with Archaic period Plano complexes are known in South Dakota.

Over subsequent millennia, the dry climate slowly became wetter and, by 3,000 BP, the land again supported sufficient bison for large game hunting to become more practical on a regular basis. Archeological evidence for increased regional human activity during this time includes a relative abundance of corner-notched dart points known as Pelican Lake points.[6]

The first professional archeological investigations were undertaken in southwest South Dakota in 1953 by Paul Beaubien, who recorded more than thirty sites during a preliminary assessment of what is now the North Unit of Badlands National Park. Most of these sites consisted of scatters of lithic debris and fragmented animal bone exposed atop the Badlands Wall, or appeared in similar scatters or as isolated features, such as hearths or fire pits, eroding out of cutbanks, ravines, or sod tables. Two major sites recorded by Beaubien were 39JK4—the Johnny Site—and 39PN9—the Pinnacles. Beaubien's investigations of the Johnny Site and Pinnacles confirm probable occupation and use of the region by groups during the Plains Woodlands period (1,100 BP-800 BP) and later populations.[7]

In 1961, Dee Taylor conducted substantial work in the Badlands with excavations at the Pinnacles (39PN9) and the Johnny Site (39JK4). Both of these appear to have been occupation sites. Ceramics from the Pinnacles site suggest an occupation by Extended Coalescent peoples and the possibility of an earlier Woodland period component. Ceramics from the Johnny Site suggest occupations by Initial Middle Missouri and Later Post-Contact Coalescent peoples.[8]

In 1996, Jones found that there had been no radiocarbon ages obtained from archeological features anywhere in the park that date prior to about 2,300 years BP. However, archeological evidence of the subsequent Late Prehistoric and Plains Village tradition in the Badlands was found to be relatively abundant and is documented throughout the North and South Units of the park. In 1987, Johnson investigated two sites in the vicinity of park residences and concessionaire cabins in the headquarters area. In 1993, Jones conducted archeological inventory work along the North Unit Loop Road involving a corridor ranging from 25 to 400 meters wide. In 2002, Jones summarized cumulative findings in the Badlands area indicating that American Indian use of the White River Badlands began as early as the PaleoIndian Clovis Complex, ca.

[6] George C. Frison, "Hunting and Gathering Tradition: Northwestern and Central Plains," in *Handbook of North American Indians* 13, Part 1 of 2 (2001): 131-145.
[7] Jones, "Archeological Investigations on the Cedar Pass Slide."
[8] Thomas W. Haberman, "Cultural Resource Investigation Along the Proposed Route of Highway 44 Between Scenic and Interior, Pennington Co., SD" (Rapid City, SD: State Archaeological Research Center for South Dakota Department of Transportation, Contract Investigation Series 119, 1984.)

11,000 years BP or about 9,000 BC. While there is only a small amount of supportive evidence at this point, American Indian use of the area probably continued through the Plains Archaic and the Plains Woodland traditions to ca. 500–700 AD.

At the Johnny Site, eroding artifactual material was re-analyzed by Johnson. Johnson corroborated the date of the Anderson ware ceramics found by Taylor and also prompted some reinterpretation of the Johnny Site data. The Johnny Site and other archeological sites recorded in the vicinity of Cedar Pass seem to reflect brief episodes of occupation or use by a variety of American Indian groups over the course of the past 1,200 years. The single waterfowl bone fragment and the faunal remains that were recovered suggest that the Johnny Site was occupied on occasion during the spring. Questions remain regarding whether a second occupation level actually exists beneath the shallow level exposed by Taylor in 1958.[9]

In 1989 the Johnny Site on Cedar Pass was reexamined and found to contain ceramic information suggestive of area usage by American Indians from the permanent Plains Village farming communities along the Missouri River to the east. These groups would certainly have included the ancestral Arikara, as well as other Siouan-speaking Indian populations. The Plains Village activity in the White River Badlands would have emphasized the seasonal hunting of bison or antelope, but, based on evidence from the Johnny Site, may have also included waterfowl. It is likely that many of these use episodes were short-term and probably occurred on a seasonal basis.[10]

In 1961, Taylor identified sites in the Cedar Pass Developed Area vicinity, which included Dry Creek, Cedar Pass Butte, Reservoir, Johnny, Crew, and Cedar Pass Flats. Ceramic materials (including sherds from the Cedar Pass Butte, Reservoir, and Cedar Pass Flats sites) closely resemble those from the Johnny Site, although they are neither Stanley nor Anderson ware, two of the typical diagnostics of the period. On the basis of known artifact type, the Badlands sites are most closely related to village sites located along the Missouri River from the Fort Randall area to well beyond the Oahe Reservoir. All sites contain hearth remains and have the appearance of temporary camp sites. Although house remains have not yet been discovered, it is conceivable that the remains of permanent house structures may yet be located along the White River. Thousands of bison bones have been discovered through erosion of the sediments at both the Pinnacles and Johnny Sites. It is assumed that the Badlands, with its steep escarpments and blind canyons, would have been an ideal area in which to trap and kill large numbers of bison.

According to the South Dakota State Plan for Archeological Resources prepared in 1990 and revised in 1991, a total of 561 prehistoric sites have been recorded within the archeological region known as #8 White River Badlands. These sites range from PaleoIndian through the Plains periods, and extend into the post-Contact period, to include historic occupation. Subsequent archeological investigation has occurred intermittently within the Badlands. An

[9] Ann M. Johnson, "The Johnny Site, 39JK4, Badlands National Park" (Lincoln, NE: Midwest Archeological Center, 1989.)
[10] Bruce A. Jones, "Archeological Inventory and Evaluation Along the Loop Road, Segment 10-2, Badlands National Park, South Dakota" (Lincoln, NE: Midwest Archeological Center, 1993.)

inventory was conducted in 1976 in the White River Development Area of the South Fork Unit.[11] Twenty-three additional sites were recorded during this work. Two of the 23 recorded sites produced probable Plains Village ceramics, and confirmed occupation of the area over the course of the past millennium. Additionally, a lanceolate projectile point base, suggesting that the South Unit might contain Plains Archaic or Paleo-Indian deposits, was recovered several kilometers east of Fog Creek, a tributary of the White River.[12]

Additional investigations in the Badlands occurred in 1991, leading to an inventory of a segment of the Loop Road, which examined a 25- to 400-meter-wide corridor. This corridor extended along both sides of the present road corridor between park headquarters and Cedar Pass, and resulted in the identification of one historic and three prehistoric sites. Further investigations were conducted by Johnson (1989a, 1989b, 1994), Jones (1993, 1996, 2002) and Hannus et al. (2003). Data gathered on early occupation and use of the Badlands covers the entire park area; yet specific information relating to the Cedar Pass Developed Area occurs in the investigation of one site only, the Johnny Site, which is so badly eroded that it has been deemed no longer worthy of further investigation.

EARLY EUROPEAN-AMERICAN CONTACT PERIOD, 1700–1803

Tribal occupation of the Badlands area during the period of contact can be understood within a developed historical context. The Caddoan speakers, all ancestors to the Wichita, Kitsai, Pawnee, and Arikara, moved from the Southeast around 900 AD, bringing many Mississippian traditions with them as they adapted to the grasslands and tributaries of the lower Missouri and Mississippi River valleys. The ancestors of the Siouan-speaking Mandan and Hidatsa arrived around 1100 AD, settling in earthen-lodge villages along the Upper Missouri and its tributaries in what are now North and South Dakota. Other speakers of Siouan languages arrived somewhat later from the Ohio Valley. In 1600 AD the ancestors of the Otoe, Missourian, Iowa, Omaha, Ponca, Kansa, and Osage were all well-established in regionally permanent villages, with the Missouri River serving as a central and connecting transportation corridor.

The Spanish introduced horses into the Southern Plains region in the 1600s, and use spread quickly northward from tribe to tribe, eventually becoming as integral as bison to the Plains culture.[13] Horses were found to be indispensable because of the advantages they provided in hunting. Prior to full integration of the horse, dogs had assisted the seasonal Plains village horticulturists with bison hunts. These methods of hunting are well described in the literature.[14] In the summer months, tribal groups gathered together, forming large encampments to hunt the buffalo herds, since effective hunting required cooperative techniques. In the Southern Plains region, fire was the tool used to surround a herd and to drive it toward hunters; on the High Plains, prehistoric methods included driving a herd over a cliff or into a corral, sometimes at the

[11] Carl Falk, et al., "A Preliminary Assessment of Archeological Resources in the Vicinity of the Proposed White River Development, Badlands National Monument, South Dakota" (Lincoln, NE: Midwest Archeological Center, Occasional Studies in Anthropology, No. E., 1978.)
[12] Ken Karmizski, Draft "National Register Multiple Property Documentation, Historic Road Resources at Badlands National Park" (Bozeman, MT: Western History Research, 1993), Section E, Page 2. This documentation indicates that #8 White River Badlands was in the Monument boundary.
[13] Frison, "Hunting and Gathering Tradition," 131-145.
[14] Frison, "Hunting and Gathering Tradition," 131-145.

bottom of a slope or cut bank. A herd was typically lured by a buffalo caller. The animals were then directed between lines of rock piles or brush arranged as a funnel to increasingly constrict the herd. Participants shouted and waved ropes to direct the herd toward the precipice or into the corral.

With horses, tribes became mounted hunters in long-distance pursuit of the thunderous, roving herds. In short, the introduction of horses into the Plains Indians way of life changed it from agrarian to nomadic hunting and gathering. Later, access to the firearm, which added power, would further change their culture.

Specific documentation of Plains tribes as it relates to the Cedar Pass area at the time of contact is sparse. With the encroachment of Europeans onto native lands to the east, and a concomitant period of droughty conditions, many agrarian tribes trekked to the western Plains, seeking new farmlands as well as larger herds of bison. The Mandan, Arikara, and Hidatsa had settled in South Dakota along the Missouri River around 1100, living in earthen lodge villages on the upper Missouri and its tributaries. They adopted a horticultural subsistence system with a periodic hunting tradition.[15]

By 1700, when Spanish and French explorers and traders first encountered them, the western Plains tribes were in a state of demographic flux; the oldest tribes, all of which were agrarian, were found on the eastern edges of the Plains. The few records relating to interchanges between American Indians and Europeans in the Badlands area generally involve negotiation by explorers seeking to claim land for various European powers. During the first half of the 18th century, France sought to explore and claim vast western territories including present South Dakota. Francois and Louis Joseph La Verendrye set out in 1742 from Fort La Reine near present-day Winnipeg, Canada, in search of a waterway to the Pacific. Their route led them through Bismarck, North Dakota, southwest across the plains. It appears that the brothers traveled through the Black Hills in February 1743, then east down either the Cheyenne River or the Bad River to the site of present-day Fort Pierre. They buried a lead plate on a hill on the west bank of the Missouri River to claim the area for France.[16]

After Francois and Louis La Verendrye witnessed extensive intertribal warfare, they realized the effort that would be required to pacify the resident groups and subsequently departed. This marked the end of official French presence in the lands of the Osage on the Missouri, but many individual French traders and voyageurs continued entering the Plains. The Missouri River remained the most significant regional means of transportation both for American Indians and European and Euro-American traders for some time.

[15] William R. Swagerty, "History of the United States Plains Until 1850," in *Handbook of North American Indians* 13, part 1 of 2 (2001): 256.
[16] Philip S. Hall, *Reflections of the Badlands* (Freeman, SD: Pine Hill Press, 1997), 1; Swagerty, "History of the United States Plains Until 1850," 266-267.

EUROPEAN-AMERICAN EXPLORATION, TRADE, AND THE BEGINNINGS OF SETTLEMENT, 1803–1890

Exploration

In 1803, the United States acquired formal title to the Louisiana Territory from France (*see Figure 2-1*). One year later, Meriwether Lewis and William Clark began their western expedition, spending the fall of 1804 exploring present-day South Dakota (*see Figure 2-2*). Although their expedition barely scratched the edges of the Badlands, their notes and maps are the first official records describing the area's cultural and biological history from a European-American perspective. While camped near the southern bank of the Bad River in 1804, the expedition raised the US flag, marking the first time the flag was flown in South Dakota. Lewis and Clark returned through the area in 1806. The Lewis and Clark expedition marked the beginning of US federal policy on the Plains. During the winter at Fort Mandan, Lewis and Clark prepared a statistical report on the tribes of the Missouri River and Northern Plains, including Plains Indian populations, locations, and economic relationships.[17]

It is clear from the conflicts that arose between Lewis and Clark and the local American Indian tribes that the river was the major regional circulation system, and its usage was considered a property right. The region's strongest military powers—the Teton and the Piegan Blackfoot—attempted to block the expedition's boats from using the river, as they had been accustomed to receiving payment for passage through their section of the Missouri. This misunderstanding of property and waterway systems usage on the part of Lewis and Clark led to Clark describing the tribes as "miscreants," who viewed the merchants of the Missouri with contempt. In turn, these enemies of the Mandan-Hidatsa envisioned Lewis and Clark dispensing guns to their foes.[18]

Immediately after Lewis and Clark's return from the west, large numbers of Euro-American trappers began entering the Northern Plains and Rockies. Jedediah Smith and an eleven-man party passed through the area of the Badlands in 1823. A member of the party, James Clyman, provided one of the earliest known descriptions of the region; it is believed to be an account of the White River Badlands. His description is as follows:

> …a tract of land whare [sic] no vegetation of any kind existed being worn into knobs and gullies and extremely uneven a looses [sic] grayish coloured [sic] soil very soluble in water running thick as it could move, a paleo whitish colour [sic] and remarkably adhesive there [came] on a misty rain while we were in this pile of ashes [badlands west of the South Fork of the Cheyenne River] and it loaded down our horses feet in great lumps it look [sic] a little remarkable that not a foot of level land could be found the arrow revines [sic] going in all manner of directions and the cobble mound[s] of a regular taper from top to bottom all of them of the precise same angle and the top sharp the whole of this region is moving to the Missouri River as fast as rain and thawing of Snow can carry it. [19]

[17] Hall, *Reflections of the Badlands*, 1.
[18] Swagerty, "History of the United States Plains Indians Until 1850;" 269.
[19] Mattison and Grom, *A History of the Badlands National Monument*, 12.

Trade

A host of fur traders and trappers followed the Jedediah Smith party into what is now southwestern South Dakota. Fort Tecumseh, built near the mouth of Bad River in 1822, and later Fort Pierre Chouteau, built in the same vicinity in 1832, were the hubs of an expansive network of small sub-stations located at various points along tributaries flowing into the Missouri River from the west.[20]

The traders set out from Fort Pierre Chouteau each fall for these sub-stations with beads, vermilion, blankets, shirts, calico, hatchets, axes, knives, firearms, gunpowder, traps, and other trading supplies, and returned to the fur trading forts in the spring with bison hides and beaver pelts.

Several major wintering houses were located on the two rivers that drained the Badlands. Four of these outposts were located on the Cheyenne River. The Cheyenne Post site was at the confluence of the Cheyenne and Missouri Rivers. A second post was a few miles above the mouth of Cherry Creek. Francis Chadron and William Laidlaw established a wintering house in 1826 at a fork of the Cheyenne, where a still was set up for making whiskey. The Oglala Post was built in 1827 near the mouth of Rapid Creek, at the northwest corner of the Badlands. Pierre de Papin operated a sub-station at the forks of White River, just below the Badlands. A second major wintering house was located at Butte Cache, just above the mouth of Wounded Knee Creek and at the southwest corner of the Badlands.[21]

Goods were transported via the White River, although on occasion the water was too shallow even to accommodate a canoe. At such times, the goods were taken by horse and cart. The route that traders at Chartran Post and Cache Butte followed was a Lakota trail along the western edge of the Badlands. This trail was heavily used from as early as 1826 through at least 1845 when the American Fur Company used it as a supply route for Fort John (later called Fort Laramie) on the North Platte River. The route came to be known as the Fort Pierre-Fort Laramie Trail (*see Figures 2-3 and 2-4*).[22]

According to some sources, a second route existed through the Badlands but was seldom taken, most likely due to the difficult terrain. One early trader described it as follows:

> The descent [off of the north wall] is by road about five feet broad, winding round and among the hills. In going over this trail great precaution is necessary for a slip of the foot would precipitate either man or horse into the gulf below.[23]

Maximilian, Prince of Wied, journeyed up the Missouri with Charles Bodmer in 1834 and was given a description of the Badlands by William Laidlaw upon reaching Fort Pierre. The German prince wrote of his regret in being unable to visit the place:

[20] Hall, *Reflections of the Badlands*, 7-9.
[21] Hall, *Reflections of the Badlands*, 7-9.
[22] Hall, *Reflections of the Badlands*, 7-9.
[23] Hall, *Reflections of the Badlands*, 9.

> Mr. Laidlow, who had been there in the winter, gave me a description of it. It is two days' journey, he said, south-west of Fort Pierre, and forms, in the level prairie, an accumulation of hills of most remarkable forms, looking like fortresses, churches, villages and ruins, and doubtless consisting of the same sand-stone as the conformations near the Stone Walls. [24]

A Jesuit priest, Father Smet, also visited the Badlands area in 1848 and described it as virtually impossible to settle, with little hope of cultivating anything.[25]

American Indian Lands

Exploration and trade was complicated by tensions among the various parties that occupied the area. For example, relations between tribes on the Upper Missouri—especially in the Blackfoot country—were tense and hostile, with Europeans exacerbating the problem by trading guns for local resources.[26]

American Indians were accustomed to intertribal conflict that forced them to vacate their lands. A more serious challenge, however, was posed by US public policymakers and private citizens who presumed that Plains peoples would be eager to engage in commerce and open to negotiating access to—and purchase of—their lands. In May 1830, Congress passed the Indian Removal Act, which empowered the President of the US to move eastern American Indians west of the Mississippi to a place they called "Indian Territory." A campaign that had begun as a somewhat voluntary operation, with concessions of land usage granted to the American Indians in exchange for their agreement to occupy certain areas, gradually became more strictly mandated by government legislation, with tribes increasingly forced to leave their lands.[27]

The US government sought to exercise ever-increasing control over the Dakota lands. Euro-Americans and American Indians had long struggled over land ownership. In 1851, the Fort Laramie Treaty attempted to establish peaceful relations among the various tribes and Euro-American immigrants. It confirmed the right of the US government to establish roads and military and other posts within American Indian territories (*see Figure 2-5*). But the treaty also required the US government to protect the Indian nations, and intended to formally recognize certain tracts of land within surveyed areas as American Indian territories. Between 1855 and 1857, the US Army purchased Fort Pierre and used it as a military post. They eventually abandoned the fort, and left it to civilian settlers (*see Figure 2-5*).[28]

An amendment to the Fort Laramie Treaty of 1868 generally established all areas of South Dakota west of the Missouri River as Lakota land. It also included hunting grounds in the Powder Region of Wyoming. By the time the Agreement of 1876 was enacted, treaties between sovereign American Indian nations had ended, replaced by agreements between the federal government and "domestic dependent nations." The 1876 agreement removed the Black Hills of

[24] Mattison and Grom, *A History of the Badlands National Monument*, 12.
[25] "The Industry of the settler will never success [sic] in cultivating and a planting this fluctuating and sterile soil," in Mattison and Grom, *A History of the Badlands National Monument,* 12.
[26] Swagerty, "History of the United States Plains Indians Until 1850," 270-275.
[27] Swagerty, "History of the United States Plains Indians Until 1850," 258.
[28] South Dakota State Historical Society http://www.sdhistory.org (accessed June 2004).

South Dakota from the Lakota domain. The Agreement of 1889 further broke up the existing great Sioux Reservation into six small reservations, including Standing Rock, Cheyenne River, Lower Brule, Crow Creek, Rosebud, and Pine Ridge (*see Figure 2-7*).

The area between the White and Cheyenne Rivers, including land on which the Badlands National Monument was established became public domain.[29] This followed the Dawes Allotment Act of 1887, which allocated lands for American Indian families, extended the US law to cover these groups, and permitted the sale of their remaining land to American homesteaders. This treaty formally defined Sioux lands to include the Black Hills and stipulated regular payments of food, clothing, and goods in exchange for US military withdrawal from Sioux lands. As an assurance that no Euro-Americans would be allowed to settle on assigned Sioux lands, the federal government would be allowed to construct additional roads and would be ceded all lands outside of Sioux land. Nevertheless, by the fall of 1890, most American Indians had been stripped of much of their territory, and were settled into allotted areas known as reservations.[30]

In December 1890, in an attempt to defy the pressure of government forces, thousands of American Indians, including many Oglala Sioux, sought guidance from the Indian prophet Wovoca. His vision called for the native peoples to practice the Ghost Dance and wear ghost shirts, which would be magically impervious to bullets. Wovoca predicted that the white man would vanish, and the hunting grounds would be restored. One of the last known Ghost Dances was conducted on Stronghold Table in what is now the South Unit of Badlands National Park. Accounts of what happened next differ, but it is generally agreed that Chief Big Foot and his band of Miniconjous Sioux fled through the Big Foot Pass and camped at the White River. When the Indians reached Pine Creek they were intercepted by the army. The following day, while attempting to disarm them, the military precipitated the infamous "Wounded Knee Massacre." (*see Figure 2-8*).[31] The incident stands as the last armed engagement of the Indian Wars. Pine Ridge Reservation is located approximately forty-five miles south of the Cedar Pass project.[32]

Scientific Discovery

In addition to interest in potential trade products an unexplored territory might yield, the Badlands offered treasures, particularly for scientists involved with the study of paleontology.

Initially, American Indian tribes participated in the dissemination of these treasures, sharing their findings with Euro-American scientists. The Lakota tribe, for example, was instrumental in trading large fossilized bones, seashells, and turtle shells with Euro-American explorers and traders. They correctly assumed that the area had once been underwater, and that the bones

[29] South Dakota State Historical Society http://www.sdhistory.org (accessed June 2004).
[30] Patricia Albers, "The Home of the Bison: An Ethnographic and Ethnohistorical Study of Traditional Cultural Affiliations to Wind Cave National Park" (unpublished manuscript, Wind Cave National Park), 65-68; Barbara B. Long, "Wind Cave National Park: Historic Contexts and National Register Guidelines" (Cresco, IA: Four Mile Research Company, 1992), 5; Western History Research, "Wind Cave National Park Land Study," Volume I, (n.d.), MS on file at the Library Collection, Wind Cave National Park, 20.
[31] Mattison and Grom, *History of Badlands National Monument,* 22.
[32] http://www.nps.gov/badl/exp/humans.htm (accessed June 2004).

belonged to creatures that no longer existed. These fossils soon became a valid reason for further exploration of this strange land.[33]

Between 1843 and 1854, fur traders also shared their findings with scientists. In 1846, for example, fur trader Alexander Culbertson sent a fossil—what later proved to be the lower jaw of an extinct animal—to Hiram A. Prout, a St. Louis physician, who subsequently published a paper in the *American Journal of Science*. In his paper, Prout declared the fossil to have come from a creature he called a Paleotherium. In 1849, Dr. Joseph Leidy, having received another fossil from the same source, published a paper describing the fossil as the skull and leg-bone from an extinct, cud-chewing mammal, later discovered as a species of camel.[34]

The first scientist to become interested in exploring the Badlands for fossils was David Dale Owen, Geologist to the United States. Unable to travel to the Badlands himself, Owen sent an assistant, Dr. John Evans. Evans traveled to Fort Pierre Chouteau in spring 1849 and hired five French-Canadian voyageurs as muleteers and cooks and one as a guide. He also employed a Sioux Indian named Elk Horn to guide. Evans collected paleontological specimens from the Badlands, including a petrified rhinoceros head, and a wolf jawbone. In the 1870s, Yale University Professor O.C. Marsh visited the region and developed more refined methods of extracting and reassembling fossils into nearly complete skeletons.[35]

Continued interest on the part of scientists helped to spread awareness about the Badlands. When the railroads began to arrive in the vicinity of the Badlands from the1880s, the way was opened up for settlement.[36]

Settlement

Euro-Americans became more interested in the Badlands as a place for both scientific discovery and potential settlement. American Indian ownership and use of the land was increasingly circumscribed by US government legislation. The unexplored lands of South Dakota were initially "public domain"—land owned by the American people but controlled and divided under federal law to promote settlement by transfer or sale of the land to private owners. Such laws ensured that land was parceled out equally and sold at a set price. The land survey system established by the Land Ordinance Act of 1785 to control this transfer or sale began in Ohio. The first surveys to be undertaken in Dakota Territory began in Dubuque, Iowa, in 1859, and continued through 1861, reaching Yankton, South Dakota.[37]

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[33] Badlands National Park History and Culture website http://www.nps.gov/badl/exp/humans.htm#fossilhunters (accessed June 2004).
[34] Hall, *Reflections of the Badlands*, 13.
[35] Hall, *Reflections of the Badlands*, 13-15.
[36] Hall, *Reflections of the Badlands*, 35-36.
[37] Courtesy of Public Records and Information Staff, Office of Surveyor General of South Dakota, Bureau of Land Management Montana State Office, Billings, MT; also http://www.library.sos.state.il.us/library/isl/ref/glo/glolocguide.html.With the Land Ordinance of 1785, the need for an organization to carry out the newly created mandates became vital. In 1812, Congress, with the Act of April 25, 2 Stat. 716, created the General Land Office (GLO) and placed it under the jurisdiction of the Treasury Department. Along with a new organization, a new method of surveying was employed. Previously, land had been surveyed using a system called metes and bounds, in which the surveyor started at a fixed point, usually determined by a local natural or artificial monument, and ran lines by compass course and distance. But the Land Ordinance Act of 1785 also mandated that surveyors use the new rectangular system, whereby the land was partitioned into a grid of

Some settlers had already established themselves on the land by this time. The Pre-emption Act of 1841 was introduced to accommodate these settlers, who would otherwise be unrecognized squatters or individuals illegally settled on federal land. When government surveyors took stock of surrounding land and prepared it for public sale, squatters had the right to purchase up to 160 acres of their illegal holdings for $1.25 per acre from the local land office and pre-empt or prevent any subsequent claims as long as the settler could show proof of a dwelling and improvements to the land. The Pre-emption Act, repealed in 1891, legalized early pioneer settlement on unsurveyed lands, and recognized squatting as a legitimate means of establishing a homestead.

By 1861, the Dakota Territory was established, encompassing what would later become North and South Dakota and parts of Montana and Wyoming. A year later, the governor of the Dakota Territory declared the Black Hills were "rich beyond conception in mineral resources of coal, copper and iron." That same year, the federal Homestead Act of 1862 was established. The Homestead Act declared that:

> There are two classes of public lands; the one class at $1.25 per acre, which is designated as minimum, and the other at $2.50 per acre or double minimum… [The Act] gives to every citizen and to those who have declared their intentions to become such, the right to a homestead on surveyed lands. This is conceded to the extent of one quarter section or 160 acres, held at $1.25 per acre, or eighty acres at $2.50 per acre, in any organized district embracing surveyed public lands.[38]

After a five to seven year "proving up" or occupancy period and payment of a small filing fee, the homesteader could acquire legal title to his land. Although the Homestead Act was a very good deal for those with little money, it was not perfect. Much of the land administered under the act was not productive, either because of natural resource limitations or lack of access. The best lands had typically been pre-empted before the act's establishment or acquired as part of railroad grants. Much of the public land claimed under the Homestead Act was eventually abandoned and returned to the public domain.

The Timber Culture Act of 1873 was another law that encouraged homesteading and the planting of trees in the west. If a settler planted forty acres of timber (reduced to ten acres in 1878), and fostered its growth for ten years, the individual was entitled to that quarter section of land. The Timber Culture Act also permitted homesteaders who occupied their land for three years, with one acre of trees under cultivation for two of those three years, to receive a patent to the land. The law was repealed in 1882.

townships and ranges, with 36 parcels per township, each 1 square mile or 640 acres. Each township itself is 6 miles square and based on a series of principal meridians and baselines running across the land. Thirty states, known as the Public Land states, were surveyed using the rectangular system. The original thirteen colonies and their then-territories (the states of Kentucky, Maine, Tennessee, Vermont, Virginia, and West Virginia) plus Hawaii and Texas were surveyed with metes and bounds or other methods.

[38] (Anonymous, 1869, 466-68) as written in the 1868 Agriculture Report and quoted in Philip Pregill and Nancy Volkman, *Landscapes in History: Design and Planning in the Western Tradition* (New York: Van Nostrand Reinhold, 1993), 388.

The Desert Land Act of 1877 was designed to foster settlement of the arid and semi-arid regions of the west, specifically portions of Arizona, California, the Dakotas, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The act allowed anyone to purchase 640 acres of land for 25 cents per acre if the land was irrigated within three years of filing. A rancher could receive title to the land any time within the three years upon proof of compliance with the law and payment of one additional dollar per acre.[39]

On November 2, 1889, President Benjamin Harrison admitted South Dakota to the Union. As a state, South Dakota would need a capital city. South Dakota's territorial capital had shifted between towns since its inclusion in Dakota Territory. Yankton was elected as the capital of Dakota Territory in 1862. In 1883, because of its central location, Bismarck (North Dakota) was selected as capitol of Dakota Territory. In 1885, a Constitutional Convention for the part of the territory south of the 46th Parallel was held, and Huron was chosen as the new capitol. Congress did not recognize the 1885 Convention, so the capitol remained in Bismarck. Pierre was subsequently chosen as the temporary capital of South Dakota. In 1890, in a competition between Huron, Watertown, and Pierre, Pierre won as the permanent seat. In 1904, the "Great Capitol Fight" between Pierre and Mitchell occurred. Pierre won again, and has remained the capital ever since. Clearly the competition for recognition as the most significant city in the area was fierce. Even the large railroad companies became involved: the Chicago, Milwaukee and St. Paul Railroad promoted Mitchell, while the Northwestern Railroad sided with Pierre. Both companies supplied free tickets for the public to visit as an incentive to vote for their town. In a sparsely populated region, economic prosperity depended greatly on transportation routes.[40]

FEDERAL DEVELOPMENT/LAND OWNERSHIP, 1890–1909

As the federal government took greater control of the Dakota Territory, removing it from American Indian ownership and enacting legislation that supported further exploration and development, more people began to consider the Badlands as a viable place to settle.

In 1894, the Carey Act granted one million acres of public land to arid states and territories on the condition they "reclaim" the land through irrigation and sell it to settlers. This attempt to promote irrigation of arid Western lands proved unsuccessful when states found they could not raise the funds to mount large-scale irrigation projects. Effective land reclamation in the West would have required a massive federal investment.

Beginning in 1899, the South Dakota School of Mines and Technology began a program of sending individuals to the Badlands area on an annual basis to work in the field of paleontology. This underscored the area's importance in scientific discovery, and provided a continual presence in the area.

Settlement was dependent on individual ability to adapt to a place where resources were scarce and conditions difficult. While timber was in short supply, sod was a plentiful resource that could be used to create living quarters. Possibly taking their cue from American Indians,

[39] http://www.time-passages.com/land-patent-research.html (accessed June 2004).
[40] http://www.thegreenpapers.com/slg/statehood.html (accessed June 2004).

homesteaders built sod houses dug into the ground. This dwelling form provided warmth, was protected from the winds and cold in winter, and offered relief from the summer heat.

A description of one family's attempts to settle in the region provides insight into the harshness of the natural conditions of this place. In 1906, Herbert Sherman, his wife and six children, moved from Randolph, Nebraska, to a South Dakota claim about three miles northwest of the town of Kadoka where they homesteaded 180 acres of grassland. The first thing Sherman and his family had to do was build a shelter. They followed the model they had seen across the plains—a sod house. Sod was cut from the prairie using a sod plow and their four-horse team. The sod was cut into pieces four inches thick by two feet long and fourteen inches wide. These pieces were stacked to form the front and sides of the house. The back of the house was dug into a small hill, and a trap door in the floor led to a cellar in the hillside where the family stored their home-canned goods. Light entered through windows cut into each side of the house and a door in the front. The roof was constituted of timber supports with boards and tar paper and sod on top (*see Figure 2-9*).

Drinking water came from a ninety-foot-deep well that had been dug with great difficulty since they had to break through a resistant layer of shale. The well had a hand pump that worked in warm weather, but froze in the winter, so a bucket on a rope had to be used instead. Outbuildings included a large barn where they stored hay for their cattle and horses and also provided a shelter for livestock in the winter. Family accounts indicate that they spent their summers putting up the hay for their animals and gathering firewood along the creek to heat the house in the winter. They then spent their winters feeding the livestock, cleaning out the barn, and trying to keep warm against the cold winds and snow.

The house was not too far from a small stream where they had a vegetable garden. Rattlesnakes could be a hazard, lying under the sand, forming a small mound near the stream to keep cool, and surprising anyone who did not pay attention. Snakes also crawled into the sod house in the summer to keep cool. They would crawl up and lay on the overhead beams. One of the boys would catch the snakes and take them into Kadoka where he got five cents apiece for dead ones and twenty-five cents for live ones. They also had to watch for snakes under the hay shocks when loading hay into the wagon.[41]

In 1906, there was considerable homestead activity under the original homestead law of 1862, despite the inadequacy of a 160-acre parcel to support a family in the arid region. Leonel Jensen, a long-time resident in the vicinity of the Badlands, stated that when his father came to the region in May 1906 there were few homestead buildings. By the fall of that year, there was a homestead shack on practically every quarter section of land, as many settlers began to anticipate the arrival of the railroads.

In 1907, railroad development through the White River valley (*see Figure 2-10 for the alignment of a stage route that likely preceded the rail line route*) prompted a homesteading boom. Towns began to spring up, usually every twenty miles at points 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. One of these, the town of Interior, was located in Jackson

[41] Oral history website: http://www.soysite.com/newsletter/Sep99.html (accessed June 2004).

County, near the Badlands and southeast of Rapid City between Wall and Kadoka on the banks of the White River. It soon boasted two hotels, two cafes, five saloons, a bank, a Ford dealer, a livery stable, and a newspaper (*see Figure 2-11*).

CONCESSIONAIRE DEVELOPMENT AND MONUMENT ESTABLISHMENT, 1909–1939

Despite the arrival of the railroad, newly formed townships, and individual farmsteads, the area remained somewhat isolated and barren during the early 20th century. A small number of visitors had begun to venture into the Badlands to see the scenic beauty they had heard about for themselves. Gradually, interest in the area as a tourist destination grew. Tourist facilities began to be established, built by enterprising individuals. When various people began suggesting a park be created in the area, it became clear that various obstacles existed, not least of which was convincing federal entities that the site was worthy of preservation as a public reservation.

Because of the various issues involved in the development of tourist facilities and establishment of a park at Badlands this section of the physical history at the Cedar Pass Developed Area has been subdivided into thematic headings.

Establishing the Monument

In March 1909, State Senator Peter Norbeck pledged his support for various groups urging the State House and Senate to approve a joint resolution requesting the US Congress to set aside a national park in the South Dakota Badlands. Norbeck, who was born into a farming family in Clay County in southeastern South Dakota, had a personal interest in protecting the lands he had grown up hearing about. While his father had been a member of the 1871 Dakota Territorial Legislature that helped settle the area, Peter Norbeck's career coincided with other early efforts to enact conservation legislation and develop a system of national conservation areas and parks in the West.

The resolution supported by Norbeck in 1909 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.[42]

[42] 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.]

The wording in this resolution is 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."

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, Louis Knowles, a Forest Ranger for the Harney District of the Black Hills National Forest, set out for the Badlands in search of sites suitable for federal "Game Parks or Preserves." He discovered a land ravaged by constant plowing and featuring virtually no wildlife due to excessive hunting. Very few trees remained, as many had been cut down for fencing. Most farms had failed and their occupants had moved on. Those farmers remaining had consolidated into larger farms or ranches that were often over-grazed. Knowles noted that numerous fences blocked the view of the Badlands Wall, a dramatic and irregular cliff paralleling the north bank of the White River for nearly sixty miles, which was a favorite Badlands hiking spot. Knowles also noted that visitation to the Badlands in 1919 had increased greatly over the years. Many visitors came via railroad, but some traveled State Route 40 (the Washington Highway) that connected the towns of Scenic and Interior with Rapid City, although much of this road, which followed more or less the Chicago, Milwaukee and St. Paul Railroad, was still under construction in 1919.[43] 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.[44]

In May 1922, Peter Norbeck, who had by this time been elected to the US Senate, introduced a bill for establishing a national park at the Badlands. Despite the fact that Congressman Williamson introduced an identical bill in the House of Representatives on the same day, neither one of these bills were passed. 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."[45]

[43] Mattison and Grom, *History of Badlands National Monument*, 27.
[44] Schuler, *A Revelation Called the Badlands*, 13-18.
[45] 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.]

One of the problems with creating a national monument at Badlands was the need to increase the number of acres that the government could incorporate into a public recreation facility. The bulk of the property in the area was privately owned and the NPS hesitated to fully push for creating a national park. Senator Norbeck explained the situation in a 1927 letter:

> The Park program is not as easy as it seems on account of so much of the land having gone into Private ownership. The Federal Government will not purchase land for park purposes. They never have. The State must and that will come slow.[46]

In July 1928, Norbeck joined 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. A resulting report from this trip concluded that the Badlands formations did not match those of the Grand Canyon, were less spectacular than Bryce Canyon, and therefore could not be awarded national park status. For his part, despite disappointment that the Badlands area could only be granted "monument" status, Senator Norbeck insisted that the state of South Dakota construct a highway through the proposed Badlands park 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.

Finally, in 1929, President Coolidge authorized the creation of Badlands National Monument, comprising some 50,830 acres. Establishment of the Monument stipulated that land would be acquired and roads built at the state's expense. Only after these conditions had been met to the satisfaction of the US President, could a proclamation be issued and the lands be 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.[47]

With the onset of the Great Depression, conditions for developing the Monument at Badlands looked bleak. It took several programs created by President Roosevelt to provide incentives and financial means to support further 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 NPS. Furthermore, in 1934, under a cooperative agreement with the new Federal Emergency Relief Administration (FERA), the NPS assumed leadership for nationwide recreational planning and began to develop model parks called recreational demonstration areas on land considered sub-marginal for agriculture.[48]

FERA provided the funding necessary for the government to acquire land that was otherwise unsuitable for agriculture but could be developed as public parkland. In addition to funding land

[46] Senator Norbeck to J.W. Parmley, Ipswich, SD November 7, 1927. ["Norbeck Collection of Papers," Badlands National Park Library [F656.N6N111 No. 1.]
[47] House of Representatives Report No. 2607, 70th Congress, 2nd Session, quoted in Mattison and Grom, *History of the Badlands*, 34.
[48] Linda Flint McClelland, *Building the National Parks* (Baltimore: Johns Hopkins University Press, 1998), 328.

purchases, it supported the establishment of recreational facilities by demonstrating how recreational facilities could be planned and developed.[49]

Much of the land required to create a monument at Badlands was located in the public domain but a large area adjacent to 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 60 percent of this land 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."[50]

Support and interest in purchasing land for the National Monument came from various NPS executives. Regional director Herbert Maier, for example, wrote to NPS Washington headquarters regarding sub-marginal land in the area of Badlands National Monument stating: "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." [51]

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. This could be implemented by executive order of the President, and executed by acquiring privately owned lands through existing federal government relief programs.

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. The sub-marginal land project extended primarily over Townships 1, 2, 3, and 4, and south Ranges 13, 14, 15, 16, 17, 18, and 19 east, in the southwestern part of South Dakota. Acquisition of the homesteads was complicated because many owners still held property rights, even though they no longer occupied the land. Many 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.[52]

Intervention came from the federal government in the form of approval from the Secretary of the Interior for the Badlands National Monument boundary extension in June 1936, an act that amended the original act of March 1929. It 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

[49] McClelland, *Building the National Parks*, 414.
[50] Sub-Marginal Land Program, Certificate of Recommendation for Land Acquisition, Jackson and Pennington Counties, South Dakota, April 5, 1935. [Miscellaneous Papers, Badlands Nation Park (BNP) Library.]
[51] Herbert Maier, Regional Director to Land Program Division, Re: Badlands National Monument Extension, NPS, Washington, DC, April 2, 1935. [Miscellaneous Papers, BNP Library.]
[52] Sub-Marginal Land Committee Statement, April 5, 1935. [Miscellaneous Records, BNP Library.]

classification and use as a grazing project pursuant to the sub-marginal land program of the Federal Emergency Relief Administration."[53]

With public land potentially becoming available for purchase, the NPS could begin developing plans for recreational infrastructure.

Land Ownership

During the early 1930s, two simultaneous developments had an impact on future park establishment: on a local level, increasing numbers of people were taking advantage of the railroads and seeking to settle the land near small western towns such as Interior; and on a national level, the federal government was seeking to conserve areas encompassing important natural resources.

For decades, homesteaders had struggled to farm the western Plains despite problems with paucity of water and good soil. Immigrating families nevertheless sought to eke out a living on land that appeared at first to provide hope for a better future. Although it became increasingly evident that the land was poorly suited to agriculture, grazing and sheep farming remained a possibility for many. With the arrival of the railroads, and hence connection to more populated areas of the country, more settlers opted to take their chances in the region. From 1900 to 1905, the population in western South Dakota increased from 43,782 to 57,575; by 1910 it had more than doubled to 137,687. After 1910, the population continued to increase until the 1930s, but at a slower pace. Much of the settlement occurred in Pennington County, which had a regional urban center. Jackson County witnessed far less settlement.[54]

In 1912, the period to "prove up" on the lands purchased for homesteading was liberalized; the required residency changed to three, rather than the earlier five, years. In 1915, Congress applied the Enlarged Homestead Act of 1909 to South Dakota, enabling settlers to acquire parcels of 320 acres instead of 160 acres; an amount that was more suited to cattle and sheep farms. Homestead laws were liberalized again in 1916 with the enactment of the Stock-Raising Homestead Act. This provided for 640-acre homesteads on lands officially designated as non-irrigable grazing lands. Encouraged by the high prices and increased demand for farm and ranch products during World War I, many farmers and ranchers took advantage of the liberalized homestead acts and, between 1910 and 1920, purchased increasing amounts of land in western South Dakota. Yet by 1922, less than half of the land that was later included into Badlands National Monument was publicly owned (*see Figure 2-12*).[55]

Although many people who had farmed within the Badlands region fled during the 1930s when drought led to the Dustbowl years and waves of grasshoppers destroyed crops, others continued farming, with a heavy dependence on government assistance programs.

[53] Land Program Division Regional Officer Herbert Maier, "Report on Badlands National Monument Extension Project," April 2, 1935. [Miscellaneous Records, BNP Library.]
[54] Mattison and Grom, *A History of the Badlands*, 26.
[55] Mattison and Grom, *A History of the Badlands*, 24-26.

Concessionaire Development

When government officials including Senator Peter Norbeck and Louis Knowles visited the Badlands in the late 1910s and the 1920s, it was clear that a tourism industry was already becoming established. Visitors could see the Badlands from the cars of the Chicago, Milwaukee and St. Paul Railroad, which ran south of and parallel to the formations.

At this time, Senator Norbeck and local concession owner Ben Millard were related through the recent marriage of Millard's nephew and Norbeck's daughter. Millard had seen an opportunity when he first arrived in the Badlands and read of plans to conserve the landscape and open it up for tourism. In the fall of 1927, Millard and Norbeck surveyed the area together to locate sites for developing a refreshment stand, a hotel, and a camp. They agreed that a stand would do well at Pinnacles, and they favored a site in the juniper grove at Cedar Pass for the campground and hotel. Although Millard and his sister attempted to lease the land from the federal government, they were blocked by Norbeck's legislation withdrawing the federal land from public occupation. Fearing their application to lease federal land would not be granted, 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 Cedar 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. 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. From available documentation examined for this CLR, it appears that Ben Millard managed the Cedar Pass property, although his sister Clara owned it until his purchase in 1937 (*see Figure 2-13*).[56]

Documentation regarding the construction of Millard's lodge and curio extension is somewhat sketchy. Some sources suggest the lodge was constructed in 1928 and it is possible this was the bark-covered building seen in an historic photograph. An addition was made in 1930 along with some rental cabins for overnight tourists. The cabins later became the mainstay of his business (*see Figures 2-14, 2-15, and 2-16).*[57]

Transportation Routes

Documentation regarding the development of roads in the vicinity of and within the Badlands National Monument is somewhat sketchy. It is clear from visitors' descriptions and historic photographs that an unpaved road led from Cedar Pass through the Badlands as early as 1919 when Louis Knowles reported on conditions in the area for the US Forest Service. The road was rough and often treacherous. Attempts to master the steep incline often resulted in overheated engines. Tired and frustrated drivers parked precariously on the rugged verges of the trail with no hope of help or refreshment in sight (*see Figures 2-17, 2-18, and 2-19*). Settlers likely created

[56] Schuler, *A Revelation Called the Badlands*, 26-27
[57] Schuler, *A Revelation Called the Badlands*, 27; Carey and Co. Inc. Architecture, Draft "Determination of Eligibility, Cedar Pass Lodge Area, Badlands National Park, Interior, South Dakota" (San Francisco: prepared for National Park Service, 2002).

their own roads, crisscrossing the terrain where possible, primarily following section lines and connecting main roads to the interior of their privately owned parcels.

A draft National Register Multiple Property Nomination for Historic Road Resources at Badlands National Park describes the development of roads in the vicinity as follows:

> By the late 1920s, US Highways 14 and 16 stretched east to west through local townships in the area, Cottonwood, Quinn, and Wall. US Highway 16 approached the badlands region from Chamberlain, to the east, and turned sharply north about seven miles west of Kadoka, only to turn sharply west again ten miles further where it joined US highway 14. These two highways skirted the badlands north of the Monument boundary[58] (*see Figures 2-20 and 2-21*).

Two railroad lines also served the area. The Chicago & North Western Railway passed near the town of Wall north of the Monument. The Chicago, Milwaukee, St. Paul and Pacific ran along and through the southern boundary of the proposed monument, paralleling State Highway 40 to Rapid City.

The lack of safe, reliable public roads was clearly seen as a problem by many parties interested in developing the Badlands area. Early visitors entering the Badlands from Kadoka or Cottonwood had driven the 'narrow and precipitous' route through Cedar Pass. One visitor described it as follows:

> The passes become more crooked and the grades more steep. The road is bordered by profuse scrub 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 the risk is small.[59]

Tourism was hindered because many of the interesting landmarks remained inaccessible. Scarcity of water also presented an obstacle as all known springs in the area were on patented land, and the springs flowed only during the early spring, barely supplying enough to meet domestic needs.

Roads in the area of the Badlands did not differ too much from roads in other rural parts of the country. They were too few, poorly maintained, and frequently impassable. Since the late 19th century, farmers all over the country who had trouble transporting their products to market had campaigned for better roads. The national Good Roads Movement, active in various states, promoted the construction of new roads and improvement of existing transportation routes. Whether it was appropriate to involve federal or state government was debated within the movement. In South Dakota, the Good Roads Movement began as early as 1908.[60]

In December 1902, Congressman Walter Brownlow introduced the first bill suggesting a unified system of national, state and local roads; the bill provided for cooperative permanent

[58] Karmizski, Draft "National Register Multiple Property Documentation, Historic Roads Resources," Section E, Page 9.
[59] Mattison and Grom, *A History of the Badlands*, 30.
[60] http://www.tfhrc.gov/pubrds/summer96/p96su2.htm (accessed May 2004).

improvement of public highways. The introduction of Henry Ford's inexpensive automobile—the Model T—in 1909 provided a stronger impetus for such a system as far greater numbers of the population suddenly had the means to travel cross-country.

Better roads were clearly needed to access remote rural areas like the Badlands. To address this problem, Congress passed the Federal Aid Road Act in 1916. The act ensured that each state would have a highway agency with engineering professionals to carry out federal-aid projects, that projects were designed and constructed properly, and that rural life was enhanced by focusing on local or post roads rather than long-distance roads. In 1916, the South Dakota State Highway Commission was created to take advantage of federal monies available for state highway construction. Additional state legislation providing for new road construction was passed in 1917 and 1919.[61]

The question of safer roads at the Badlands was addressed when the South Dakota Highway Commission announced plans to build a new highway through the area; its exact route became a cause of competition as interested parties viewed the highway as a business opportunity. The state, attempting to save costs, wanted to construct the road through the least rugged part of the country. This meant that it would avoid the area around the Wall, which encompassed a range of formations dividing the prairie from the valley below. Norbeck and Millard hoped the highway would instead follow the Wall, thereby providing access to the dramatic landforms of the Badlands.

Millard surveyed the route he and Norbeck felt would be more scenic and interesting to tourists and eventually succeeded in convincing the state to extend the highway, as originally proposed, east from Big Foot Pass close along the Wall and up through Cedar Pass. At the same time that Norbeck was promoting the Badlands as a tourist destination, he also promoted the development of Custer State Park. Senator Norbeck became 'legendary' at Custer State Park for supporting the design of roads that would lead the visitor through scenic areas, yet preserve natural beauty by having the road curve around natural resources.[62]

In 1928, State Highway 40 was under construction. Seven miles west of Kadoka where US Highway 16 turned north, State Highway 40 was proposed to continue in an easterly direction to connect with the existing State Highway at Kadoka. An existing portion of State Highway 40 approached the Badlands from the west, connecting Rapid City with Scenic, Imlay, Conata, and Interior. From Interior it headed north toward Cedar Pass and south of Cedar Pass stretched further east, about fifteen miles. State Highway 40 was described as a graded road between Rapid City and Scenic and as a dirt road from Scenic to a point northeast of Interior. From that point northeast of Interior, the road was graded through Cedar Pass as well as along the fifteen-mile road segment running east, south of Cedar Pass (*see Figure 2-22*).[63]

By 1935, automobile travel was much improved as is evidenced by an NPS report that described the forty-two miles of existing roads within the Badlands Monument boundaries. Of these roads, twenty-one miles were graveled, and the other twenty-one were graded to a high standard. The

[61] http://www.tfhrc.gov/pubrds/summer96/p96su2.htm (accessed May 2004).
[62] Karmizski, Draft "National Register Multiple Property Documentation, Historic Roads Resources," Section E, 10.
[63] Once the state had fulfilled obligations to construct roads in conjunction with the establishment of the Monument, responsibility for upkeep and maintenance of the roads within the Monument boundary fell to the NPS.

route through the Monument was designated as State Highway 40. It arose from US Highway 16, seven miles east of the proposed monument, entered the Monument about four miles north of Millard's hotel at Cedar Pass, and passed through Cedar Pass, Big Foot Pass, Dillon Pass, and Pinnacles Pass before reaching its terminus at Sage Creek (*see Figure 2-23*).[64]

At Cedar Pass, a three-mile segment of low-standard road led from the Monument area to Interior. A high-standard road connected Interior with the Monument highway about three miles west of the Cedar Pass area. The NPS report indicated that one of these roads should be eliminated, and from the standpoint of traffic planning, that it should be the latter.[65]

At the time the NPS began discussing a major lodge development in April 1935, the park could be entered from the east by way of State Highway 40. An improved roadway led to the Cedar Pass area and connected with an existing road from Interior running beside the Chicago, Milwaukee and St. Paul Railroad.

In 1936, the greatest advocate for a park at the Badlands, Senator Peter Norbeck, died. Norbeck had, however, lived to achieve many of his goals. Roads had been constructed, land acquired and boundaries for the National Monument authorized and established. In 1936, Congress authorized the enlargement of the National Monument to 250,000 acres by presidential proclamation.[66]

EARLY MASTER PLANNING AND CCC DEVELOPMENT, 1938–1941

National park master planning had begun in the late 1920s but only really developed as a fully supported practice in the 1930s. At the time, it was intended to consider all park improvements over a six-year period. By 1939, master planning was a component of the many emerging programs of the NPS, assisted by the New Deal program initiated by President Franklin D. Roosevelt.[67] This section examines the initial Cedar Pass planning efforts conducted by the NPS, the physical development implemented by the CCC, and the additional land acquisition that accompanied these efforts prior to World War II.

Master Planning

Master planning became a mandatory NPS process in 1929 under the leadership of landscape architect Thomas Vint.[68] Landscape preservation and conservation principles established in 1916 were used to determined policies that guided planning. Key park service personnel including NPS Director Stephen Mather and Vint, among 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

[64] Howard W. Baker, Resident Landscape Architect, "Report to the Deputy Chief Architect on Development of Proposed Badlands National Monument," November 13 and 14, 1935. [Miscellaneous Records, BNP Library.]
[65] Baker, "Report to the Deputy Chief Architect of Development of Proposed Badlands National Monument," 1935. [Miscellaneous Records, BNP Library.]
[66] Mattison and Grom, *History of Badlands*, 9.
[67] McClelland, *Building the National Parks*, 7.
[68] McClelland, *Building the National Parks*, 293.

of natural scenery.[69] Schemes resulting from a philosophy that protected the natural environment provided for development in clusters where 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 concessionaire buildings. The siting of facilities was further complicated by the need for certain structures to be visible to the public and others to be screened.[70]

At the proposed Badlands National Monument, master planning conformed to principles set out by the main office of the NPS 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.[71]

In 1938, much of the activity at Badlands continued to focus on land acquisition but also included planning for physical development (*see Figure 2-24*). Although acquisition of land remained problematic as much of the area was still in private ownership, the most pressing infrastructure need was providing clean water regularly to large numbers of people. An administrative facility was also needed to oversee management of the area. Such a facility would encompass offices, but also cover visitor facilities such as a museum and concessions 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.

A master plan developed for the Badlands in 1938 described the advantages and disadvantages of constructing a future headquarters at either of the two already-developed sites. 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 (*see Figure 2-25*).

Nevertheless, another factor to be considered was the private development that had already been established at Cedar Pass. Ben Millard's visitor 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 (*see Figure 2-26, 2-27, and 2-28*).

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, despite Millard's construction of a

[69] McClelland, *Building the National Parks*, 138.
[70] McClelland, *Building the National Parks*, 145-148.
[71] Baker, "Report to the Deputy Chief Architect, Branch of Plans and Design, on Development of Proposed Badlands National Monument," 1935. [Miscellaneous Records, BNP Library.] The idea of adobe or sod buildings appears to have been dropped early on in the planning and design process.

stucco addition to the Lodge. One advantage to Millard's development appears to have been the layout and organization of buildings on the landscape. The 1938 master plan shows the configuration of Millard's development, which it suggests be demolished (*see Figures 2-29 and 2-30*).

The Site Design for Pinnacles

The proposed headquarters site at Pinnacles was on a promontory 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, the water supply was severely limited.

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 and 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 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 near one another. The concessionaire's wing would have a dining room and lounge from which visitors could view the spectacular and colorful landscape.[72]

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.

[72] National Park Service, "Master Plan, Badlands National Monument, South Dakota," 1938.

Despite the many advantages of the Pinnacles site, it was ultimately rejected in favor of the Cedar Pass site. The primary concerns regarding the Pinnacles site was that it lacked available water, and locating administrative facilities in Wall was considered inefficient for park operations.

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 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 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 twenty-eight acres of land to the endeavor.[73]

NPS 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 additional buildings had already been constructed at Cedar Pass relating to maintenance and administration.[74]

Once the issue of location had been settled, materials had to be selected. 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 vicinity from which a hard, gray stone could be obtained in quantities sufficient to construct all of the proposed buildings, although it is not known what type of stone this was. The master plan conceded that stone construction would be more expensive than sod, but noted it would also be "far more permanent, free of vermin attack, and the erosion to which sod is subjected." In addition, stone 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."[75]

[73] Karsmizki, Draft "National Register Multiple Property Nomination, Historic Roads Resources at Badlands National Park," Section E, page 20; Mattison and Grom, *History of the Badlands*, 43.
[74] Superintendent's Reports, April 1941. BNP Library.
[75] National Park Service, "Master Plan; Badlands National Monument, South Dakota," 1938.

In 1939, the Badlands was proclaimed a national monument consisting of 150,000 acres. It became the seventy-seventh national monument and the 151st area in the federal park system to be administered by the NPS.

Early Park Development

The Civilian Conservation Corps was brought into the Badlands to provide much needed labor for park development. Initial construction efforts were impaired by the fact that the CCC camp had been located at Quinn Table and much of 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 and mess hall was constructed at Cedar Pass; later, a camp was established there as well. Custodian's reports indicate that the 'army' was to erect a camp for CCC laborers at Cedar Pass. It is not clear if this was possibly a way of referring to the CCC or was indeed an army unit.[76] The earlier CCC camp at Quinn Table was abandoned and transferred from the Army to the NPS. A caretaker was assigned to the Quinn site to repair broken windows and close up the buildings.

The new CCC camp was located just south of the Monument boundary on land owned by the Soil Conservation Service (SCS) and was protected from the severe, prevailing, 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.

The new CCC camp included a utility area, maintenance garage, and blacksmith shop. Although the camp was ultimately dismantled, some of the buildings and associated features in the utility area were retained and became the park's maintenance yard. The maintenance yard remains separated from other functions in the Cedar Pass Developed Area. With the retention, and ongoing development of this utility area, a precedent was set for the location of maintenance facilities away from other developed area functions.

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 dollars 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.

The early years of park development also focused on providing the visitor with information. Altogether, fifty signs constructed of wood and concrete were erected at Cedar Pass and elsewhere along visitor routes. Roads were improved with new layers of gravel, abandoned farmsteads were razed, a ranger was employed to assist visitors, and a building was constructed near the Pinnacles checking station that would serve as the temporary residence for the acting custodian until a permanent residence could be completed at Cedar Pass. The ranger played an

[76] Superintendent's/Custodian's Reports, September 1941. BNP Library.

important part in addressing visitor needs by documenting and ranking their requests for things like road improvements, expanded museum facilities, and restroom facilities.[77]

Visitors complained of the lack of sanitary facilities and water and the condition of the highway. The NPS constructed five new parking areas along the Monument in the early 1940s as park managers feared that erosion was exacerbated by drivers pulling over their cars along roadsides (*see Figure 2-32*).

This was addressed in 1940 when Millard constructed a new gas station and comfort station 100 feet west of the lodge. This building was constructed with underground public flush-type toilets, an improvement over the pit toilets that had served the camp in previous years. Millard constructed a camp building, 36 feet by 70 feet, to house men's and women's toilets for the entire cabin camp and the old gas station was moved south near the utility area, leaving the north side of the highway free of obstruction (*see figure 2-33*).[78]

Visitors felt the park should be more widely advertised and ranger-naturalist services added. In 1940, Millard offered the only such services at Cedar Pass Lodge, where he lectured nightly on the geologic history of the Badlands, showed several reels of film of the Badlands, Custer State Park, and Wind Cave National Park. The NPS considered his lecture and accompanying film in conformance with park policies and satisfactory to Monument visitors, although it was clear that the Monument's significance was not fully appreciated by visitors.

In January 1941, Ben Millard began construction of a sewer line from his lodge, intending to connect it with the NPS sewer system. At about the same time, 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.

As the facilities at Cedar Pass improved, local landowners requested assistance with improvements that would provide connections to their lands, and to services they might want to make available to visitors. The NPS denied a request to establish a road from the highway to the gas station and refreshment stand across State Highway 40. A request to open a saddle horse concession in the Cedar Pass area was also denied. The latter request was denied on the basis that facilities available for caring for and stabling horses were inadequate and demand for such a concession was limited. The concession was subsequently set up on privately owned land.[79]

Relations with adjacent landowners were not always on the best of terms and conflicts arose particularly with reference to accessibility of land for grazing. The park wanted to avoid having stock graze throughout the park land while farmers wanted to continue their traditional practice of allowing the animals to roam freely. A paucity of fences meant that herds of domestic stock grazed at will over government land, as well as lands owned or leased by private individuals. The NPS was concerned that the grassland was threatened from overgrazing. Owners for their part attempted to cooperate but were unable to afford to fence their property.

[77] 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.
[78] This building was rehabilitated in 1951 but sold in 1959.
[79] Superintendent's Reports, June–August 1940. BNP Library.

Acting Custodian Stricklin noted that: "It would appear that until the land at such strategic places within the Monument can be purchased such incidents will continue to occur."

> Grazing of sheep, cattle and horses on the Monument was noted—this is practically impossible to check as long as large tracts of county and private land exist within the boundaries here owners can headquarter herds of stock and allow them to overflow on to unmarked ground.[80]

At this point the NPS began to keep better records of land ownership within the designated park boundary, and determined that Jackson County owned 3,990 acres within the Monument boundary and private individuals living within Jackson County owned an additional 280 acres. In addition, Pennington County was found to own 10,589 acres within the boundary and private citizens residing within Pennington County owned another 16,383 acres. Eventually, these lands were incorporated into federal ownership and grazing permits were ceased.

In February 1942, federal agencies acknowledged the importance of beef as a commodity to support the war. In January 1943, under a plan proposed by Congressman Case to help in the "Beef for Victory" program, the NPS authorized grazing permits for the first time on federally owned grasslands within the Monument boundary. Under this program, the Monument was divided into seven grazing units. Land exchange occurred under an agreement known as the Recommended Program of Procedure, which made it possible to transfer without legislation 3,676.19 acres of NPS lands lying outside the park boundary to the Soil Conservation Service (SCS). This was done by order of the Secretary of the Interior in July 1949. An orderly grazing plan was established with the aid of the SCS and as part of the new agreement, permits for the grazing of sheep and cattle were issued to individuals or farming organizations with the understanding that the grazing would be terminated over the course of some eighteen years—by 1961—through mandatory reductions of a little more than 15 percent every three years.

The question of grazing was problematic for both NPS and stockmen alike, and numerous meetings were called in an effort to come to terms with the issues. This continued for some time. At a South Dakota conference in March 1954, for example, it was agreed that existing boundary lines in general should remain in place. Landowners within the Sage Creek basin were permitted to continue grazing under permit and the NPS agreed to look into the possibilities of establishing a fenced game reserve between Interior and Konata, and running north to Big Foot Pass for the showing of small bands of antelope, deer, buffalo and a few wild horses in natural prairie surroundings. It was also agreed that negotiations with the Oglala Sioux Tribe regarding exchange of Land Utilization (LU) lands in the Pine Ridge Reservation for Sheep Mountain on the west end of the Monument should continue.[81] The complicated land ownership patterns in the National Monument, along with the terms of the grazing permits, would plague the NPS for years.

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

[80] Superintendent's Reports, June 1940. BNP Library.
[81] The Land Utilization Project is part of the history of national grasslands, national forests, and the Soil Conservation Service.

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.

Millard also remodeled several cabins in 1941, added plumbing, and constructed one new cabin. It is estimated that the park was subsequently able to accommodate 125 people per night during the season, an increase of 25 over previous seasons. In addition, Millard donated to the NPS additional lands that he had purchased from Jackson County.

WORLD WAR II, 1942–1945

During America's involvement in World War II, Monument development at Badlands, including Cedar Pass slowed almost to a standstill. Many of the CCC laborers were called to serve in the military, and funding was reduced to such a degree that it barely covered minimal maintenance. Nonetheless, planning for development of the Monument continued. Lands within the Monument boundary were also 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 1942, a revised master plan focused on 'objectionable features' that would have to be removed in order to create a public place of natural beauty and interest. The Chicago, Milwaukee, St. Paul and Pacific Railroad, which passed through the park's southern boundary, was considered intrusive, and since it was a small, single-track branch line on a poorly graded roadbed and carried little traffic, it was hoped that the line could be moved, if not eliminated. In a few places where the line passed through grazing land, the right-of-way was fenced with barbed wire, also considered visually intrusive within the landscape. Five miles of the line passed through the Monument near the town of Interior, with another two miles of line running near the town of Scenic.

Some of the privately owned unimproved roads, particularly those located along the northern and southern boundaries that connected with the main Monument highway, were also considered a problem from an administrative and security perspective. The 1942 Master Plan proposed to gain permission to close these roads in the future.

Finally, the Millard cabins, which provided the only overnight accommodations within the Monument, were considered inadequate. It was proposed that these be acquired at some future date in order to control concessionaire development. The 1942 master plan illustrates twelve existing cabins, the dance hall, and a planned Custodian's Residence in the administration area. The 1950 Master Plan shows this building labeled as 'Building #12' (*see Figure 2-34*).

A memorandum regarding development at Cedar Pass noted that it should be kept relatively inconspicuous, with minimal tourist facilities, and lodging and food service kept at one location.

It was considered especially desirable, soil conditions permitting, to keep all necessary utility lines underground.

The Monument's water supply was a constant source of concern. In 1942, the cement-asbestos water line from the pumping station at White River to the reservoir at Cedar Pass suffered breaks due either to improper laying of the pipe or to abnormal settling from excessive rainfall. In every case the pipe was found to have broken near the middle of the thirteen-foot section, where the dirt bedding under the pipe had been soaked away by surface water that had penetrated the dirt backfill of the ditch.[82]

In 1943, members of the 21st Service Group of the armed forces constructed a bridge at the White River crossing west of Kadoka with an approach road following the water line from a point near the pumping station to join State Highway 40 directly south of the Monument headquarters area.[83] 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, joining State Highway 40, sometimes 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.

In April 1944, the landscape architect for Wind Cave National Park provided design concepts for tree and shrub plantings in association with the residences within Cedar Pass. The proposed plantings provided the buildings with a visual buffer. Other proposals suggested removing trees and shrubbery from in front of the administration building to establish a panoramic view of the surrounding landscape.

POST WORLD WAR II DEVELOPMENT, 1945–1956

By the time CCC efforts at Badlands were terminated in 1942, a number of administrative changes had occurred in the program at the national level. Diminishing funds and staff at the regional office level meant that regional landscape architects and architects spent less time at individual sites and were consequently less familiar with them. The craftsman's ethic and attention to detail, which had previously guided the design of structures, gave way to a functionalism in design, which advocated modern materials, streamlined forms, and mechanized technology. On the one hand, adherence to principles of rustic design, such as using curved lines and avoiding right angles continued, yet the character of park structures, roads, and trails began to change from the design of the New Deal era.[84]

At Badlands, visitation dropped precipitously during the war, with the number of overnight visitors reduced to two or three per night compared to fifty or more per night during the pre-war period. This prompted park officials to consider ways to improve facilities to attract visitors, and

[82] Superintendent's Reports, May 1942. BNP Library.
[83] Superintendent's Reports, September 1943. BNP Library.
[84] McClelland, *Building the National Parks*, 452.

make the park safer and more accessible. At this point visitor facilities owned by private concessionaire Millard were absorbed into a more comprehensive NPS development plan.

Visitor use facilities were separated from park administration and maintenance functions. For example, plantings screened the Cedar Pass reservoir and its access road was barricaded to keep out visitors. A fence also surrounded the sewage disposal lagoon behind the Cedar Pass Lodge and cabins.

During the 1940s, the development to improve facilities at Cedar Pass continued. The park mulched steep road shoulders and rugged narrow washes throughout the Monument in November 1945 as part of an experimental program. In 1947, the Rural Electrification Authority (REA) provided electrical service. Road improvements occurred in 1948: the park oiled almost four miles of State Highway 40 (also known as Monument Road) between Cedar Pass junction and Norbeck Pass (which then became known as Route 2), and the NPS secured a permit to change the State Highway 40 alignment.

The NPS completed the custodian's house in November 1946. In July 1948, a new sewer line was constructed from the custodian's residence to the old line. In 1946, Millard's gas station and restroom facilities continued to serve a desperate need; the park's ability to supply clean water for public use remained a problem.

Between May 1948 and the end of 1949, improvements were made to the utility buildings. Some were moved elsewhere to serve other uses. For example, one of the old CCC buildings was moved to the vicinity of the new Custodian's House and remodeled to function as a garage (*see Figure 2-35*). The old blacksmith's shop was moved to a site near the highway, and remodeled for use as a temporary headquarters office (*see Figures 2-*36 *and 2-37*). Between December 1948 and January 1949, the custodian's position was changed to superintendent.

In 1949, the NPS removed slab siding at the Cedar Pass Lodge and from some of the cabins and replaced it with stucco, and planned for grading the parking in front of the Lodge. Slabs were reused at building #11, which was the temporary headquarters. Grading at this area was begun in order to allow access to the building (*see Figures 2-38 through 2-40*).[85]

In June and July 1949, a large stock pond constructed west of Cedar Pass Lodge outside the south boundary brought about an unwanted concentration of grazing in and around headquarters, illustrating once again the undesirability of issuing grazing permits. However, these were soon to be terminated (*see Figure 2-41*).[86]

The 1950 Master Plan shows proposed features and the extant Millard development.[87] The Millard property sits along State Highway 40, with the lodge and custodian's residence at the head of a horseshoe-shaped cluster that comprised six large cabins and fifteen smaller cabins, a storage area, power house, laundry, and dormitories off the cabin area (*see Figure 2-42*). A stucco one- story addition was made to the lodge in 1950. Documentary evidence suggests that

[85] Superintendent's Reports, April 1949. BNP Library.
[86] Superintendent's Reports, July 1949. BNP Library.
[87] Drawing reference number NM-BL-029B.

Millard may have moved his cabins to accommodate the new alignment of the Cedar Pass Pinnacles road in the 1930s.

The 1950 plan proposed an administrative area sheltered at the foot of the formations. A utility road is shown connecting a sixty-car parking lot in front of the administration building with residential buildings clustered in a horseshoe shape along a secondary road off the utility area. A powder magazine was located in the distance off the old road to Interior and close to the 'present utility area' marked on the plan for obliteration. A proposed new utility area appears on the plan between the pump house and residential area in the area in which the CCC had their camp (*see Figure 2-42*).

The development shown in the 1950's Master Plan clearly builds on the ideas shown on the 1938 Master Plan. The alignment of the cabins, however—as noted earlier—appears to have been altered, possibly due to the realignment of the road extending from State Highway 40 in front of the Lodge (*see Figure 2-42 detail*).

Between mid-1950 and 1951, extensive rehabilitation of the utility site was conducted. Sixteen new highway signs were constructed, and the woodwork on residences was painted. Building #12 was completed, and building #9 received a concrete floor. A traffic counter was installed at Cedar Pass Lodge which was the only concession building left in the Monument, the concession building at the Pinnacles having been razed by this time, and Cedar Pass Lodge was considered the best place to keep track of visitation (see *Figure 2-43*). A drift fence was constructed to keep cattle from around the lower utility area and Cedar Pass Lodge. Sanitary features for building #13 were completed. New roofing was completed on building #1, the repair shop; #3, the gas and oil house; #5, the employees' temporary quarters; and #7, the storage shed. Buildings #3 and #5 each received a coat of silver gray paint.

Other minor alterations were carried out within Cedar Pass in the early part of 1950. These included the addition of a small enclosure in the rear of the administration building to protect the future fire danger station site and installation of a culvert beneath the service road at the upper utility area. In February 1951, electrical service was extended to the lower utility area. Although the site plan was simple, the NPS administrative headquarters area was taking shape. The NPS presence was symbolized by repainting and erecting the flagpole from the former CCC camp at the new headquarters site (*see Figures 2-44 and 2-45*).

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 park designation. 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.

Between 1952 and 1955, maintenance of roadways continued. In 1952, a mixture of buffalo and blue grama grasses as well as crested wheat was seeded on slopes along approximately three miles on the northeast entrance road; guardrails were installed, platform fills were completed, one trail was finished and another readied for pavement. Construction of a new utility road was finished; and new metal road signs were installed. Telephone service was extended to the headquarters at the Monument. Further rehabilitation of accommodations also occurred, with three cabins at Cedar Pass Lodge modernized with showers and toilet facilities. The park residential area was upgraded through the addition of prefabricated houses, and walks for all quarters. A 1953 proposed planting plan shows massings of plantings around the headquarters area as well as the employee residences, with scattered shrubs and trees articulating modern landscape characteristics. Crisp lines delineate the edges of irregular polygon-shaped beds within an amorphous, free-flowing grassy area. This planting scheme contrasted sharply with the geometric symmetry of the buildings, yet drew the surrounding area in, sculpting the natural and manmade into a continuous form in which indoor and outdoor space is shared. Landscape features at Badlands are in general quite sparse likely due to the harsh climate of the area (*see Figure 2-46*).[88]

Additional 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.[89]

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, 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. The initial 1955 plan for a campground differs greatly, however, from that ultimately constructed under the auspices of Mission 66 (*see Figure 2-47*).

MISSION 66, 1956–1966

See Map 2-1, 1966 Period Plan

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. In the development for future expansion and improvement, the early planning efforts were used as a foundation. This was as true at Badlands as it was elsewhere in the country.

[88] Carey and Co., Draft "Determination of Eligibility Cedar Pass Visitor Center," Section 7, page 9.
[89] McClelland, *Building the National Parks*, 466.

Promoting the Program

The sudden surge in visitors after World War II found park officials fighting for funding to support long-term plans for maintenance and rehabilitation. Had the early master plans of the 1930s and 1940s not been in place, it would have proven much harder for park administrators to develop the Mission 66 concept. The purpose of Mission 66 was really an attempt to update, carry out, and improve on earlier master plans, such as the Badlands National Monument master plan of 1938.[90]

On December 9, 1951, Conrad Wirth was named Director of the NPS.[91] He devised a solution to the funding problems that had plagued development at the parks for years. Long-term projects required long-term funding sources and Congress had not been forthcoming in the past. In addition, many parks had been allowed to deteriorate during the war years, performing only minimal maintenance. Although fiscal recovery was slow following the war, visitation increased dramatically; and NPS officials realized that parks were falling short in fulfilling a growing demand for quality recreation. In place of the traditional annual budget requests, NPS Director Wirth proposed petitioning for an entire decade of funding from Congress in order to correct the parks' degraded condition and provide sufficient assistance for them to realize their full potential. Wirth and his colleagues devised a plan called Mission 66 that they hoped would fund projects beginning in 1956 and continue over a ten year period. Mission 66 had a framework of accepted standards that would ensure that basic facilities would be provided at all parks.

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.[92]

The statement went on to describe the importance of visitor "enjoyment-without-impairment," which considered protection of the resource. The fiftieth anniversary of the establishment of the NPS would occur in 1966, and total visitation at the nation's parks was projected to reach 80 million that year. Using the ten-year span between 1956 and 1966, Mission 66 was intended to "replace outmoded and inadequate facilities with physical improvements adequate for expected demands but so designed and located to reduce the impact of public use on valuable and destructible features." In addition, the program was intended to provide both facilities and personnel for visitor services of the quality and quantity that the public was entitled to expect in its National Park System.

In January 1956, the NPS held a meeting to discuss the development of Badlands National Monument within the parameters of Mission 66; from this meeting, an executive committee was created for the purpose of steering development at the park. The following month, a second

[90] Conrad L. Wirth, *Parks, Politics and the People* (Norman: University of Oklahoma Press, 1980), 59.
[91] Wirth, *Parks, Politics, and the People*, 21.
[92] "What is Mission 66," in Badlands National Park Mission 66 folder, National Archives – Plains, Kansas City, MO.

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. Because the Mission 66 plan would greatly affect visitation, allowing far greater numbers than ever before to visit the park, and likely provide benefits to local businesses, it was important for the NPS to keep the local population informed of their decisions.

Programmatic changes due to Mission 66 encompassed education and interpretation. Not only would there be enhanced opportunities to provide information to the visitor, the NPS would use that information to protect the physical environment from deterioration. 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.[93] Information was relayed to the visitor through a building—visitor information center—designed specifically for the purpose of explaining the significance of the park's natural and cultural resources.

The new visitor information center became a focus point of Mission 66 developments. Prior to the development of this type of facility, which became known as the Visitor Center, the only contact visitors had with park staff had been via a small information station staffed by seasonal employees during the summer, and only 5.1 percent of park visitors typically stopped at this station (*see Figure 2-48*).[94]

The 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 such an information locale could be improved to provide a range of information encompassing indigenous natural features and cultural resources. This was a primary feature of the Mission 66 Visitor Center concept.[95]

Integral to the planned central role of the Visitor Center was its placement in the park. Early in the Mission 66 program, NPS architects identified three potential locations for the placement of Visitor Centers:

> 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.[96]

[93] McClelland, *Building the National Parks*, 466.
[94] This information station was moved to the Pinnacles area after the opening of the new Visitor Center at Cedar Pass. Superintendent's Notes, 1958. BNP Library.
[95] Wirth, *Parks, Politics and the People*, 45.
[96] Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type* (Washington, DC: Government Printing Office, 2000), 28.

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."[97]

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.[98]

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. Through 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, displays 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 (*see Figure 2-53*).[99]

After several refinements to the preliminary design, Doty handed over the plans to the Rapid City architecture firm of Lucas, Craig and Whitman. The final design deviated only slightly from its conservative rectangular footprint and spare detailing. His "z"-shaped design was closer in many ways to an attempt to express the Park Service Modern design sensibility and would have

[97] Allaback, *Mission 66 Visitor Centers: The History of a Building Type*, 28.
[98] Carey and Co., Draft "Determination of Eligibility Cedar Pass Visitor Center," 9: 21.
[99] Carey and Co., Draft "Determination of Eligibility Cedar Pass Visitor Center," 9: 25.

been a stronger 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. [100]

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 (*see Figures 2-54 and 2-55*). It was the first Mission 66 Visitor Center to be completed in South Dakota.[101]

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. Gas service was connected to the five new residences and three existing residences, enhancing living conditions (see *Figures 2-56 and 2-57*). A year later, landscape improvements, consisting of 200 truck loads of subsoil and 350 truck loads of topsoil prepared the grounds surrounding the residences and Visitor Center. By the end of June 1959, the NPS constructed three seasonal apartments and a utility shop, erected sixty-four miles of fence, and established access roads to the residential area (*see Figures 2-58, 2-59, 2-60, and 2-61*).

In 1958, parking areas and driveways for the residential housing and seasonal residences were graded and surfaced with gravel. Trees and shrubs were planted at the apartment houses and the Visitor Center, and lawn was established and maintained. Landscaping was also carried out in other areas, such as at the headquarters. One hundred acres of wheat stubble was tilled and planted with native seed, noxious weeds around buildings and water reservoirs were removed, and soil sterilized. Planting plans from 1958 indicate that the following plantings were recommended for the headquarters area of Cedar Pass: Indiancurrant coralberry, fendler wood (a rose), lead plant amorpha, silver sage bush, common blue eyed grass, Virginia spiderwort, meadow rose, western virginsbower, skunkbush sumac, green ash, eastern redcedar, sand cherry, clove currant, sunshine rose, small soapweed, box elder, American elm, common hackberry, and symphoricarpos (*see Figure 2-62*).

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 their 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

[100] Carey and Co., Draft "Determination of Eligibility Cedar Pass Visitor Center," 9: 22.
[101] Carey and Co., Draft "Determination of Eligibility Cedar Pass Visitor Center," 9: 25.

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."[102]

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 (*see Figures 2-63 and 2-64*).[103]

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

[102] E.P. Meinecke, *A Campground Policy* (Ogden, UT: US Forest Service, US department of Agriculture, 1932), 10, quoted in McClelland, *Building the National Parks*, 278.
[103] McClelland, *Building the National Parks*, 282.

> 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.[104]

Campsite development became a priority at Badlands National Monument between 1956 and 1959. In addition to installing thirty American Indian-inspired picnic shelters, the park added six pit toilets and constructed guard rails and timber barriers at the Cedar Pass campground (*see Figure 2-64*). Interpretive signs were also added around the site. 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 (*see Figure 2-66*). The 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.[105]

Interpretive programs were enhanced by the addition of new signage including a large sign at the headquarters. Spot checks were made by rangers to keep count of the number of visitors who used the areas where interpretive signs were placed. It was found that interpretive contact rose steeply due to the new improvements. New programs were highly publicized, including the campfire program at the amphitheater, and slide programs at the Visitor Center, as well as more general information on the area.

The campfire program became a regular with the arrival of the first park Naturalist on June 1, 1958. A simulated campfire constructed of fiberglass and connected to copper tubing with light bulbs beneath was added. It was then covered with wood for a more realistic effect (*see Figures 2-67 through 2-69*).[106] These programs were conducted each evening during the travel season at the campfire circle and amphitheater near Cedar Pass and reached a total of 7,145 people annually. They consisted of lectures, slide-illustrated talks, and movies. Audio-visual aids were used to advantage in the operation of these talks; the equipment included an RCA 400 movie projector and an EKCOTAPE tape recorder plus slide projector. Excitement and enthusiasm for

[104] E.P. Meinecke, *Camp Planning and Reconstruction* (California Region: US Forest Service, S.B. Shaw, n.d. [ca. 1933]) 7.
[105] "Annual Report on Information and Interpretive Services," January 1959, Mission 66 Folder, BNP Library.
[106] Safety was an issue during implementation of the Mission 66 programs.

the new program spilled over into publicity events that resulted in write-ups in travel publications.[107]

Visitor safety was a primary concern during the Mission 66 era and places considered to be hazardous or pose possible harm were fenced, as for example at the gas distribution system. Visitor safety was addressed through the provision of fire equipment and placement of a prairie fire danger chart at the Visitor Center. In addition personnel were instructed in emergency rescue techniques.

Land Acquisition

Land acquisition programs that acquired the original extent of the National Monument occurred simultaneously with the move to update facilities at Badlands. The purchase of these additional lands was intended to enhance park recreational offerings, meet conservation goals, and prevent adjacent development. In 1956, NPS identified the following parcels important to purchase for their impact on the developed area at Cedar Pass:

> J. R. Richardson, 7.18 acres along the monument highway; Robert W. Kelly, 160 acres visible from within 1 mile of the road and considered an "eyesore" because of the corrals sheds and fences that "detract from the native loveliness of the prairie;" Lee Williamson, 40 acres on Highway 40; Mabel Keith, 160 acres close to the Monument Highway; S.N. Millard and B.H. Millard, 120 acres and Cedar Pass Lodge (*see Figure 2-49* for Kelly property).[108]

Despite excellent relations between the NPS and Ben Millard, there was concern that future owners of the Cedar Pass Lodge might not be so amicable. In March 1962, contract land appraisers evaluated the Cedar Pass Lodge property. Millard's holdings consisted of 72.01 acres and included the entire Cedar Pass Lodge development. The NPS eventually acquired the Cedar Pass Lodge and land for $275,000 from the Millard family. The Lodge was then run on a contract basis.[109]

Fencing

In 1957, the designated boundary of the National Monument was redefined, reducing the size of the park by approximately 11,000 acres and leaving an official acreage of 111,529.82 acres. After the boundaries were redefined, the NPS began a long-term program of fencing the Monument. The first segment of fencing was completed in 1957; by early 1962 some 108 miles of fence were erected, with 20 miles still to be completed. The fencing of non-federal land located within the National Monument would require an additional 92 miles of fence.[110]

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[107] Superintendent's Reports, June-August 1958. BNP Library.
[108] Memorandum: Superintendent BNM to Regional Director, Region Two, March 22, 1955 [Ten-Year Program for Acquiring Private Land] Mission 66 File, NAR.
[109] It is not clear if any buildings were constructed by the NPS within Millard's development. It appears that Millard and the NPS worked together to improve facilities but documentary evidence of their endeavors specifics was not identified in research conducted for this CLR.
[110] Mattison and Grom, *A History of the Badlands*, 36.

Signage

The first changes of the Mission 66 period to be made at Cedar Pass were interpretive signs located at the main parking area. The new signage was considered integral to providing better facilities for visitors. A study was conducted in conjunction with the State Highway Commission to design effective approach signs on highways leading to Badlands National Monument.

Telling the story of Badlands at various locations was also important in order for the visitor to receive a more complete understanding of the landscape. As has been discussed, the terrain of the Badlands was very rugged and, in places, impassable. Travel through the terrain by large numbers of visitors on foot or by automobile was risky both in terms of visitor safety and in protecting resource integrity. Attempts were made to reduce impacts to natural resources by directing visitors by means of prominent signage. In this way, significant locations could be viewed and understood. Visitors also appeared to be missing certain features of the landscape. This quote reveals NPS concerns:

> Too frequently the visitor drives hurriedly through the Monument and while greatly impressed with the unusual scenery he does not gain a full understanding of the area's significance. Unfortunately due to rugged topography and often adverse climatic conditions only the most interested and hardy visitors will undertake the extensive and prolonged examination of the area with a full appreciation of its values demands. However all-weather roads, parking areas, and interpretive signs at the principal points of interest will help the average visitor see and understand more of the natural features of the Monument. A series of overlooks, interpretive signs, wayside exhibits, in-place displays, and short self-guiding trails will unfold the story of the Oligocene Epoch and its fossils.[111]

Between 1957 and 1961, information relating to resources of the National Monument was provided through the addition of nine new interpretive roadside and trail exhibits, four rehabilitated exhibits and one replacement exhibit. Seven new designated picnic areas were also added to the Monument. State Highway 40 was regraded and an addition made with 1.9 acres of Millard property acquired for right-of-way purposes (*see Figures 2-50, 2-51, and 2-52*).

Adding major and minor support facilities refined the site management program at the park, for example, the placement of a flat-bed to hold a 300-gallon water tank that was to be used with the pump unit at Cedar Pass. The park renewed twenty-three grazing permits; acquired "Satan," a saddle horse used to check boundary fences and patrol isolated areas in the park; and constructed a barn and corral for the horse.

The lack of a comprehensive communication network at the Monument was finally rectified as Golden West Telephone Company installed a new telephone system that connected the Cedar Pass headquarters, residential area, and Cedar Pass Lodge, with the town of Interior. This provided telephones for some area ranchers for the first time in their history.

[111] Untitled document dated July 31, 1957 received at Mount Rushmore and available in BNP Library, miscellaneous documents.

By 1960, the Visitor Center was fully furnished with exhibits and a functioning audio-visual program. More visitors than ever were traveling to the site, necessitating the addition of an interpretive station at the Pinnacles overlook manned during the tourist season. Five new interpretive signs were erected at overlooks built as part of the road construction program. The amphitheater was modified with the addition of a new base for the amphitheater screen and a plaque that drew attention to the new name, the George H. Sholly Memorial Amphitheater. (This plaque was later removed). The amphitheater was also wired for sound (*see Figure 2-70*).

Almost 100,000 persons visited the Cedar Pass Visitor Center during June, July, and August 1960. Such heavy use revealed the need to further develop and expand facilities. At this time the evening program became the "thing to do" locally. Not just campers were attending but also people from the surrounding area, and those staying outside of the park in campgrounds and other accommodations traveled to the park for the evening program.

The audio-visual room was already considered to be too small. Seating was provided for thirty-six to forty people, which was insufficient for the use it received during peak periods. The parking area, lobby, and exhibit portions of the facility remained adequate during this time, however (*see Figure 2-71*).

NPS personnel implemented a new interpretive sign program for the twenty-eight miles of main Monument road with a total of twenty-two interpretive signs describing the pertinent aspects of the Badlands story. New signage was also added in order to eliminate confusion at the intersection of State Highway 40 and US Highway16A, just west of the headquarters. At the campground, new signage displayed fees at the campground entrance and camping sites were given numbered signs on the loop road. As the campground became more populated park rangers increased their activity, providing assistance from a new campground kiosk between the hours of two to ten o'clock p.m. during the main camping season.

In June 1962, greatly increased visitation necessitated extending the group picnic area to take care of the overflow from the regular campground. A section of plastic water line was installed a few inches under the ground to provide water, and two pit-type comfort stations were erected. Twenty regulation refuse can bases were installed in the Cedar Pass campground. Funds did exist for another loop on the existing campground in anticipation of increased visitation during the Seattle World's Fair of 1962, however, rains had prevented preparation of the road (*see Figures 2-72 and 2-73*).[112]

Transportation changes in the vicinity reflected national trends. On October 24, 1960, the last passenger train departed from the Rapid City depot. For the first time in seventy-five years, South Dakota's second largest city was without rail passenger service as the Chicago and Northwestern discontinued its Rapid City and Mankato to Minnesota run. Only freight service was thereafter available on the line, since the Chicago, Milwaukee Railroad had eliminated passenger service several years previously. Airline service however, steadily improved, with three companies operating flights from Rapid City, including non-stop flights to Denver, by 1960.

[112] Superintendent's Reports, June 1962. BNP Library.

NPS personnel completed various general maintenance activities within the park at this time. Such tasks included repainting roadside trash barrels with new lettering and adding a different type of attachment to keep the barrels from blowing over in high winds. Construction crews completed a new apartment building; graded and gravel-surfaced trails to the new comfort station at Cedar Pass and from Cedar Pass Lodge to the amphitheater parking lot and constructed a steel screen over the dump area for safe burning of trash. The park planted ten evergreen and sixty-nine deciduous trees around the Visitor Center and residential area in April 1962. At the same time they leveled and reseeded rough and barren areas, which had occurred due to the lack of rain in recent years.

The critical need for recreational facilities for NPS and Cedar Pass Lodge employees was addressed through the addition of a volleyball net, and square and round dances held on a weekly or more frequent basis as desired.

Nature trails received new signage and directional stakes at the trailheads and along the route. At the Visitor Center too, several routed plastic information signs were added, including a clock with hands announcing the next showing of the audio-visual program.

The small amphitheater, with a seating capacity of 170, was overcrowded and in need of rehabilitation because of increased use of the campground. At the Visitor Center too, the audio-visual room became inadequate with its 300 seating capacity and renovations became a priority.

In 1964, the park acquired Millard's Lodge and cabins, and immediately leased them as a concessionaire facility to be managed by the Oglala Sioux Park and Recreation Authority.

FURTHER EXPANSION AND NATIONAL PARK DESIGNATION, 1966–2003

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.[113]

The most recent addition to 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.[114]

Hartzog's ideas were reflected in developments at the Badlands 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.

Land that the United States Air Force had used as a practice firing range during World War II was returned to the NPS, but much of the range was declared excess property, with 2,500 unused acres being retained by the USAF. In 1968, Congress expanded the National Monument area by 133,000 acres, increasing its total 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 (*see Figure 2-74*).

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 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.

[113] George B. Hartzog, "Tomorrow in our National Parks" *National Geographic* 130 (No.1, July 1966): 48.
[114] Hartzog, "Tomorrow in our National Parks," 80.

Because visitor parking intruded into zones set aside for administration and park personnel residences, 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 (*see Figure 2-75 and 2-76*).

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 in 1977 (*see Figure 2-77*). 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 building.

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 was identified as a necessary project as was 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 State 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 (*see Figure 2-78*).

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 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.[115]

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.

In 1993, further archeological work built on the work undertaken in 1975 and the State Historic Preservation Office in South Dakota found that a site (the Johnny Site 39JK4) located just below the escarpment was eligible for nomination to the National Register under Criterion D for possibility of yielding information on the Initial Middle Missouri period. The State Historic Preservation Officer James T. Reynolds suggested that this may be "one of the best preserved village assemblages" in this part of South Dakota (*see Figure 2-80).*[116]

However, since that time erosion has almost completely destroyed any remnants of archeological material.[117]

In September 1999, an application was made for funding for a storage facility at park headquarters and additional monies were sought to rehabilitate and expand the Ben Reifel Visitor Center.

In 2000, various minor improvements were made, such as the installation of solar-lighting on trails between the headquarters and the campground, and construction of a new laundry and maintenance buildings to replace the 1920s buildings.

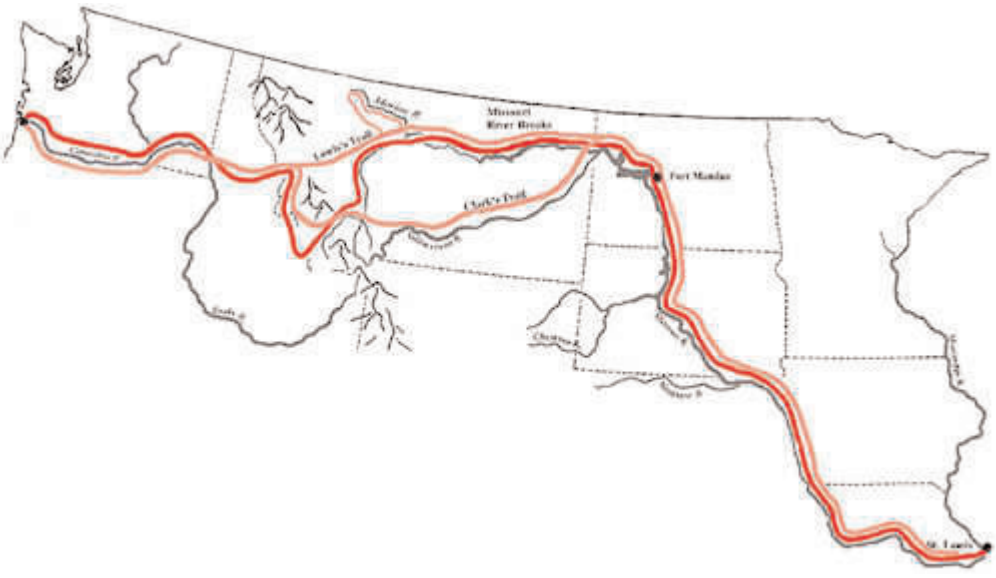
In 2003, the park undertook a General Management Plan/Environmental Impact to reconsider natural and historic resources at the park in general. In 2002, an archeological investigation was conducted in conjunction with remediation of a landslide on the Cedar Pass segment of the Loop Road in the North Unit. Continued movement associated with the slide had caused repeated breaks in the road surface, prompting concern for driver safety and continued visitor access to the park.

[115] Ernest Allen Conally, Associate Director to Honorable George McGovern, United States Senate, December 4, 1972.
[116] SDSHS site 39JK4 Determination of Eligibility, June 12, 1993.
[117] 95% Review Comment, Cedar Pass Badlands National Park Cultural Landscape Report.



HTTP:WWW.SDHISTORY.ORG/SOC/SOC_HIST.HTM. (South Dakota State Historical Society)

Figure 2-1: Illustration of land area included in the 1803 Louisiana Purchase.



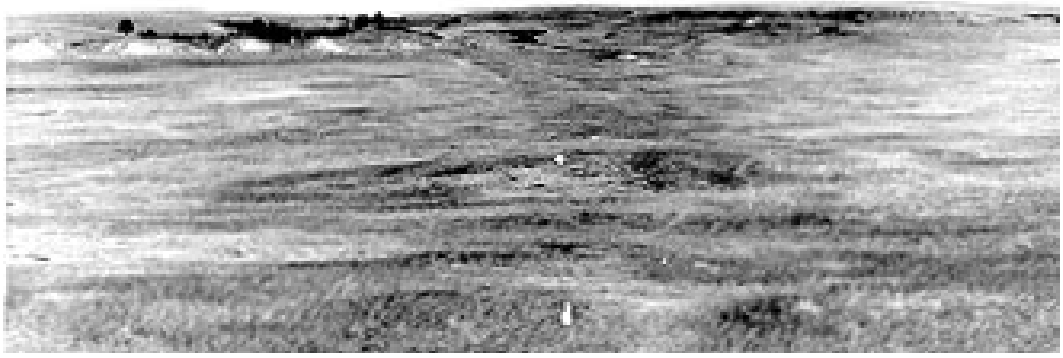
HTTP:WWW.SDHISTORY.ORG/SOC/SOC_HIST.HTM. (South Dakota State Historical Society)

Figure 2-2: The route taken by Lewis and Clark in the early 1800s.



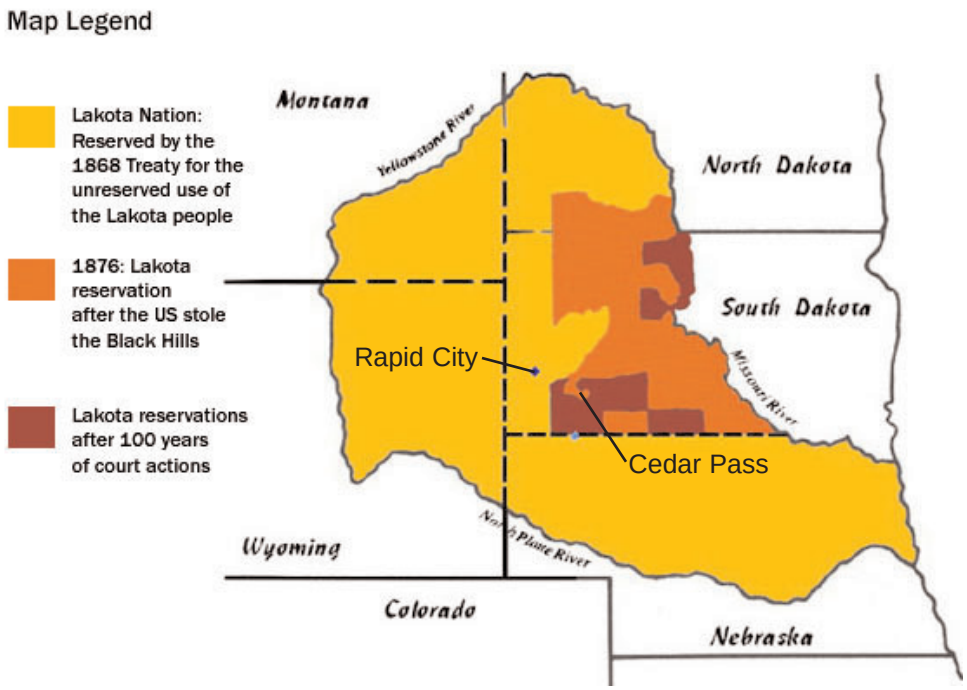
National Park Service

Figure 2-3: Fort Pierre–Fort Laramie Trail.



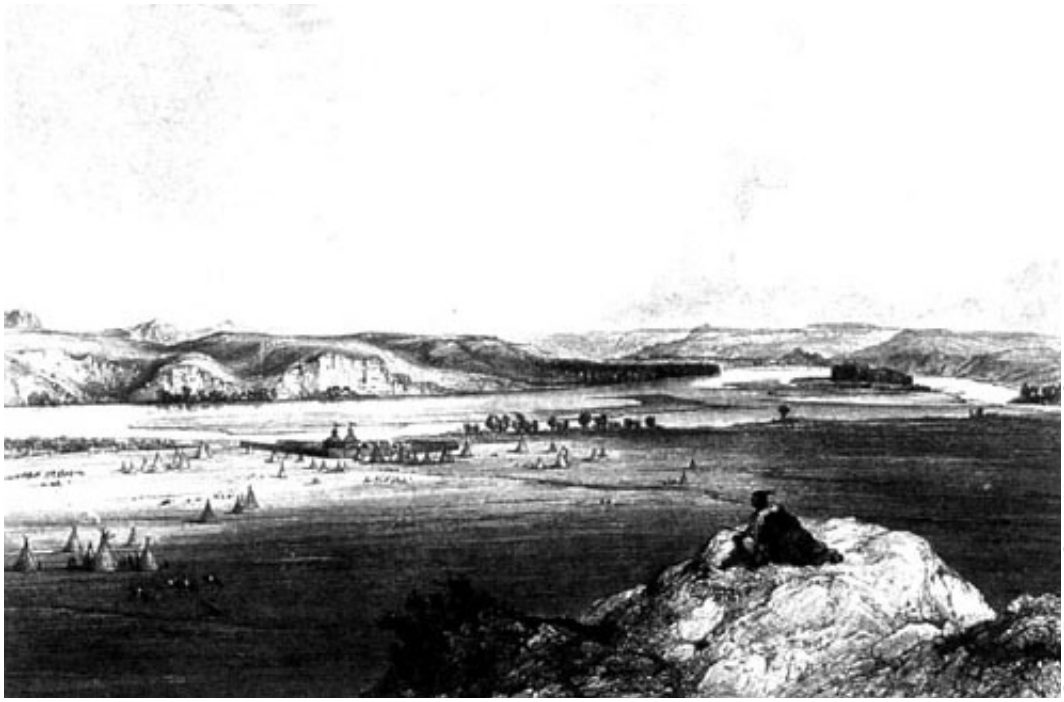
National Park Service

Figure 2-4: Fort Pierre–Fort Laramie Trail.



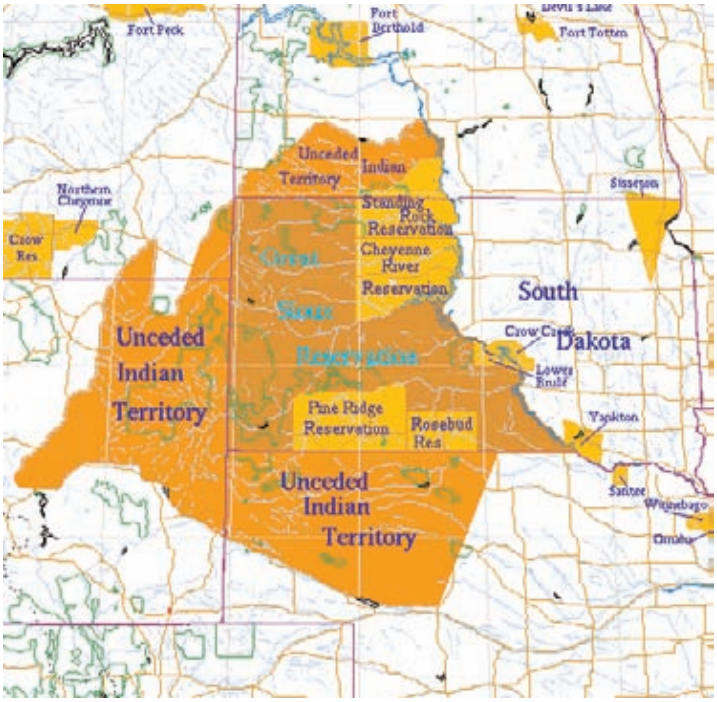
HTTP://WWW.CANKU-LUTA.ORG/PINERIDGE/LARAMIE_TREATY.HTML

Figure 2-5: 1851 Fort Laramie treaty for Indian territories.



South Dakota State Historical Society, http://www.sdhistory.org/soc/soc_hist.htm

Figure 2-6: Bodmer rendering of Fort Pierre.



SOURCE TO BE ADDED LATER

Figure 2-7: Map of Sioux Reservation subdivision based on Agreement of 1889.



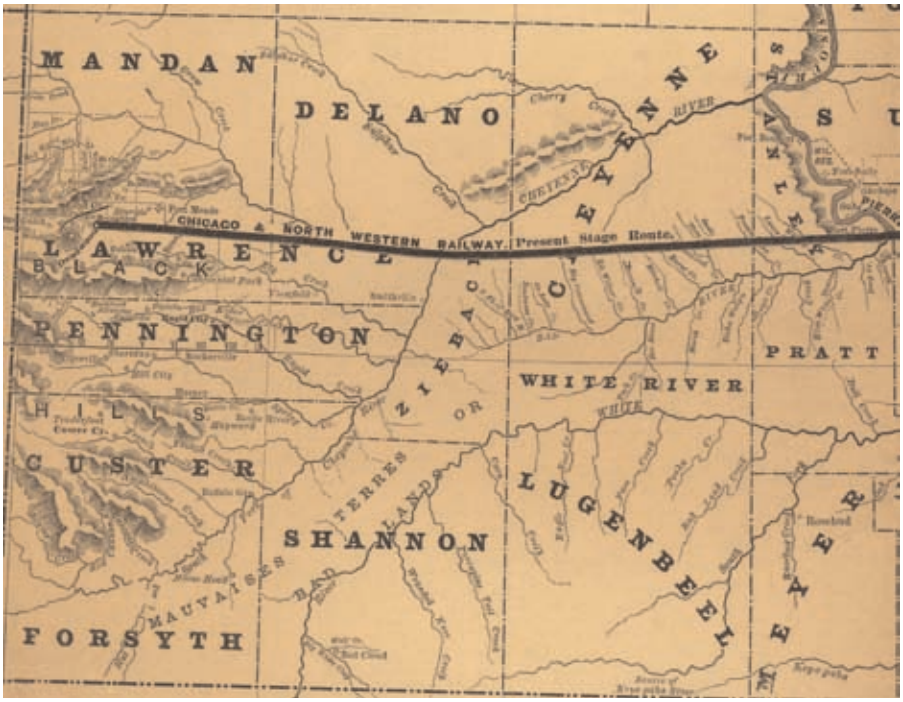
HTTP://WWW.BLACKHILLSBADLANDS.COMGO.ASP?ID=281

Figure 2-8: Pine Ridge Reservation.



WWW.PRAIRIEHOMESTEAD.COM

Figure 2-9: Sod homestead.



Library of Congress, U.S. and Territorial surveys, 1882

Figure 2-10: 1882 railroad map, showing stage route.



Badlands National Park Archive

Figure 2-11: Building in railroad town of Interior, ca. 1909. (BADL-1964-54B)



Badlands National Park Archive

Figure 2-12: View of ranch land adjacent to Badlands, 1935. Much of the land that would become Badlands National Monument was still in private ownership at the time. (BADL-1935-1)



Badlands National Park Archive

Figure 2-13: Millard's dance hall, ca. 1928. (BADL-1965-100)



Badlands National Park Archive

Figure 2-14: Millard's hotel at Cedar Pass, also known as a lodge, ca. 1928. (BADL-1968-3)



Badlands National Park Archive

Figure 2-15: Millard's rental cabins, ca. 1930s. (BADL-1935-3)



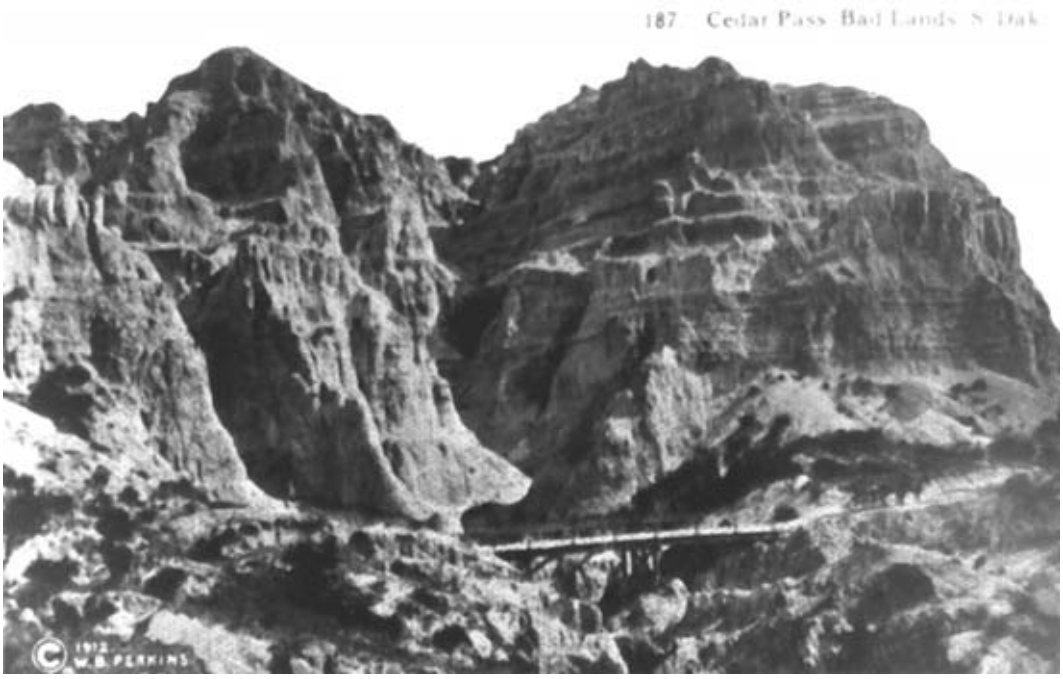
Jay Schuler, *A Revelation Called the Badlands*, pg. 32

Figure 2-16: Cabins at Cedar Pass, ca. 1930s.



Badlands National Park Archive

Figure 2-17: Early road through Cedar Pass, 1908. (BADL-1908-13)



Badlands National Park Archive

Figure 2-18: Bridge on early road through Cedar Pass, 1912. (BADL-1917-119)



Badlands National Park Archive

Figure 2-19: Car near the summit of Cedar Pass, 1917. (BADL-1912-52)



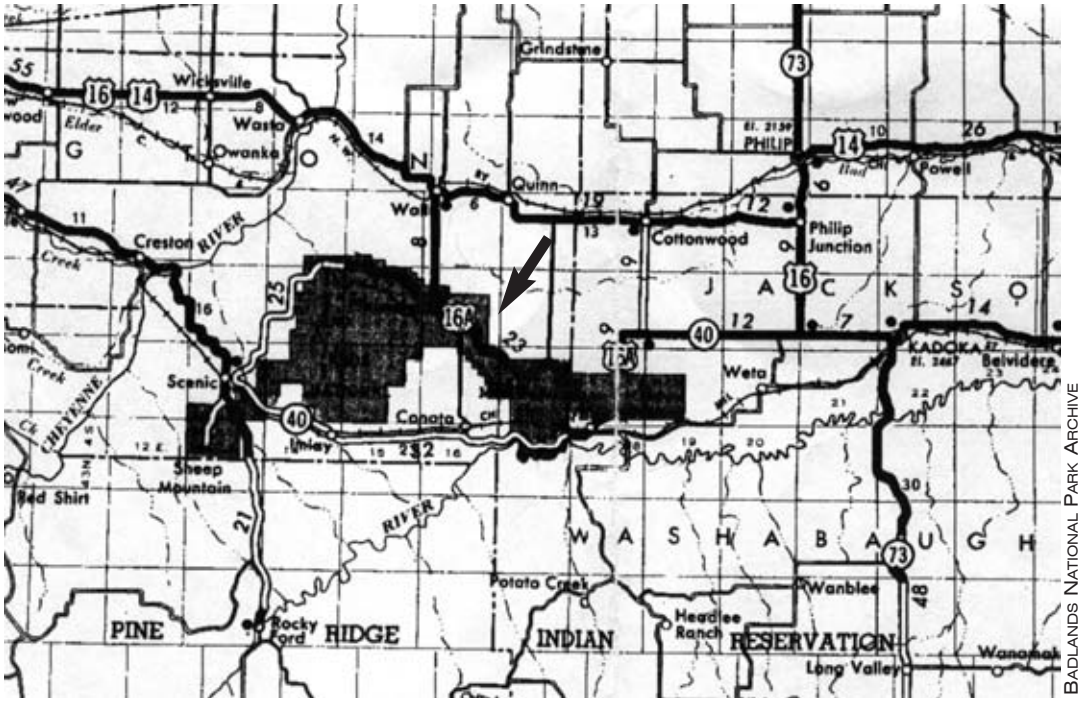
Badlands National Park Archive

Figure 2-20: Monument Highway construction, ca. 1931. (BADL-1931-1)



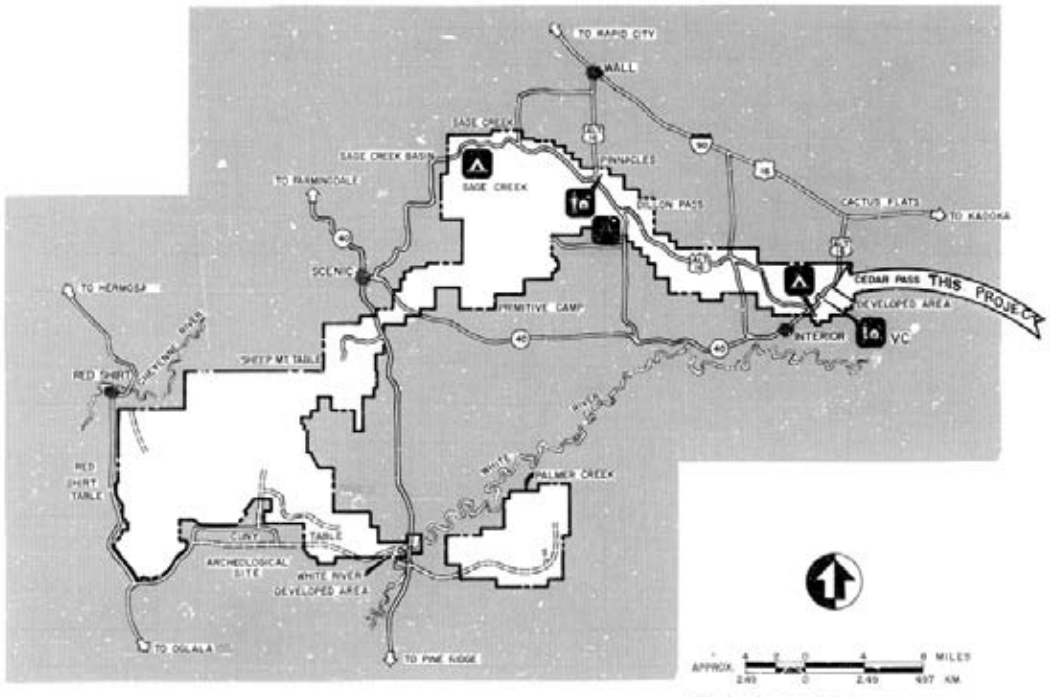
Badlands National Park Archive

Figure 2-21: (BADL-1931-2) Monument Highway construction, ca. 1931.



Badlands National Park Archive

Figure 2-22: 1940 Route 16A extension joining Monument Highway.



DENVER SERVICE CENTER, MAP 137 80059

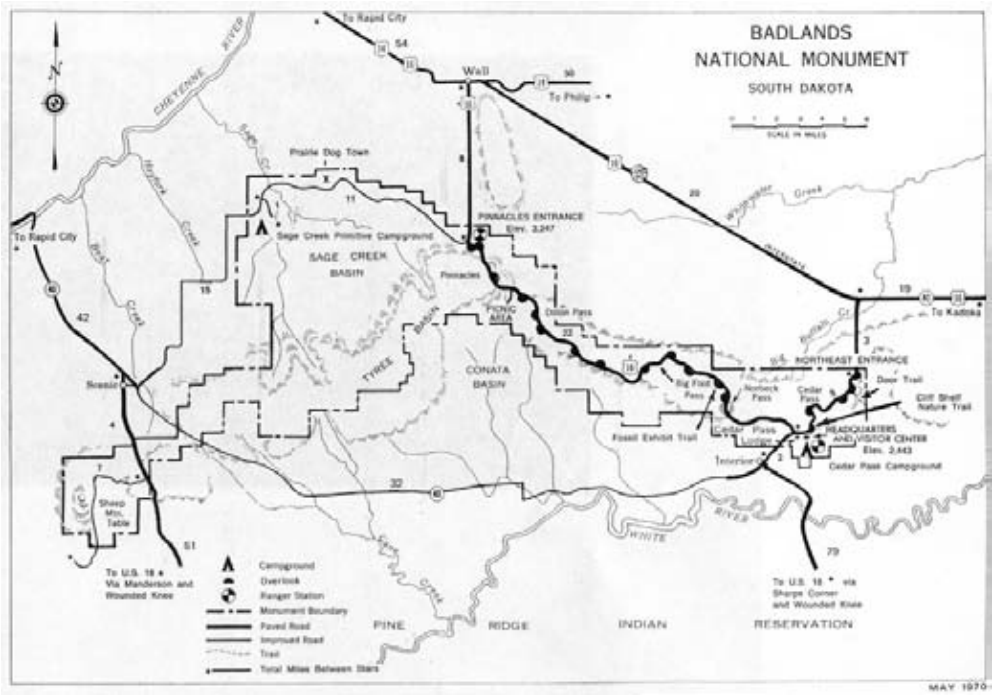
Figure 2-23: (detail) 1940 Route 16A extension joining Monument Highway.





BADLANDS NATIONAL PARK ARCHIVE

Figure 2-24: (details) Map of Land Acquisitions, 1938 Master Plan (NM-8L 3002B).



MATTISON, *A HISTORY OF THE BADLANDS*, APPENDIX E

Figure 2-25: Map showing U.S. 16, U.S. 14, and State Highway 40.



SCHULER, *A REVELATION CALLED THE BADLANDS*, PG. 28

Figure 2-26: Millard's cabin configuration prior to Monument establishment at Cedar Pass.



Badlands National Park Archive

Figure 2-27: Millard cabin configuration, 1938.



Badlands National Park Archive

Figure 2-28: Millard gas station at Cedar Pass along State Highway 40, ca. 1939. (BADL-1939-43)



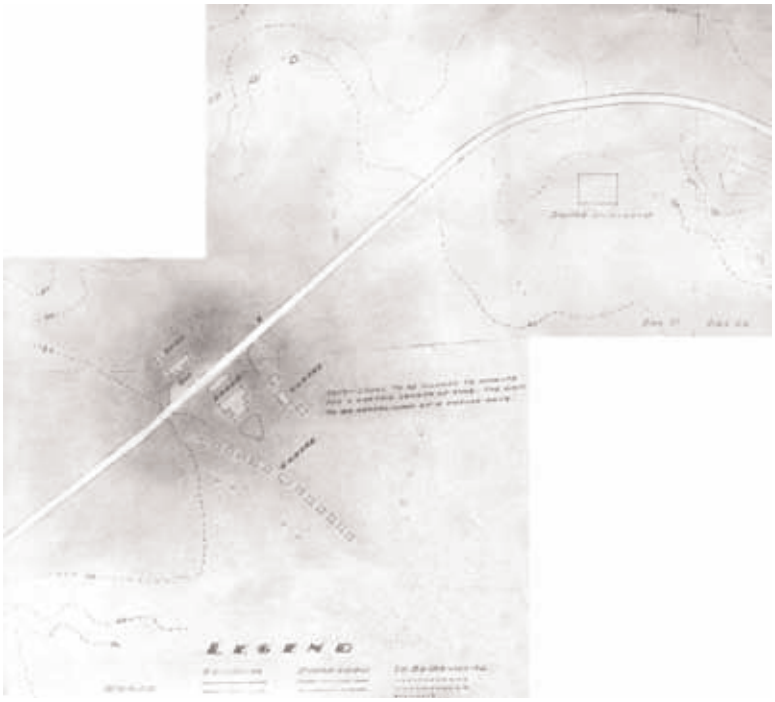
Badlands National Park Archive

Figure 2-29: Cedar Pass Lodge addition, ca 1940. (BADL-1940-11)



Badlands National Park Archive

Figure 2-30: Millard's Cedar Pass Lodge and addition, ca. 1940. (BADL-1940-9)





Badlands National Park Archive

Figure 2-31: (details) 1938 Master Plan showing Millard development with dance hall on the far right.



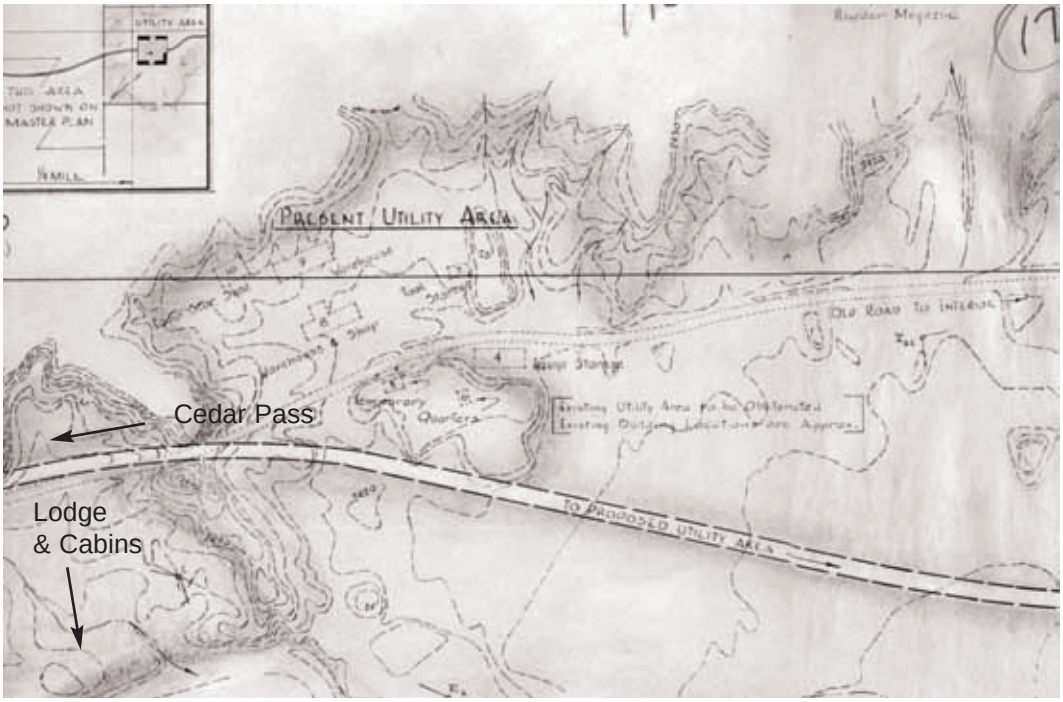
Badlands National Park Archive

Figure 2-32: Parking area on Cedar Pass, early 1940s. (BADL-1940-2)



Badlands National Park Archive

Figure 2-33: Photograph of gas pumps relocated to the CCC utility area. (BADL-1951-4)



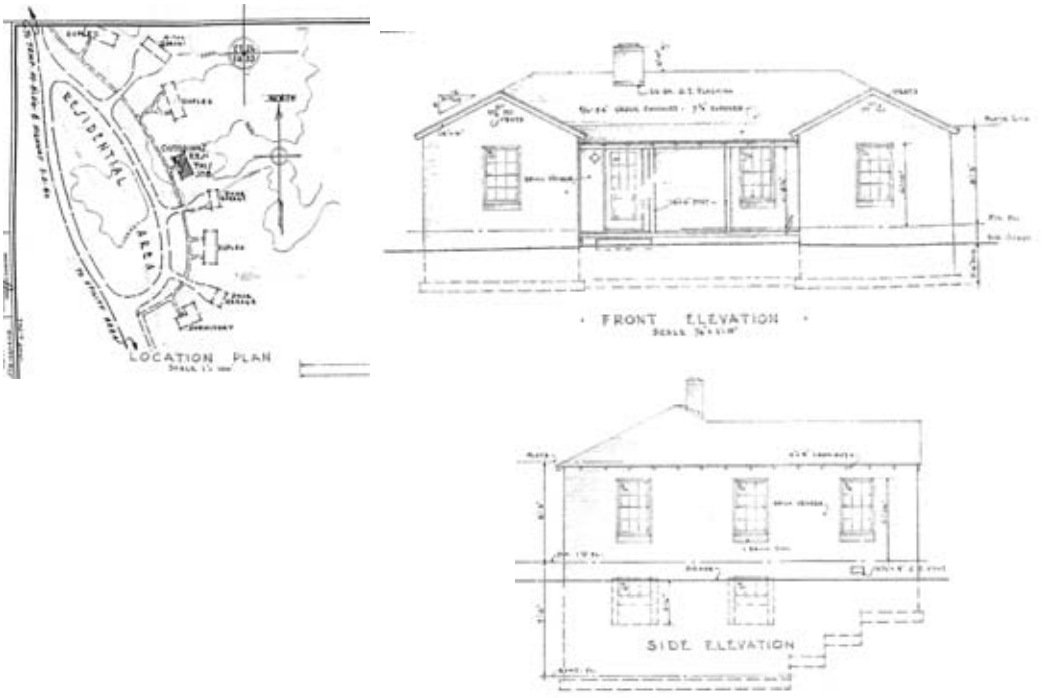
Badlands National Park Archive

Figure 2-34: (detail) CCC utility area on 1950 Master Plan.



Badlands National Park Archive

Figure 2-35: CCC utility area, ca. 1938. (BADL-1938-6)



DENVER SERVICE CENTER, TECHNICAL INFORMATION CENTER

Figure 2-36: (details) Site plan and elevation of custodian's residence. (DSC-2023-C)



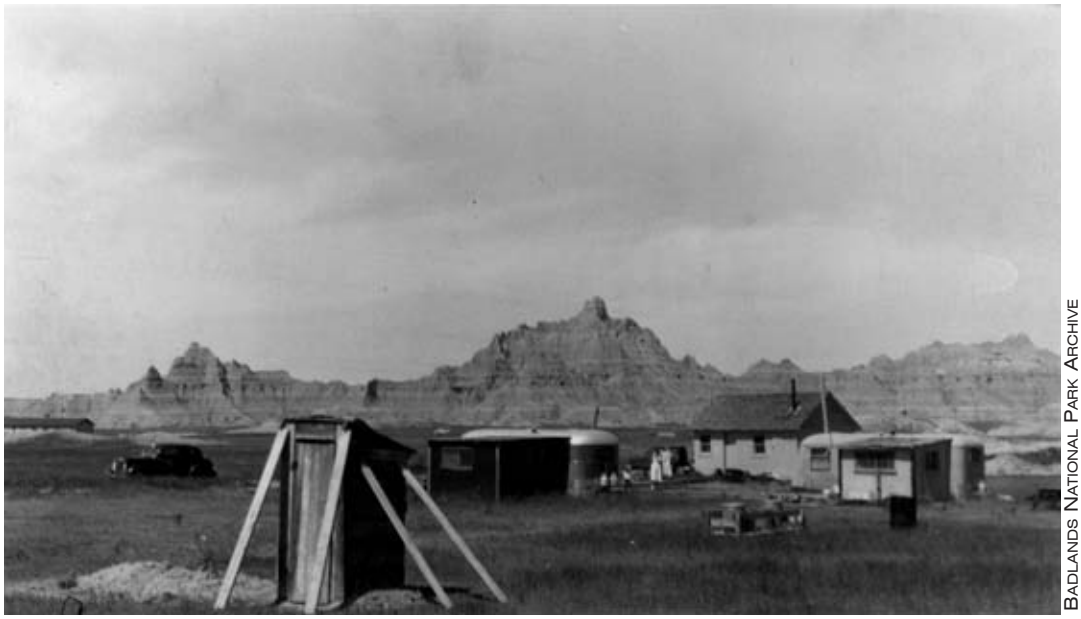
BADLANDS NATIONAL PARK ARCHIVE

Figure 2-37: 1949 photograph of garage (white building on the left) refitted as temporary residence . (BADL-1950-25)



Badlands National Park Archive

Figure 2-38: Photograph of the temporary headquarters office, ca. 1949. (BADL-1950-23)



Badlands National Park Archive

Figure 2-39: Headquarters area, ca. 1949 (same building pictured in figure 2-35). (BADL-1950-24)



Badlands National Park Archive

Figure 2-40: 1949, Millard cabin looking south.



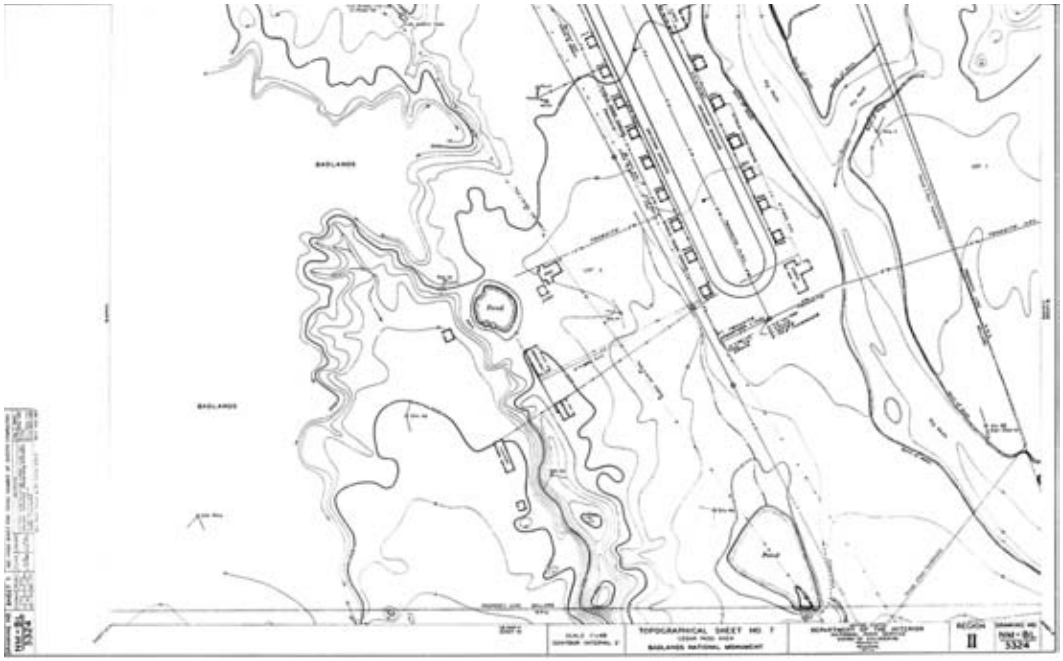
Badlands National Park Archive

Figure 2-41: 1949, Millard cabin newly stuccoed.



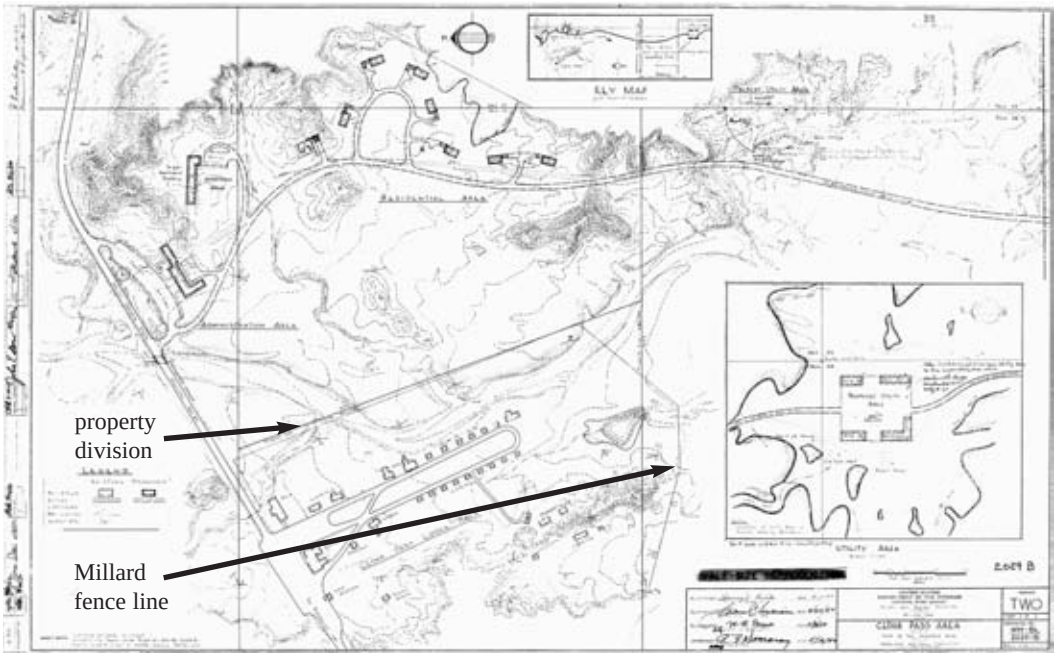
Badlands National Park Archive

Figure 2-42: 1949, Millard cabins looking west.



Denver Service Center, Technical Information Center

Figure 2-43: 1949 plan showing Stock Pond. (5324-8)



Denver Service Center, Technical Information Center

Figure 2-44: 1950 Master Plan showing property lines and fencing. (DSC-2029-B)



Badlands National Park Archive

Figure 2-45: Pinnacles site, Millard Development, ca. 1940s (razed by 1950). (BADL-1939-54)

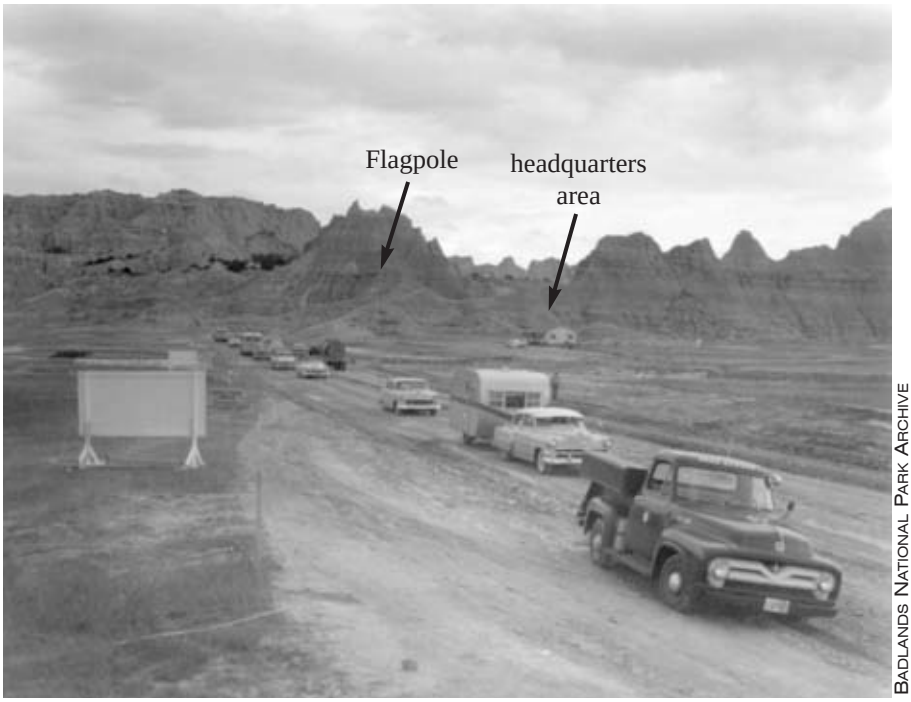


Figure 2-46: Early headquarters, ca. 1950. (BADL-1956-24)

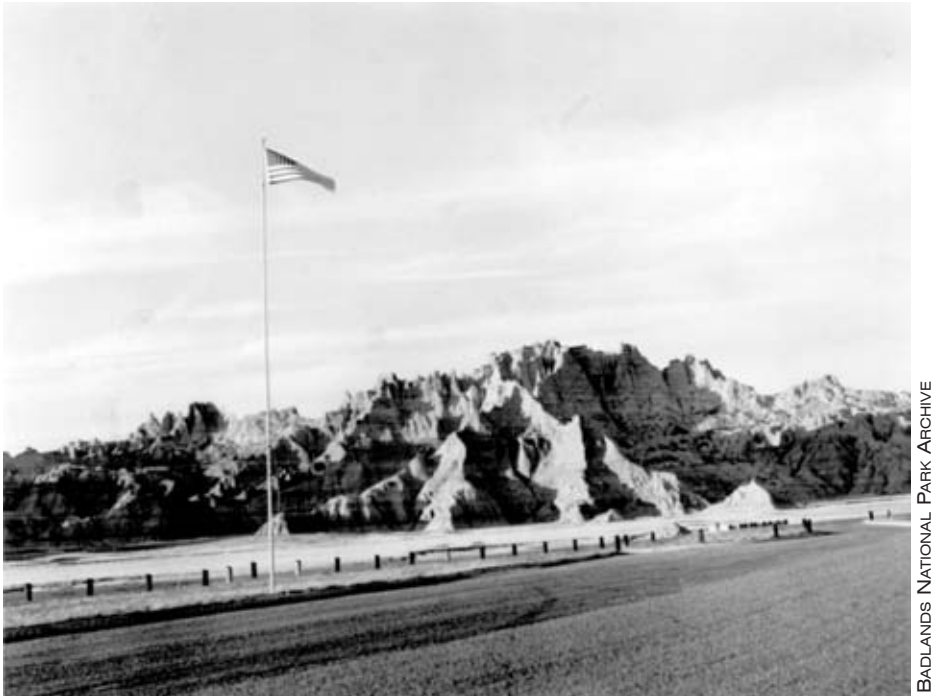
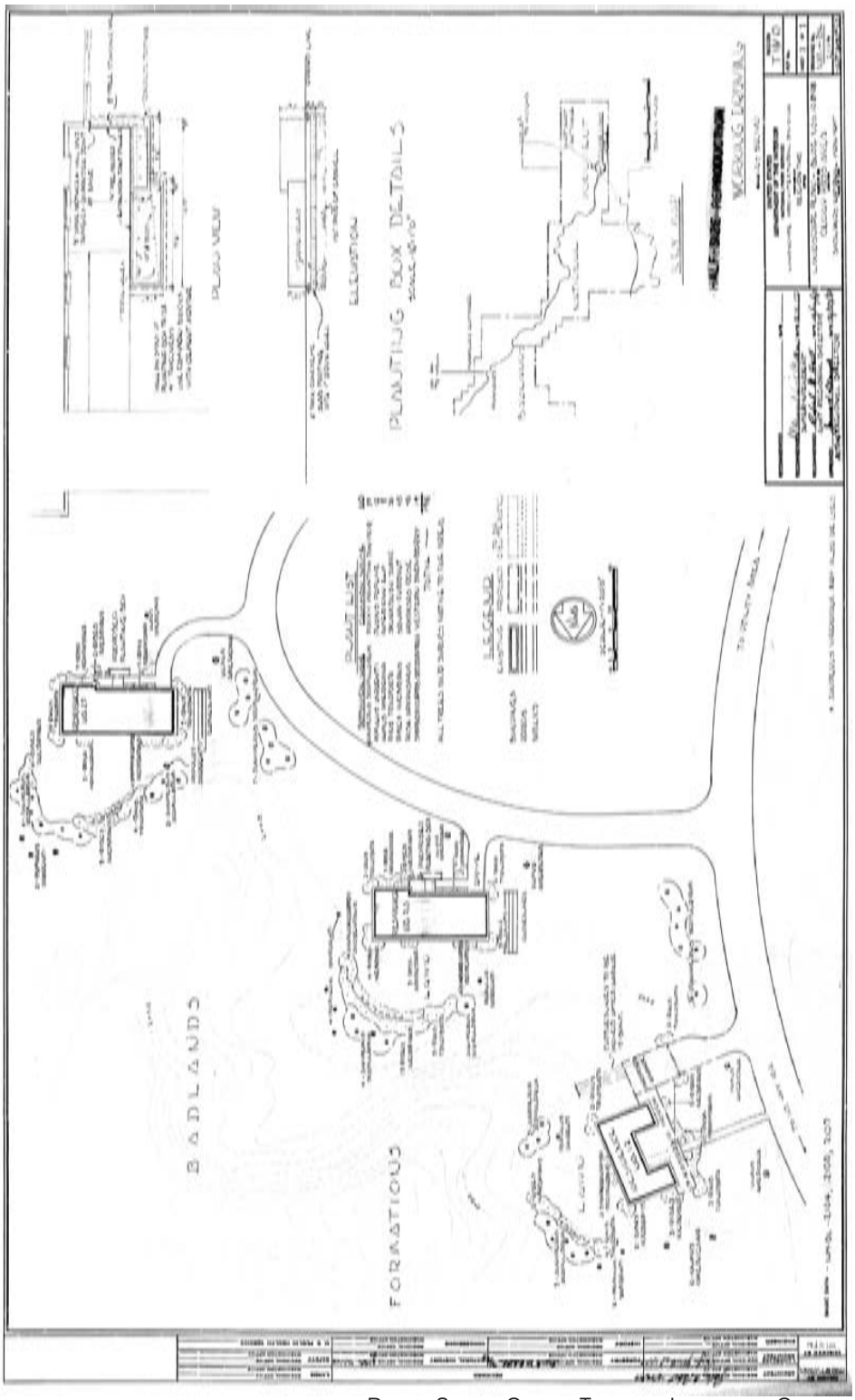
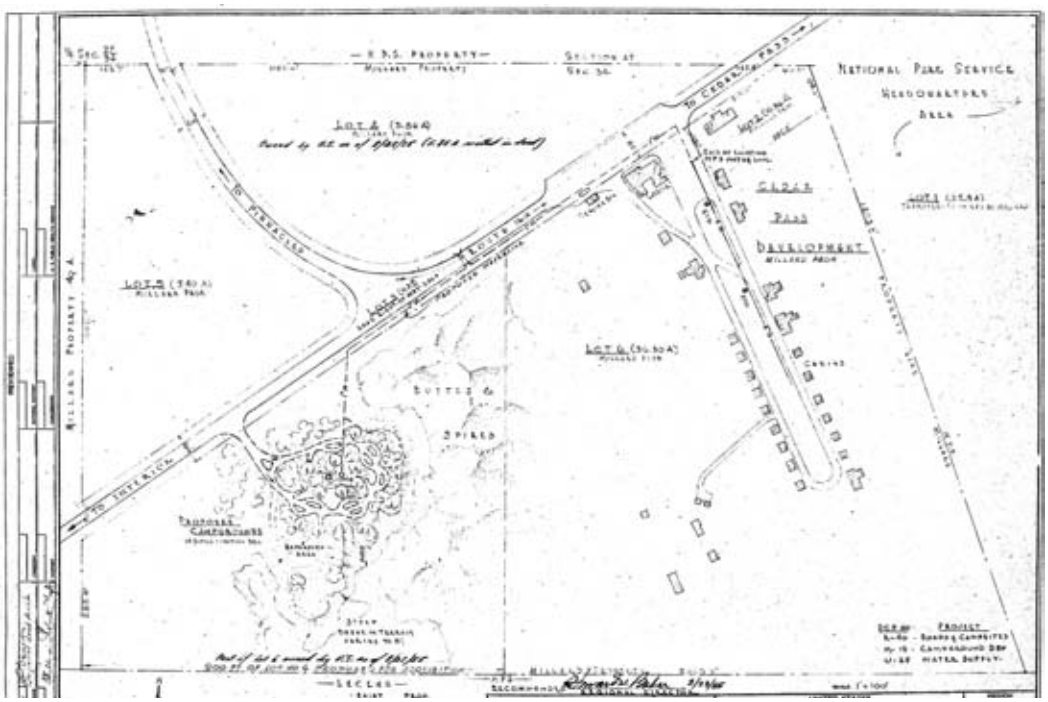


Figure 2-47: Flagpole at headquarters, view to Cedar Pass, 1951. (BADL-1956-28)



Denver Service Center, Technical Information Center

Figure 2-48: 1953 Planting Plan for NPS residential area. (DSC-2114)



Denver Service Center, Technical Information Center

Figure 2-49: Early plan for a campground, ca. 1955. (DSC-2120)



Badlands National Park Archive

Figure 2-50: Information station, ca. 1958. (BADL-1958-63)



Badlands National Park Archive

Figure 2-51: Local stock ranch with sheds and fenced corrals, ca. 1956 (Kelly Land). (BADL-1956-55)



Badlands National Park Archive

Figure 2-52: Mission 66 interpretive exhibits, ca. 1962. (BADL-1962-24)



Badlands National Park Archive

Figure 2-53: Mission 66 interpretive exhibits. (BADL-1962-26A-B)



Badlands National Park Archive

Figure 2-54: Mission 66 interpretive exhibit on trail. (BADL-1961-6)

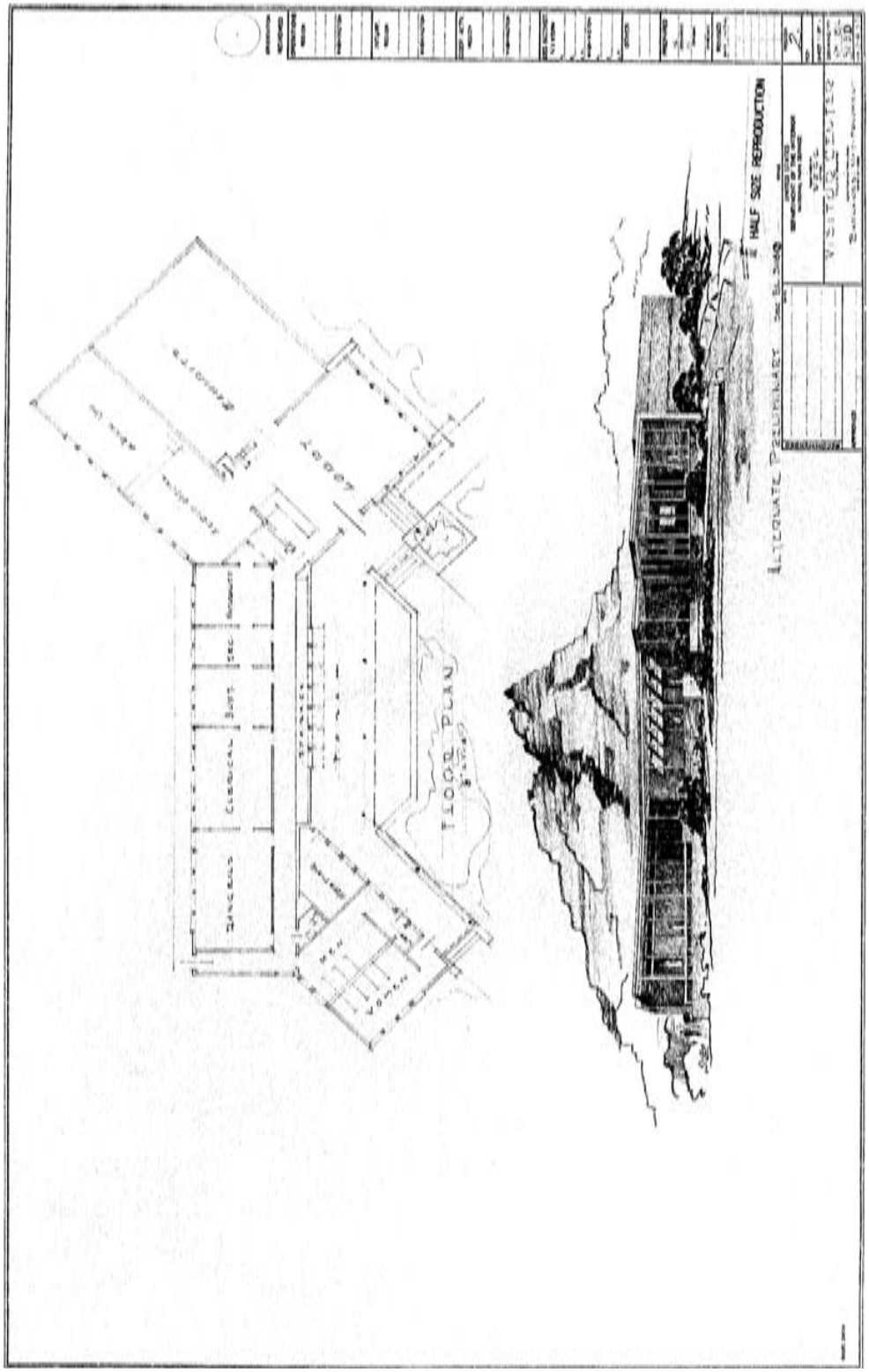


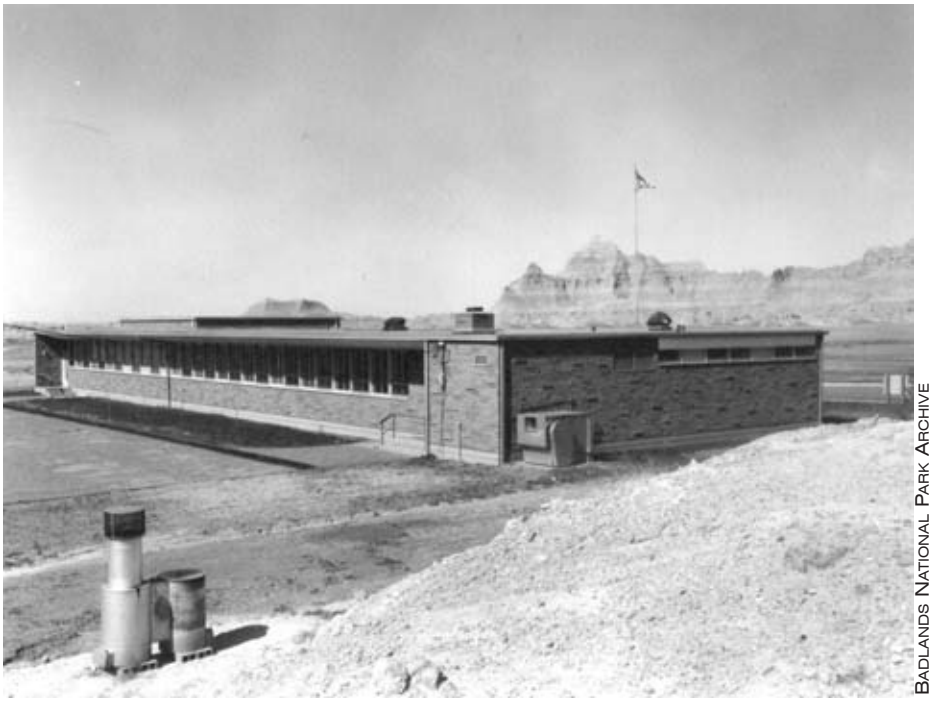
Figure 2-55: Alternative design for the Visitor Center. (DSC-3118-D)

Denver Service Center, Technical Information Center



Badlands National Park Archive

Figure 2-56: North façade, Visitor Center, ca. 1959. (BADL-1959-21)



Badlands National Park Archive

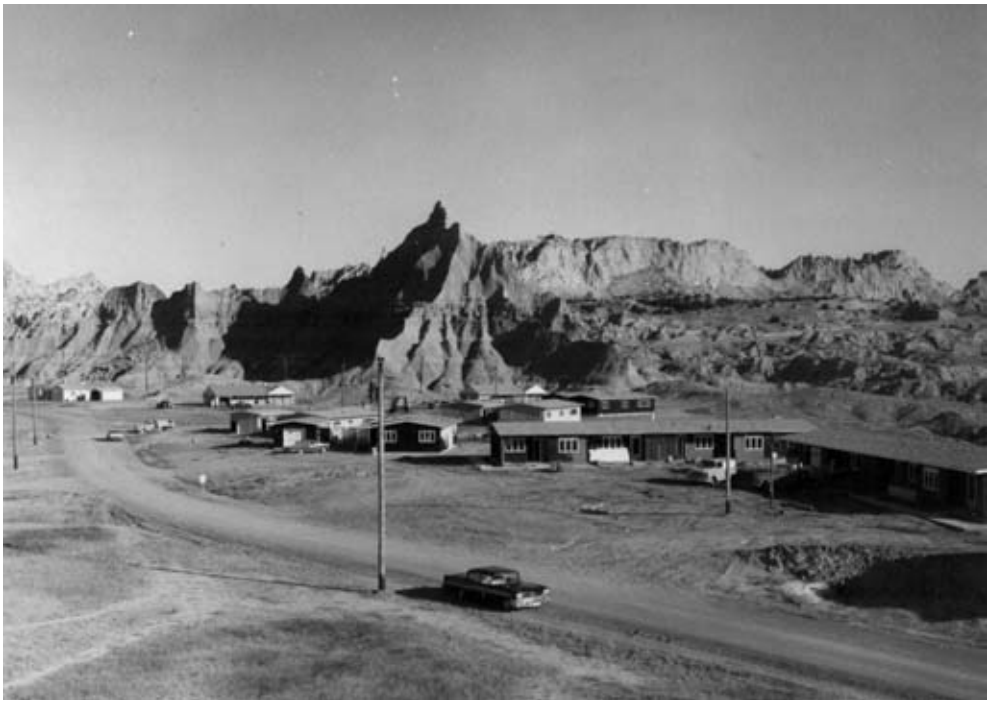
Figure 2-57: South façade, Visitor Center, ca. 1960. (BADL-1960-38)



Figure 2-58: Building #30. (BADL-1960-6)



Figure 2-59: Building #28. (BADL-1956-60)



Badlands National Park Archive

Figure 2-60: Apartment buildings. (BADL-1959-72)



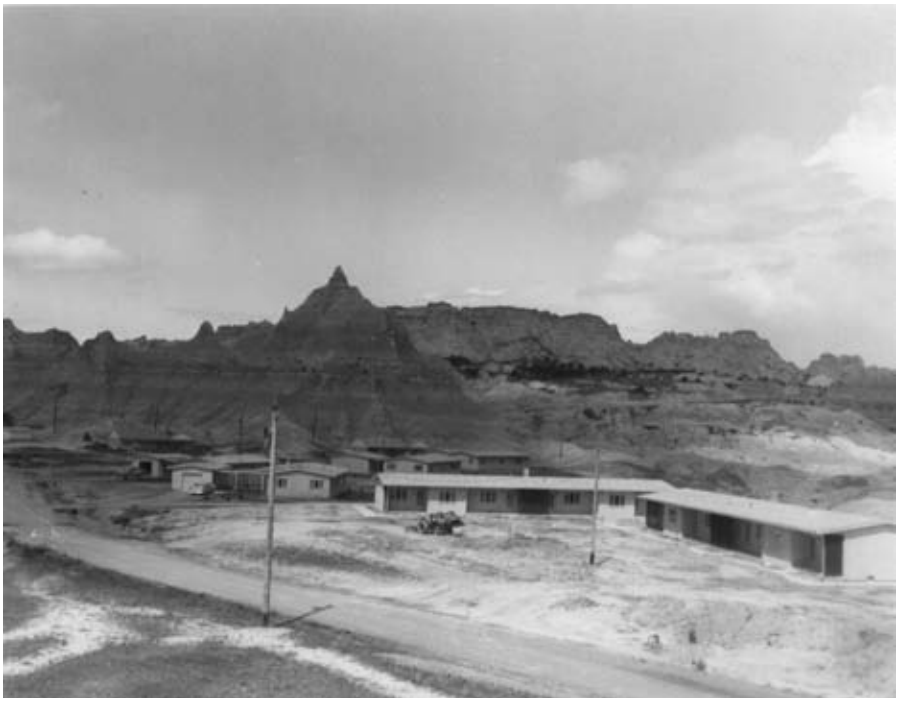
Badlands National Park Archive

Figure 2-61: Access roads to residential sites, ca. 1958. (BADL-1959-46)



Badlands National Park Archive

Figure 2-62: Residential area from the air, ca. 1964. (BADL-1964-104)



Badlands National Park Archive

Figure 2-63: Construction of parking at seasonal quarters. (BADL-1959-47)

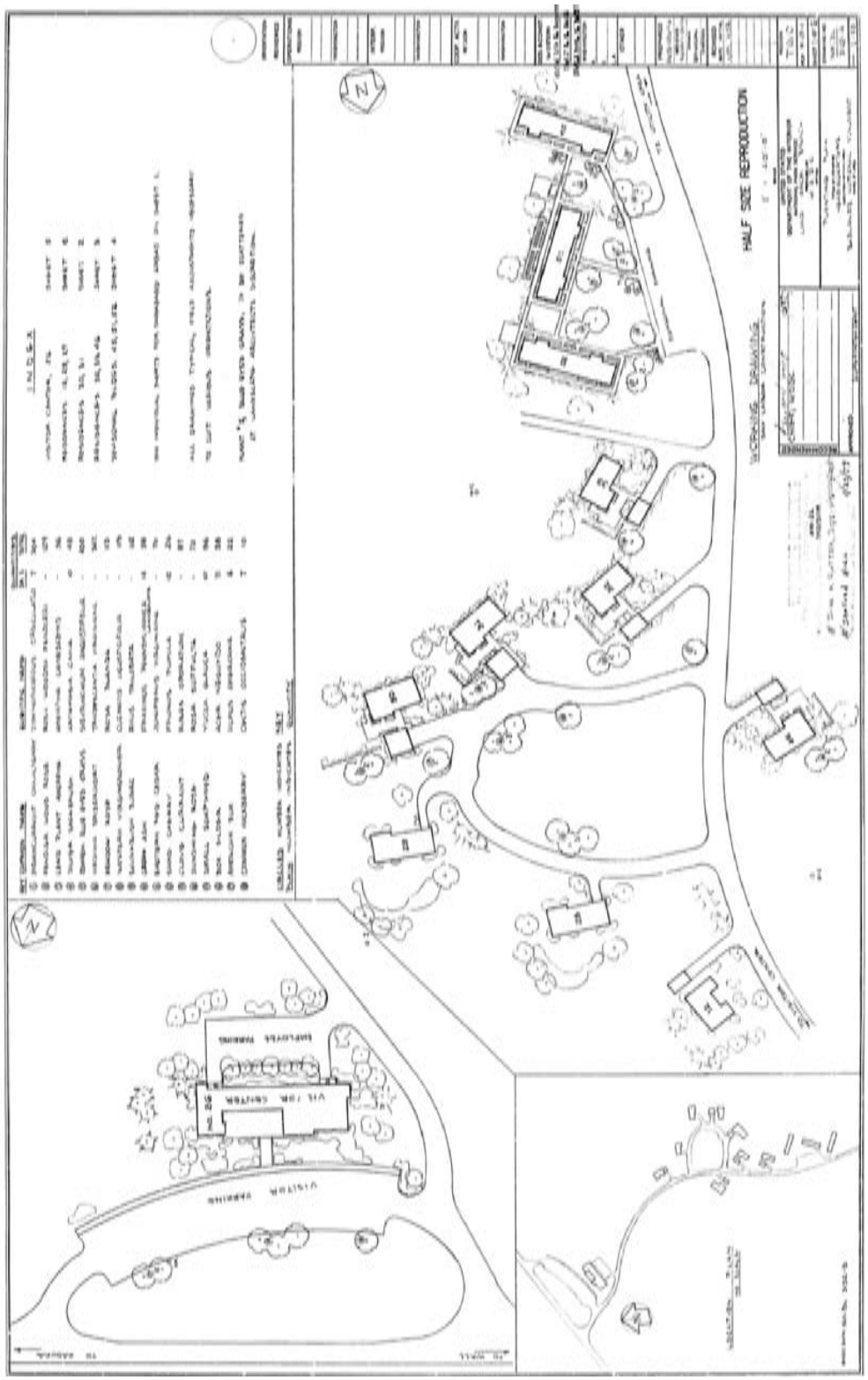
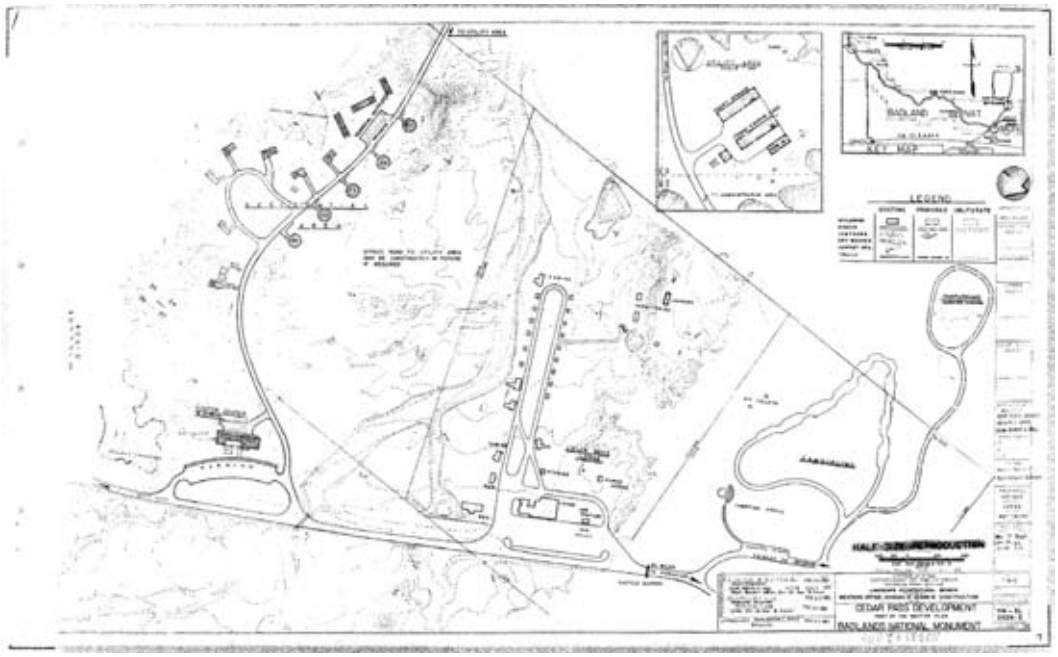


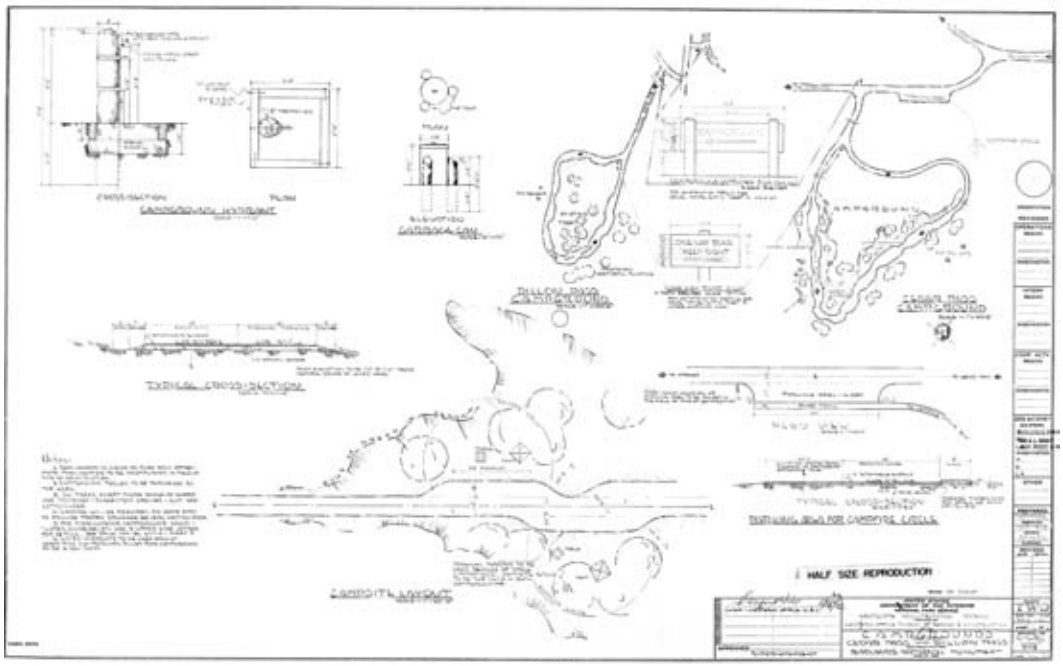
Figure 2-64: 1958 planting plan. (DSC-3148)

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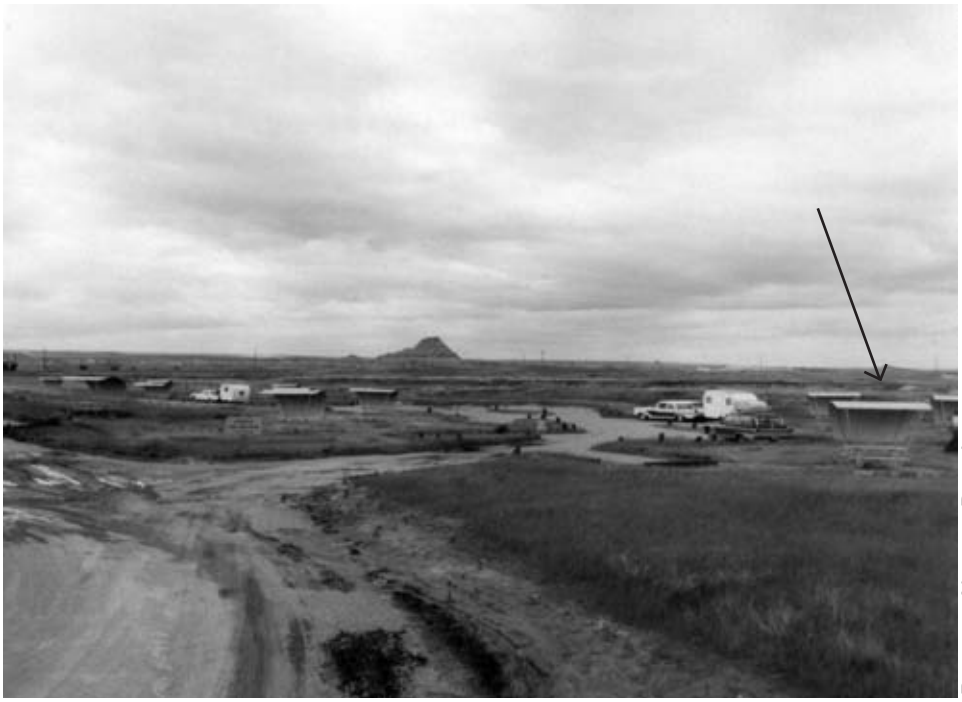
Denver Service Center, Technical Information Center

Figure 2-65: Master plan showing campground area, Mission 66. (DSC-2029-E)



Denver Service Center, Technical Information Center.

Figure 2-66: Mission 66 campground plan. (DSC-3113)



Badlands National Park Archive

Figure 2-67: Photograph of campground showing picnic table shelters, ca. 1950s. (BADL-1965-21)



Badlands National Park Archive

Figure 2-68: Program at campground amphitheater, 1958. (BADL-1958-33)



Badlands National Park Archive

Figure 2-69: Placement of amphitheater in relation to campground, ca.1959. (BADL-1959-14)



Badlands National Park Archive

Figure 2-70: Device to simulate campfire illumination effect, ca. 1959. (BADL-1959-68)



Badlands National Park Archive

Figure 2-71: Campfire device with wood for realistic effect, ca. 1959. (BADL-1959-67)



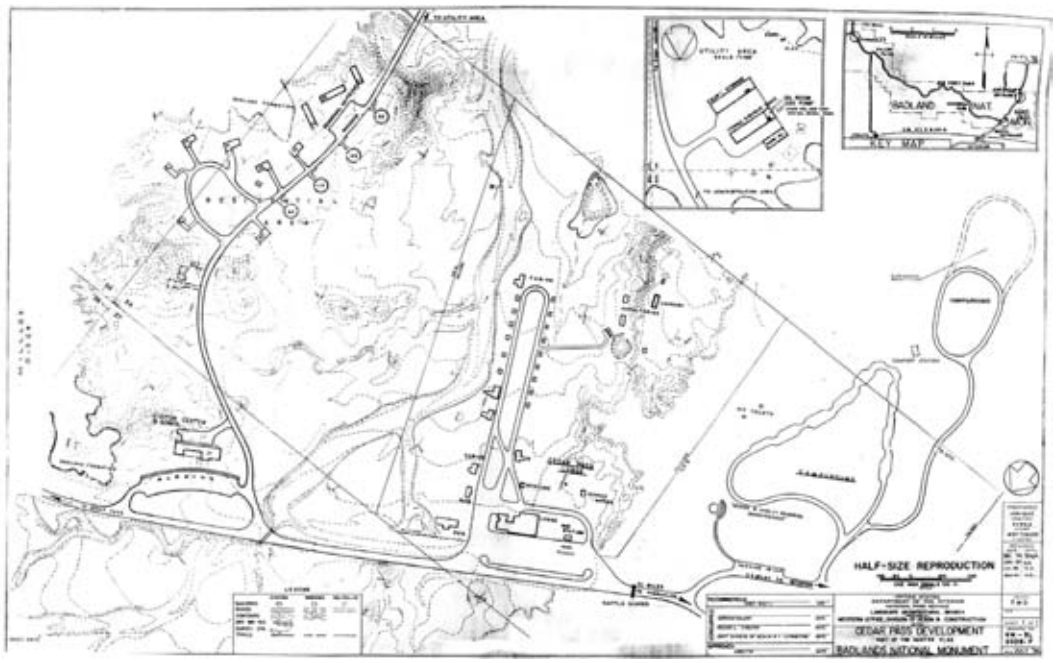
Badlands National Park Archive

Figure 2-72: New amphitheater, ca. 1960. (BADL-1962-53B)



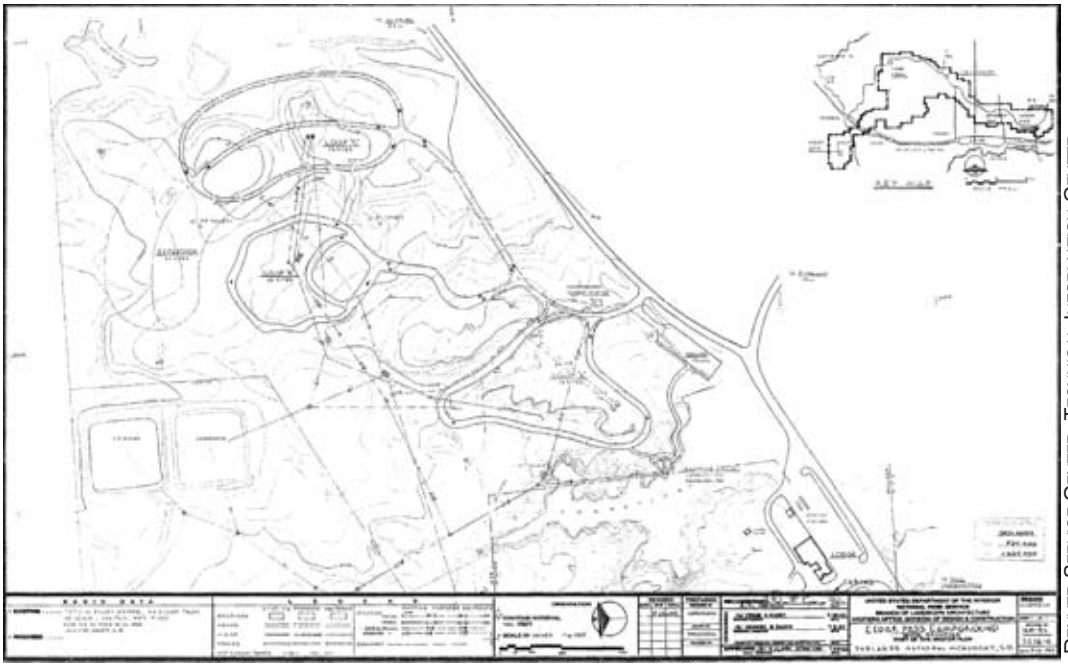
Badlands National Park Archive

Figure 2-73: Visitor Center parking, ca. 1964. (BADL-1964-43)



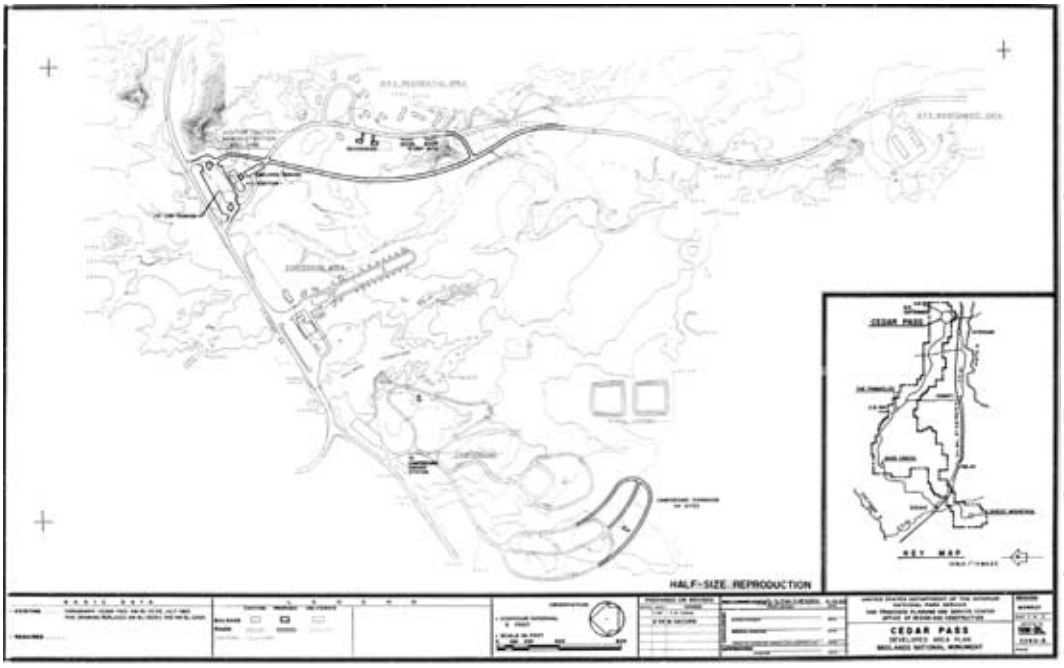
Denver Service Center, Technical Information Center

Figure 2-74 Campground planned expansion (1950s Master Plan). (DSC-2029-F)



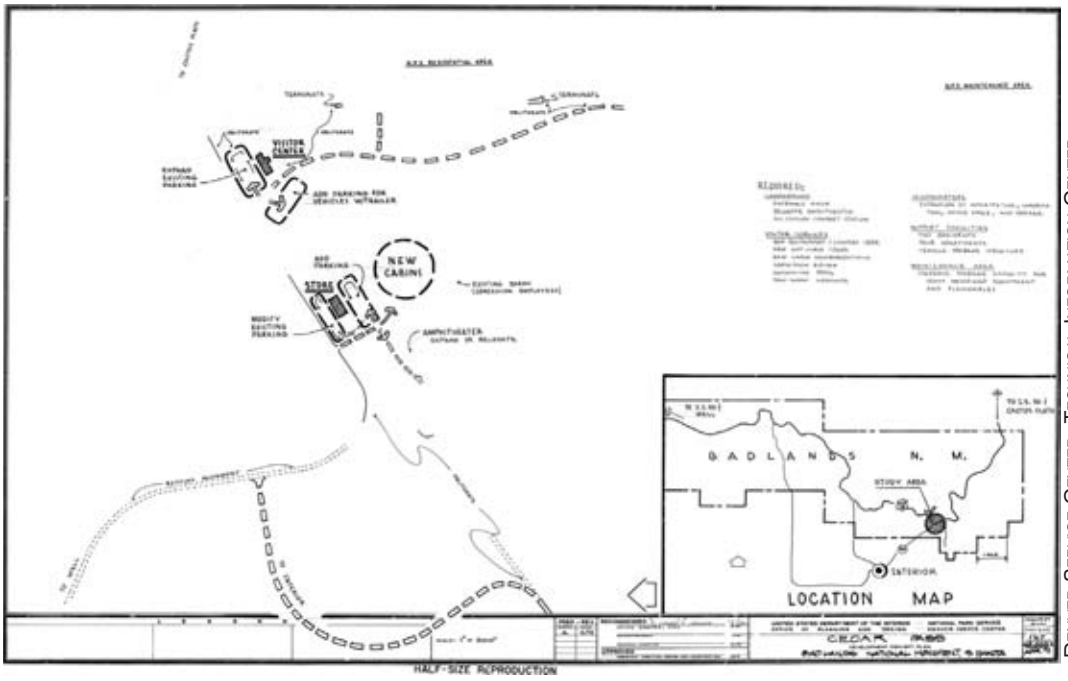
Denver Service Center, Technical Information Center

Figure 2-75: Utilities and road alignment at campground, ca. 1962. (DSC 3216-A)



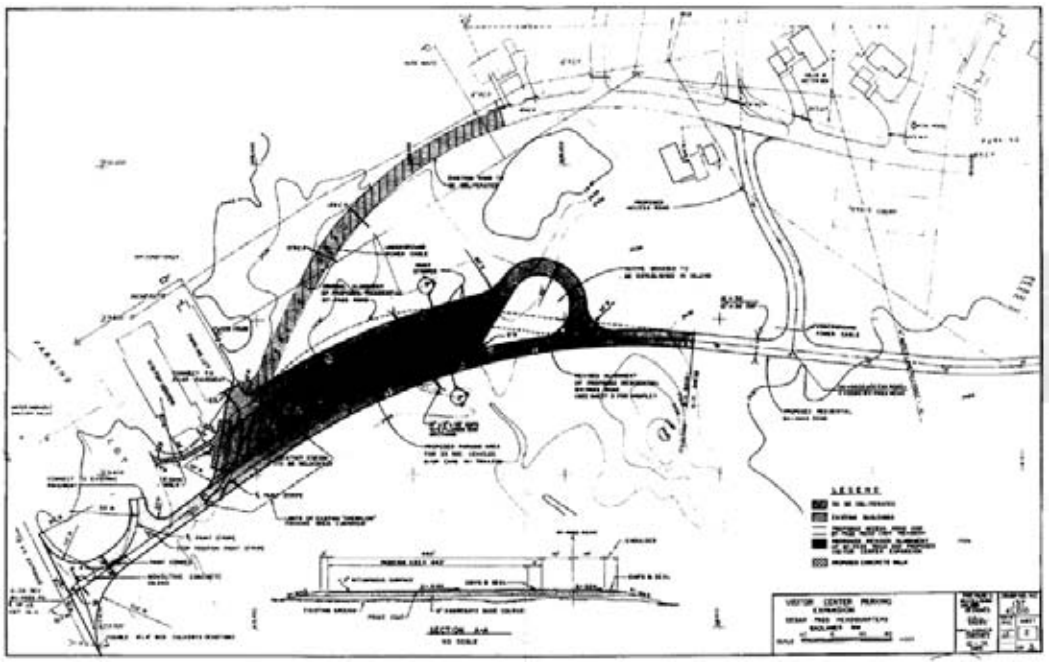
Denver Service Center, Technical Information Center

Figure 2-76: Road alignment and campground expansion plan, 1969. (DSC-3243-A)



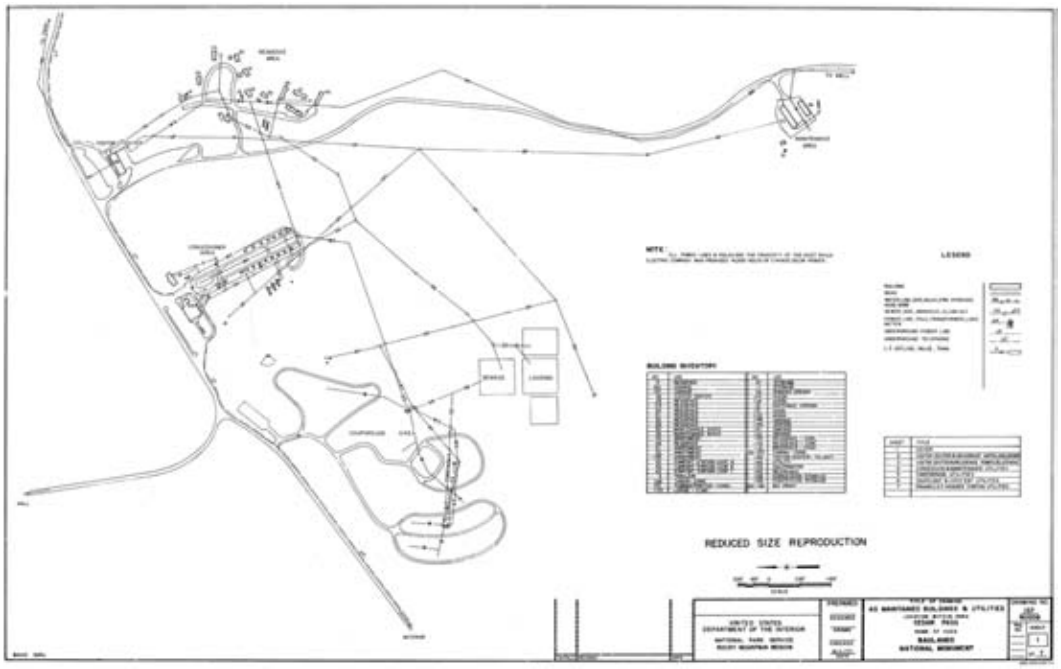
Denver Service Center, Technical Information Center

Figure 2-77: 1971 Plan. (DSC-40000-A)



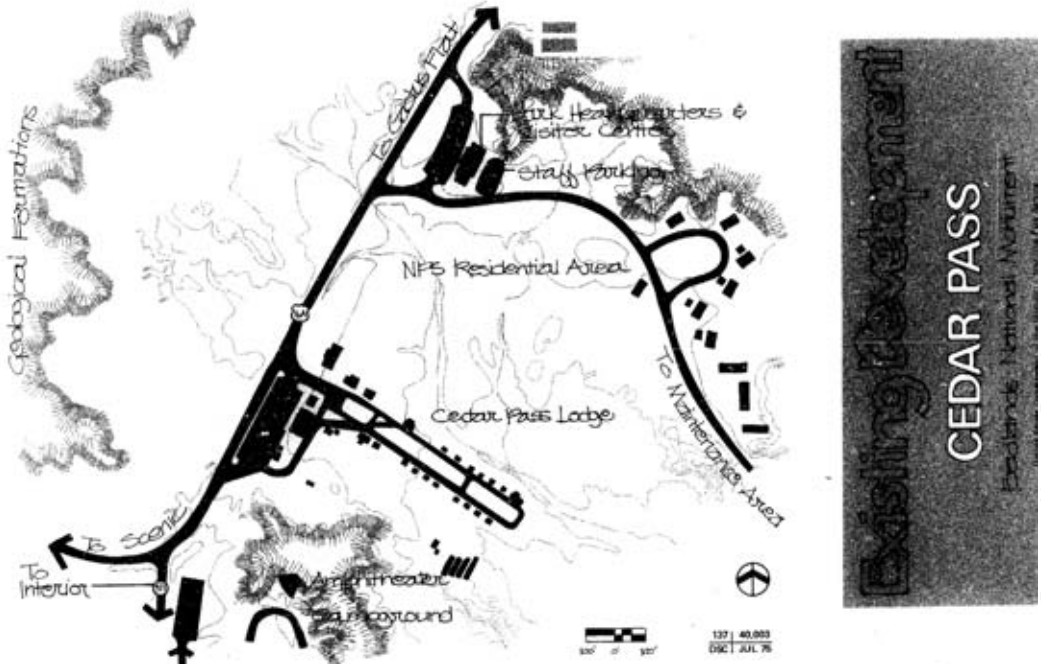
Denver Service Center, Technical Information Center

Figure 2-78: Residential road to re-alignment, ca. 1974.



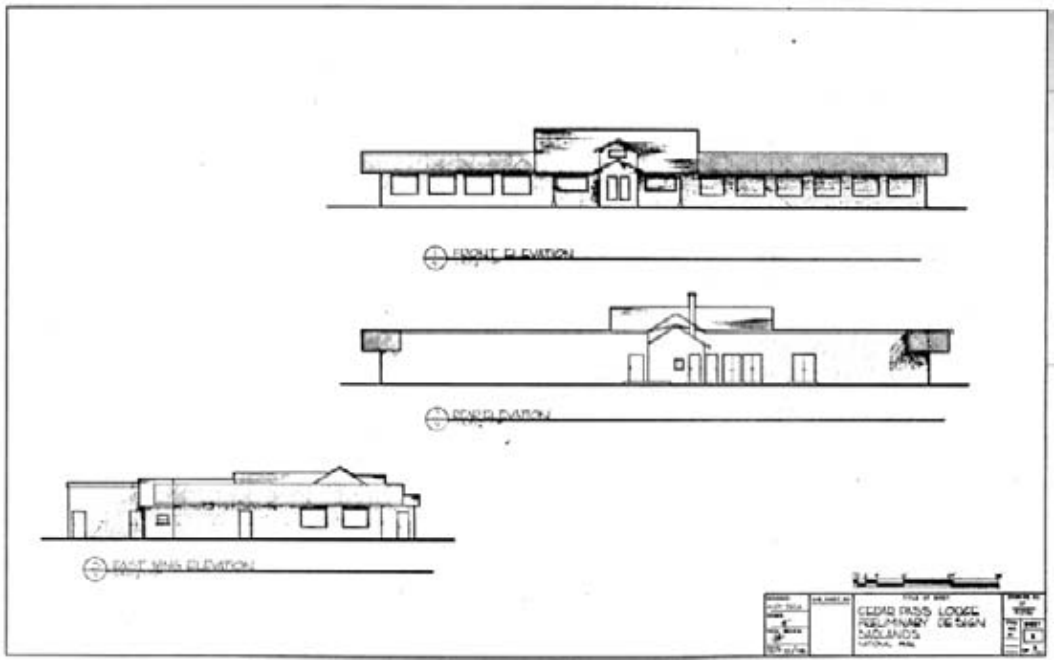
Denver Service Center

Figure 2-79: Existing Conditions, 1977. (DSC 80006-1)



Badlands National Park Archive

Figure 2-80: 1975 Existing development. (DSC 40003)



Denver Service Center, Technical Information Center

Figure 2-81: Lodge expansion, ca. 1986. (DSC-41021)



Chapter Three

Existing Conditions

CHAPTER THREE

EXISTING CONDITIONS

This chapter includes written, graphic, and photographic documentation of existing landscape conditions for the Cedar Pass Developed Area of Badlands National Park in 2003. This documentation is based primarily upon field investigations of the study area and site information provided by the National Park Service (NPS). The first section of this chapter—Site Description—places Cedar Pass within a regional environmental and cultural context. Specific information about the study area and its features follow in the section titled Existing Conditions Documentation by Landscape Characteristic.

Representative photographs, referenced in the text, illustrate primary landscape features. The photographs and photographic station point maps (*Maps 3-8 to 3-10*) are located at the end of the chapter. Maps (*Maps 3-1 to 3-7*) that identify the locations of site features are also located at the end of the chapter.

SITE DESCRIPTION

CULTURAL CONTEXT AND SETTING

Badlands National Park is a popular visitor attraction that averages over 900,000 visitors a year.[1] Visitors travel to Badlands National Park for a variety of reasons. Most are attracted to the area's natural history and its scenic beauty. As one of the world's richest fossil beds, the Badlands' paleontological resources attract many visitors. Visitors are also drawn to the region's American Indian history and the various tribes with strong connection to the Badlands landscape. Tourist amenities contribute to high visitation within this area.

Badlands National Park is comprised of two units, the North Unit and the South Unit. The Cedar Pass Developed Area sits within the southeastern portion of the North Unit of the park. It comprises approximately 290 acres of the park's nearly 250,000 acres. Rapid City, South Dakota, is located approximately forty miles northwest of the park and both I-90 and SD Highway 44 provide access from Rapid City to the park. Air travel to the region is supported by the Rapid City Regional Airport with multiple daily flights. The Badlands Loop Road is located off I-90. Cedar Pass can be accessed by automobile via Badlands Loop Road or SD Highway 377 from Interior, South Dakota. The Ben Reifel Visitor Center, Cedar Pass Lodge and cabins, campground, administrative offices, and park housing and maintenance facilities are all located within the Cedar Pass Developed Area.

[1] http://www.nps.gov/badl/pphtml/facts.html (accessed August 11, 2003).

In addition to Badlands National Park, there are numerous other attractions in the region that contribute to its popularity as a tourist destination. South Dakota State Parks, Wall Drug, Minuteman Missile National Historic Site, and Buffalo Gap National Grassland are nearby, while Mount Rushmore National Monument, Jewel Cave National Monument, Wind Cave National Park, and Devils Tower National Monument are within two hundred miles of the park. These parks and sites, as well as neighboring towns and cities, provide tourist amenities such as lodging and restaurants.

The area around the park is generally rural and sparsely populated, although a few small towns dot the landscape. Just southwest of Cedar Pass, the town of Interior is a gateway to the eastern portion of the park. The Pine Ridge Indian Reservation covers approximately two million acres south of the park. The reservation is best known as the site of the 1890 Wounded Knee massacre and is home to as many as 40,000 members of the Oglala Lakota (Sioux) tribe. Pine Ridge is the second largest reservation in the United States and includes within its boundaries the two poorest counties in the country. Due to a lack of economic development, unemployment is at a staggering rate of eighty percent. The average life expectancy on the Reservation is forty-five years and many residents live in substandard houses, some of which lack running water or electricity.[2]

While the southern half of the park is surrounded by the Reservation, the majority of the northern half of the park is contained within the Buffalo Gap National Grassland. Cedar Pass is located in this northern half of the park in an area where a narrow section of the grassland separates the park from the reservation. The White River serves as the boundary between the reservation and grassland three miles south of Cedar Pass. The two halves of the park are referred to as the North Unit and the South Unit (also known as the Stronghold Unit). The North Unit is managed solely by the NPS while the South Unit is co-managed by the NPS, and the Oglala Lakota (Sioux) tribe.

ENVIRONMENTAL CONTEXT AND SETTING

The park falls within the geologic region referred to as the Badlands, a highly eroded plateau region of South Dakota and northern Nebraska. The Badlands derives its name from the Oglala Lakota, who called this region *Mako Sica*, translated simply into "bad land." French traders echoed the sentiment, dubbing the place *Les Mauvaises Terres*. For nomadic people like the Lakota, this land was bad indeed—a highly dissected erosional landscape, a place of disorienting and fantastical landforms where it was easy to get lost. The Badlands' spectacular landscape is so renowned for these qualities that this term now applies to all similar gullied and sculpted areas.

The three defining characteristics of a badlands landscape include 1) poorly consolidated, easily-erodable sedimentary bedrock, especially shale and mudstone; 2) an arid or semi-arid climate with infrequent but torrential precipitation; and 3) lack of vegetation to stabilize the soil. These factors combine in the Badlands of South Dakota to form one of the world's most rapidly

[2] From http://www.pineridgerez.net/overview.php and http://www.airc.org/reservations/pineridge.html (accessed July 25, 2003).

eroding landscapes. This erosion has not only produced the dramatic sculpted landform, but has also revealed a world-famous trove of fossils. The spectacular geological features and the fossils contained in the landscape are the primary reason the park was established.[3]

The region's climate is semi-arid, with short, hot, dry summers and long, cold, dry winters. Due to its location on the Northern Plains, temperatures at the Badlands show extreme seasonal variability, with winter lows dropping to -30˚F and summer highs reaching in excess of 100˚F. During the spring and fall, temperatures can vary dramatically and change rapidly. Average annual precipitation is 16 inches, mostly occurring in the late spring and early summer. Afternoon and evening thunderstorms, sometimes torrential, are frequent during the summer.[4] Although precipitation has been largely responsible for the formation of the Badlands landscape through erosion, surface water is nearly non-existent.

Natural systems—geology, climate, and the biotic responses to these factors, such as plant and wildlife communities—have exerted a profound influence on human activities in the region. Each is described below.

GEOLOGY

The bedrock that underlies the Badlands landscape is mostly poorly-cemented mudstone, claystone, and siltstone containing scattered beds of sandstone and conglomerate, thin beds of limestone, and layers of concretion. These sediments were deposited on floodplains (the mud, clay, and silt), in stream channels (sand and gravel), and in shallow lakes (limestone). Volcanic ash is prominent in several of the layers, especially in the upper layers of the local section. The bedrock can be divided into three distinct geological units, or formations. In ascending order, from oldest to youngest, they are: the Pierre Shale, the Chadron Formation, and the Brule Formation (the latter two are included in the White River Group).[5]

The oldest exposed formation in the area is the Pierre Shale, an extensive deposit of dark gray colored shale containing abundant Late Cretaceous-age marine fossils from between 69 and 84 million years ago. This is the most widespread sedimentary rock formation in South Dakota. It is about 300 feet thick in the Badlands region and thickens considerably toward the west, into Montana. These rocks formed from organic-rich mud deposited in a shallow inland sea. Upon weathering, the shale produces dark gumbo clay. Patches of resistant limestone in the black shale erode into conical hills called teepee buttes, formed from ancient reefs rising off the seafloor. Pierre Shale is not exposed in the Cedar Pass Developed Area, but underlies the formations that are exposed there. In some places the Pierre Shale is capped by white beach sand of the Fox formation, which locally forms an important aquifer.[6]

[3] National Park Service, Draft "General Management Plan/Environmental Impact Statement, Badlands National Park, South Dakota" (Interior, SD: Department of the Interior, February 2003), 3, 66, 69.
[4] Joy Keve Hauk, *Badlands: Its Life and Landscape* (Interior, SD: Badlands Natural History Association, 8th ed., 1993), 46
[5] National Park Service, Draft "General Management Plan," 10.
[6] John Paul Gries, *Roadside Geology of South Dakota* (Missoula, MT: Mountain Press Publishing Company , 2nd ed., 1998), 96.

All along the top of the Pierre Shale is a red and yellow paleosol, or ancient soil horizon. Its coloration is derived from the weathering of pyrite during warm and wet conditions in the past. Above this paleosol is an unconformity representing 30 million years of upheaval and folding during the Laramide Orogeny. The resulting erosion surface has about 150 feet of relief.[7]

Overlying the Pierre Shale is the White River Group, consisting of the lower Chadron Formation overlain by the much thicker Brule Formation. The Chadron Formation has thin, basal conglomeratic sandstone that is buried by greenish gray clay with abundant Eocene-age land mammal fossils, 34 to 39 million years old. These rocks contain bentonite, a rock composed of montomorillonite-rich clay that is formed from the breakdown of volcanic ash. Bentonite poses serious engineering problems. The clays absorb water very quickly and swell up when wet; and they can remain saturated for days, even weeks, after a rainfall.[8] The Chadron is highly variable in thickness, as it is filling an erosional surface. It typically weathers to low hummocks called haystacks, contrasting with the steep cliffs in the overlying Brule Formation. The uppermost part of the Chadron contains thin (one to twelve inch) discontinuous zones of limestone and marks a distinct break in slope. The limestone beds were deposited by algae in shallow lakes and ponds, and contain fossil clams and snails.[9]

The Brule Formation is composed of up to 450 feet of tan and pink, water-lain clay and sandy gravel, with zones of underlying windblown sand, silt, and volcanic ash, and contains an incredible assemblage of Oligocene-age fossil mammals 31 to 34 million years old. Unlike the underlying Chadron sediments, the Brule beds readily shed surface runoff, and this formation weathers to steep bluffs and cliffs. The upper part forms steep cliff faces that are ornamented with spires, pillars, steps, shelves, and overhangs. Volcanic material becomes increasingly more abundant upward throughout the formation, and the white ash beds at the top form the sheerest vertical cliffs.[10]

Based upon distinct fossil assemblages and lithology, the Brule Formation can be divided into the lower Scenic Member and the overlying Poleslide Member, each with several distinct zones. In the lower part of the Scenic Member, about ten to forty feet above the Chadron limestone beds, is the "Lower Nodular Zone" (sometimes known as the "Red Layer") containing calcite nodules and Oligocene-age fossils that are covered with a red clay coating. The nodules are formed when calcite cement, moving with water in the soil, accumulates in discreet areas; when the formation weathers, the hard cemented areas remain behind. It appears that these nodules are remnants of ancient caliche layers, which are carbonate soil horizons that form in semi-arid regions. The middle part of the Scenic Member contains what are known as the *Metamynodon* channel sandstones, named for the presence of fossils of a large aquatic rhinoceros. The top layers are punctuated by the "Upper Nodular Zone." The Poleslide Member contains the *Protoceras* channel sandstones, named for a primitive camel, and the *Leptauchenia* nodule layer, named for a fossil oreodont, an extinct, pig-like creature.

[7] Gries, *Roadside Geology of South Dakota,* 194.
[8] Gries, *Roadside Geology of South Dakota,* 166.
[9] Gries, *Roadside Geology of South Dakota,* 195.
[10] Hauk, *Badlands: Its Life and Landscape,* 11-12.

GEOMORPHOLOGY

The sediments that underlie the region have never been deeply buried. They are loosely cemented, contain a great deal of volcanic ash, and are composed of expansible clays, all of which contribute to their disintegration. Erosion averages about one inch per year, but varies considerably by locality, rock type, and microclimate.[11] Of the sediment in the Badlands, the ash layers are the most susceptible to weathering processes, while the sheets of channel sandstone and layers containing concretions are the most resistant.

Landforms in the Badlands can be divided into three categories:

1. walls, escarpments, and buttes formed along zones of headward erosion by steeply sloping gullies and rills;
2. basins containing terrace-like benches dissected by gullied drainages; and
3. plateaus and tablelands comprising the remnants of the largely-eroded surface of a once higher plain.[12]

The most distinctive feature in the area, the Wall, is a 200-foot-high erosional front carved in Brule Formation, eroding away from the White River. The Wall extends from Cedar Pass to Sage Creek, dividing the higher northern grasslands from the lower southern grasslands, while functioning as a drainage divide between the White River to the south and White River Creek to the north.[13] The Badlands Loop Road utilizes breaks in the Wall that occur at Dillon Pass, Big Foot Pass, and Cedar Pass to cross the landform.

Other erosional features in the Badlands include pinnacles, spires, buttes, arches, knife-edged ridges, and deep ravines. Depositional features include alluvial fans, outwash fans, slumps, and landslides.

PALEONTOLOGICAL RESOURCES

The White River Badlands region is considered the birthplace of modern vertebrate paleontology in North America and contains some of the finest known accumulations of late Eocene and Oligocene mammal fossils in the world. Fossils from the Badlands are used to define the North American Land Mammal Ages for these time periods.

The Pierre Shale contains abundant Late Cretaceous (Pierre Stage, 69 to 84 million years ago) marine fossils, including more than eighty species of ammonites, mosasaurs, plesiosaurs, fish, sea turtles, and crabs in tan limestone nodules.[14] The beds of shale were deposited over 15 million years, time for significant evolution to occur, and the Pierre Shale can be divided into several distinct fossil zones.[15]

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[11] National Park Service, Draft "General Management Plan," 67
[12] National Park Service, Draft "General Management Plan," 67.
[13] Hauk, *Badlands: Its Life and Landscape,* 13.
[14] National Park Service, Draft "General Management Plan," 69; Hauk, *Badlands: Its Life and Landscape,* 9; Gries, *Roadside Geology of South Dakota,* 94-95.
[15] Gries, *Roadside Geology of South Dakota,* 95.

The Chadron Formation contains Eocene (Chadronian Stage, 39 to 34 million years ago) fossils such as titanotherium, alligators, oreodonts, early horses, rhinoceroses, felines, and canines. The Brule Formation contains the world's most extensive known source of Oligocene (Orellan Stage, 34 to 32 million years ago) fossil mammals, with more than 150 different genera of rodents, horses, camels, pigs, deer, antelope, beaver, felines, canines, small rodents, and oreodonts.[16] Of particular note are *Metamynodon*, a large aquatic rhinoceros; *Protoceras*, a primitive camel; and *Leptauchenia,* an oreodont. Fossils are particularly common in the irregular channel sands, indicating that the animals either became mired or drowned, perhaps as part of a herd trying to cross during flood stage; such an occurrence is known as a "death assemblage." According to the 2003 draft GMP, "the entire park potentially contains fossils," but only a small percentage has been surveyed.[17]

SOILS

Soils in the Badlands are formed from the weathering products of shale, siltstone, claystone, and, to a lesser extent, sandstone and volcanic ash. There are four regional soil classifications:

Vertisols are upland clays with very high shrink/swell potential. These soils are characterized by deep cracks.

Mollisols are prairie soils found on grassy bluffs. They are usually darkened due to organic material.

Aridisols occur on dry uplands. These soils contain very little organic material. They may contain mineral concentrations such as gypsum or calcite.

Entisols are incipient upland soils formed from steep slope erosion, alluvial floodplain deposition and material blown in by the wind. These soils are embryonic and do not have any developed horizons.

According to the Natural Resources Conservation Service, there are no prime or unique agricultural soils in the Badlands National Park. In fact, much of the park lacks soil because of highly active erosion.

[16] Gries, *Roadside Geology of South Dakota*, 196.
[17] National Park Service, Draft "General Management Plan," 69.

GEOLOGIC HAZARDS

Many of the soils and rock formations contain montmorillonite, a clay that expands when wet and shrinks when dry, conditions that can result in slumps or landslides. In addition, deep pits can form within previous slumps as the underlying unconsolidated material is undermined. Slumps are often most active during unusually wet periods. An active slump is located north of the study area along the Badlands Loop Road where it threatens to close this portion of the road. This would affect circulation patterns such as the approach to the Cedar Pass Developed Area. A buttress was built in fall 2000 as a measure to temporarily stabilize the slump.[18]

PLANT COMMUNITIES[19]

A total of 457 vascular plants have been documented in the park, including 41 species of native grasses. This mixed-grass community is a transitional association between short-grass prairie to the west and tallgrass prairie to the east. It is one of the largest contiguous native mixed-grass prairies under federal protection and part of one of the largest remaining mixed-grass prairies in North America. Despite human activity, according to the 2003 draft GMP, "the park's current vegetative mix is believed to approach what naturally existed before the influx of European settlers."[20]

The vegetation of the Badlands National Park was mapped in 1999 as part of a nationwide mapping project by the US Geological Survey and the NPS. Approximately 48 percent of the park is sparsely vegetated or barren, while grasslands cover approximately 45 percent, shrublands (dry, mesic, and riparian) cover approximately 4 percent, woodlands (dry coniferous and riparian) cover approximately 2 percent, and riparian/wet meadows cover the remaining 1 percent of the park.

Three plant species listed as rare by the state of South Dakota are endemic to the Badlands: Barr's milkvetch (*Astragalus barrii*), Dakota buckwheat (*Eriogonum visheri*), and secund bladderpod (*Lesquerella arenosa var. argillosa*). There are also two other state-listed rare plants that occur here but are not endemic to the Badlands: the Easter daisy (*Townsendia exscapa*) and the largeflower Townsend daisy (*Townsendia grandiflora*). Four other state-listed rare plants may be present in the park: Hopi tea (*Thelesperma megapotamicum*) in open sites, hairy virgin's bower (*Clematis hirsutissima*) near streams, Parry's rabbitbrush (*Chrysothamnus parryi*) on dry plains, and silver-mounded candleflower (*Cryptantha cana*) on sandy, gravelly soil.

[18] National Park Service, Draft "General Management Plan," 68.
[19] This section summarized from National Park Service, Draft "General Management Plan," 70-71.
[20] National Park Service, Draft "General Management Plan," 70.

INVASIVE NON-NATIVE PLANT SPECIES[21]

A total of 71 exotic species are known to exist within the park; most have limited distribution and are found primarily in disturbed areas. Some of these plants have arrived unintentionally, brought in by birds or via windblown seeds, while others were planted for agricultural or landscaping purposes. Four species are of special concern in the park: Japanese brome (*Bromus japonicus*), downy brome (*Bromus tectorum*), halogeton (*Halogeton glomeratus*), and puncture vine (*Tribulus terrestri*s). Halogeton is a common species on the formations in the Cedar Pass Developed Area. Canada thistle is also a significant problem, infesting an estimated 8,000 acres in the park. This species is invading native grasslands and riparian areas.

Other introduced grass species include smooth brome (*Bromopsis inermis*), crested wheatgrass (*Agropyron cristatum*), and Kentucky bluegrass (*Poa pratensis*). Relatively common exotic species include alfalfa (*Medicago sativa*), giant ragweed (*Ambrosia trifida*), yellow sweet clover (*Melilotus officianalis*), field bindweed (*Convolvulus arvensis*), spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Centaurea repens*), houndstongue (*Cynoglossum officinale*), perennial sow thistle (*Sonchus arvensis*), and Canada thistle (*Cirsium arvense*).

The park has focused much of its invasive plant control measures on Canada thistle using both chemical and biological control methods. Park resource managers are also experimenting with controlled burns followed by overseeding with native grasses.

WILDLIFE[22]

Although animals are relatively scarce due to the Badlands' sparse vegetation, a variety of species are represented. To date, 56 mammal species have been documented in the park, with 8 others suspected to be present. Seventeen reptile and amphibian species and more than 200 birds and 11 fish species have been identified in association with the park.

Rocky Mountain bighorn sheep (*Ovis canadensis*) were restored to the park in 1964, filling a niche formerly occupied by the now-extinct Audubon's bighorn sheep (*Ovis canadensis auduboni*). Bison (*Bison bison*) were restored to the park in 1963 and now number over 500 head. Mule deer (*Odocoileus hemionus*) are somewhat common in the park, while white-tailed deer (*Odocoileus virginianus*) are only seen infrequently and are usually restricted to riparian areas. Pronghorn antelope (*Antilocapra americana*) are common. Other mammals found in the park are coyotes, bobcats, muskrats, least chipmunks, jackrabbits, desert cottontails, eastern cottontails, and black-tailed prairie dogs.

Several endangered or threatened species of note occur within the park. The black-footed ferret (*Mustela nigripes*), extirpated from the Badlands and once considered the most endangered mammal in the United States, has been reintroduced into the Badlands with 217 captive-bred individuals released between 1994 and 1997. Listed as endangered by the federal government

[21] This section is summarized from National Park Service, Draft "General Management Plan," 72.
[22] This section summarized from National Park Service, Draft "General Management Plan," 73-78.

and the state of South Dakota, the black-footed ferret completely relies on prairie dog colonies, feeding primarily on prairie dogs and utilizing their burrows for shelter and breeding.

The state of South Dakota considers the black-tailed prairie dog (*Cynomys ludovicianus*) a species of management concern and the US Fish and Wildlife Service has identified it as a candidate for listing as threatened. Sharps and Uresk (1990) found that at least 40 percent of all vertebrates west of the Missouri River are associated with prairie dog towns. However, within the park, prairie dogs now inhabit only 5 percent of their former territory, but the current colonies have the potential to expand.

The mountain lion (*Felix concolor*), listed as threatened by South Dakota, occasionally appears in the park, with thirty-seven documented sightings from 1960 to 2002, many of them transient males. No dens have been found in the park. The bald eagle is a sporadic and uncommon visitor to the park with twenty-seven sightings from 1960 to 2002, mostly between December and April, and mostly near water sources such as streams or livestock dams, or near prairie dog towns. The whooping crane is a migrant that occasionally uses the wetlands, meadows, and agricultural fields in the park.

EXISTING CONDITIONS BY LANDSCAPE CHARACTERISTIC

The landscape features associated with Cedar Pass Developed Area are documented below in accordance with the *Guide to Cultural Landscape Reports: Contents, Process, and Techniques* and National Register Bulletin No. 30. Narrative, graphic, and photographic depictions of existing landscape features, systems, and land use patterns within the study area are organized by the following eleven landscape characteristics:

- Natural Systems (N)
- Spatial Organization (SO)
- Land Use (L)
- Circulation (C)
- Topographic Modifications (T)
- Vegetation (Ve)
- Buildings (B)
- Structures (S)
- Small-scale Features (SS)
- Views and Vistas (V)
- Archeological Resources (A)

NATURAL SYSTEMS

The natural systems and features discussed in this section occur within, and are part of, the regional and park-wide natural systems described above.

The most distinctive geological feature in the study area, the Wall (described above), extends through the Cedar Pass Developed Area; Cedar Pass is a break within this formation[23] (*see Figure 3-1*).

There are two primary soil associations located within the study area: 1) Badlands-Interior-Cedarpass Association: a deep, well-drained, loamy and silty soil found on badlands, uplands, fans, and floodplains; and Cedarpass-Denby-Interior Association, which occurs on alluvial fans and terraces along the base of badlands formations. The expansion and contraction of badlands soil limits suitability for development, and, in the past, native soil has had to be removed from beneath the construction sites for roadways, parking areas, and buildings.[24]

Surface water is almost non-existent within the study area; there are no perennial streams, floodplains, or natural wetlands. Gullies and washes provide drainage during rainstorms and after snowmelt (*see Figure 3-2*). Although little data exists on water quality within the park, it is believed to vary seasonally and from stream to stream.[25]

Plant communities within the Cedar Pass Developed Area are largely comprised of grasslands with sparsely scattered trees. Except for a few cottonwoods along the washes, there are no naturally occurring trees within the study area. There are no known rare plant populations inside the study area. The USGS-NPS Vegetation Mapping Program identified the following plant groups inside the Cedar Pass Developed Area.[26] The locations of the groups are indicated on *Map 3-1*.[27]

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[23] Within the context of the existing conditions documentation by landscape characteristic, the term "formation" will be applied (following local tradition) to *erosional* features such as pinnacles, spires, hoodoos, and walls. This usage can be somewhat confusing. Technically, a geological formation is the basic lithostratigraphic unit in geology, representing laterally extensive layers of rocks that were *deposited* under similar circumstances. Formations are part of a geological hierarchy—they are divided into members that are further divided into beds; and two or more formations are part of a group or supergroup. As such, the geological formation is roughly akin to the species or genus in biology, and formalized names for formations must pass through an internationally-recognized stratigraphic commission.

[24] National Park Service, Draft "General Management Plan," 68.

[25] National Park Service, Draft "General Management Plan," 61.

[26] Jim Von Loh, et al., *USGS-NPS Vegetation Mapping Program Badlands National Park, South Dakota*, Technical Memorandum No. 8260-00-02, (Denver, CO: Technical Service Center, November 1999).

[27] The Vegetation Mapping Program uses the National Vegetation Classification System. The vegetation maps are based on specific vegetation photo signatures and many grasses have identical photo signatures that cannot be differentiated. Therefore, many of the park's grass species cannot be separated out in the minimum 1/2 hectare mapping unit areas, and plants are instead grouped into complexes. In Badlands National Park there is an overabundance of acres in a complex because 50 percent is the Badlands Sparse Complex and 36 percent is Western-Wheatgrass Complex; however, there are more association map units than complex map units.
A complex includes multiple associations and an association is a combination of a few different plant species, usually three or less that are classified as dominant (e.g. at least 40 percent is dominated by a species) or co-

1) Badland Sparse Vegetation Complex includes four associations, with the most sparsely vegetated—the Eroding Great Plains Badlands Complex—the one most likely present within the study area. This complex typically occurs on steep shale slopes and other heavily-eroded areas where moisture is scarce and temperatures are extreme. Approximately 15 percent of the study area falls in this category; these areas were almost barren of vegetation. Plant species most often present within this association include small-flowered wild buckwheat (*Eriogonum pauciflorum*), snakeweed (*Gutierrezia sarothrae*), and curly-cup gumweed (*Grindelia squarrosa*) (*see Figure 3-3*).

2) Western Wheatgrass Alliance Grassland covers the majority of the study area—approximately 53 percent—including most of the areas not occupied by Badlands formations or developed areas. This association is dominated by western wheatgrass (*Pascopyrum smithii*), a sod-forming grass that thrives in clay soils. It can range from almost pure, monotypic stands, to a true mixed-grass prairie. Other common species in this alliance include Japanese brome, blue grama (*Bouteloua gracilis*), Kentucky bluegrass, green needlegrass (*Nassella virdula*), and buffalo grass (*Buchloe dactyloides*) (*see Figure 3-4*).

3) Western Snowberry Shrubland is found on approximately 1 percent of the study area, forming several colonies in the southern and western portions of the site. This plant community is found in moist drainages, swales, or depressions or other low areas where extra moisture is available. Common species include western snowberry or wolfberry (*Symphoricarpos occidentalis*), skunkbush (*Rhus trilobata*), prairie wild rose (*Rosa arkansana*), poison ivy (*Toxicodendron rydbergii*), mountain wormwood or white sage (*Artemisia ludoviciana*), western wheatgrass, downy brome, and Japanese brome.

4) Chokecherry Shrubland is located in a small area (less than 1 percent of study area acreage) just south of the maintenance buildings. This plant community is often found in draws and drainages, forming impenetrable thickets composed of American plum (*Prunus americana*) and/or chokecherry (*Prunus virginiana*), with western snowberry, skunkbush, currant (*Ribes odoratum*), and Kentucky bluegrass also often present.

5) Switchgrass Grassland is a common component of mesic areas, but was found as a dominant grass in a few areas of the North Unit of the park. One of these areas occurs just north of the new wastewater ponds and comprises a little more than 1 percent of the study area. The dominant species is switchgrass (*Panicum virgatum*) with other associated species including little bluestem (*Schizachyrium scoparium*), heath aster (*Aster ericoides*), wild licorice (*Glycyrrhiza lepidota*), prairie dropseed (*Sporobolus heterolepis*), and western wheatgrass.

dominant. Associations in the park are termed, for example, as Woodland, Shrubland, and Grassland while groups of Associations are termed as complex, emergent wetlands, and alliances.

6) Emergent Wetland Grassland is dominated by short rhizomatous grasses and grasslike plants such as cattail (*Typha angustifolia* and *T. latifolia*), bulrush (*Scirpus americanus* and *validus)*, barley (*Hordeum vulgare*), and common rush (*Juncus spp*.). This community was mapped in a small area (less than one percent of study area acreage) that appears to have been used as a borrow pit located west of the maintenance buildings and southwest of the old wastewater ponds—just outside the boundary of the park and the study area. The area associated with the now-drained ponds will cease supporting this type of vegetation.

7) Eastern Cottonwood Woodland is one of the few wooded associations in the park. During CLR-related fieldwork, a few trees were mapped in this association and others were noted to occur north of the old wastewater ponds and along the northern portion of the eastern wash. Common species include the cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*) with snowberry, western wheatgrass, and Kentucky bluegrass also often present (*see Figure 3-5*).

Exotic and invasive plant species, (described for the park as a whole in the Environmental Context and Setting section above) are also present within the Cedar Pass Developed Area. Plants common in the study area, or of particular concern, are halogeton, yellow sweet clover, alfalfa, puncture vine, and Canada thistle. Other exotic or invasive species found in the park that may occur within the study area include Japanese brome, downy brome, smooth brome, crested wheatgrass, Kentucky bluegrass, giant ragweed, field bindweed, spotted knapweed, Russian knapweed, houndstongue, and perennial sow thistle. Siberian elms (*Ulmus pumila*) have been planted at the Lodge and have escaped to the grassland area east of the Lodge.

Wildlife that occurs within the Cedar Pass Developed Area includes Rocky Mountain bighorn sheep, which are frequently sighted in the study area. Other common park wildlife that may be sighted within the study area include mule deer, pronghorn antelope, coyotes, bobcats, muskrats, least chipmunks, jackrabbits, desert cottontails, and eastern cottontails.[28] The black-footed ferret, black-tailed prairie dog, mountain lion, and bald eagle are also spotted within the study area.

SPATIAL ORGANIZATION

Within the sharply dissected terrain of the Badlands, which can be described as extreme, vast, and disorienting, the Cedar Pass Developed Area offers a point of contrast and reference. Located at the southeastern tip of Badlands National Park, it is partially surrounded on the north and east by the Badlands Wall formation, with smaller formations located around the maintenance area to the south and a single peak between the Cedar Pass Lodge and campground. Open grasslands sweep across the remainder of the site, continuing southwest beyond the post and wire fence demarcating the park (and study area) boundary. This protected position at the foot of the Wall, with open views to the southwest, presents visitors with both close views of the formations and distant views across the prairie (*see Figure 3-6*).

[28] National Park Service, Draft "General Management Plan," 74.

Within the site, the formations dominate spatial organization, with clustered buildings lining circulation corridors. The Badlands Loop Road and South Dakota Highway 377 separate the Cedar Pass Developed Area from the Wall formation to the north. Both road corridors are slightly elevated. With little or no vegetation in the area, these road corridors seem to merge visually with the surrounding landscape (*see Figure 3-7*). In the northeastern corner of the study area, the service road corridor leaves the Badlands Loop Road and cuts south through the site, passing through a gap in the formation and continuing outside the park. These three roads—the Badlands Loop Road, SD Highway 377, and the service road—form an "L"-shaped system along which developed nodes are located (*see Map 3-2*).

Four separate development nodes are located with the study area; the Visitor Center/administration residential cluster; maintenance facilities; the Cedar Pass Lodge and cabins; and campground. The Visitor Center/administration/residential area is the largest, beginning at the corner of the service road and the Loop Road and stretching south along the eastern side of the service road. The Visitor Center faces the Loop Road with a large parking lot in front. Staff parking edges the rear of the building and a large overflow parking area stretches from the rear of the Visitor Center to the administration cluster with its paving continuous with the service road (*see Figures 3-8 and 3-9*). Walks connect the Visitor Center to the parking areas and the administration cluster. Tree and shrub plantings accentuate the front lawn of the Visitor Center (*see Figure 3-10*). The Visitor Center is the focal point of a large open area. The siting of the Visitor Center affords views of the formation to the west. The circulation patterns of roads, parking and walks, and plantings are subordinate to and strengthen the object quality of the Visitor Center.

The administration portion of the cluster lies several hundred feet south of the Visitor Center and is comprised of five buildings—three of which are situated to form a courtyard space, with the other two sitting to their east. Two small parking areas are located between the two groups of buildings and accessed from the south via an old service road segment. A network of walks connects the buildings, Visitor Center, and parking. Several small trees surround the two eastern buildings and several others line a walk from the Visitor Center to this area (*see Figures 3-11* and *3-12*). In contrast to the Visitor Center area, the administration area is a complex of buildings that are sited to form courtyard-like spaces defined by building façades.

Further south and oriented along the old service road segment is the residential portion of the cluster. A short road spur connects the service road with the residential streets (*see Figure 3-13*). The northern half of the residential cluster is comprised of eight one-story single-family residences that edge the old service road segment as well as a loop drive to the east (*see Figure 3-14 and Figure 3-15*). Five of the houses have detached garages, which form a small courtyard space. Fencing and vegetation creates intimate spaces around each house. Front lawns lack fencing but have more trees and shrubs, while the rear lawns are often partially fenced but have few plantings (*see Figure 3-16*). The southern half of this cluster is comprised of four, one-story, seasonal employee apartments at the terminus of the old service road segment. The apartment units are arranged to create a central courtyard. A formation surrounds the units to the south, east, and west sides. Walks connect the two units to each other and to two small parking areas (*see Figure 3-17*). A few trees are scattered throughout the area. A small fenced clothesline area lies just east of the apartment units (*see Figure 3-18*). The arrangement of streets and buildings,

along with large trees, resulted in a hierarchy of spaces. A large central space is defined by the Loop Road, large trees, and the fronts of residences. Smaller residential lawn spaces are defined between buildings, between the buildings and loop road edge, and by fencing. In addition, at the rear of the single-family residences are small spaces defined by the rears of buildings and fencing and the nearby formations. Another major courtyard space is defined by the multifamily apartment buildings.

A new two-story fire cache lies just east of the service road approximately 600 feet south of the apartment complex and outside the developed nodes. Although the site was under construction during the June 2003 field visit, it was noted that the appearance of this building will differ significantly from other buildings visible from the visitor areas due to its two-story profile. The base of the building is partially screened by a formation just to its north (*see Figure 3-19*).

The maintenance developed node is located in the far south portion of the study area to either side of the service road; although the bulk of development lies to the west of the road. From the fire cache, the service road crosses a narrow strip of prairie before passing through a gap in a large formation and reaching the maintenance area. This formation completely screens the maintenance area from visitor areas (*see Figure 3-20*). The primary maintenance yard lies immediately south of the formation. It consists of three large rectangular buildings situated perpendicular to the service road (*see Figure 3-21*). Several smaller structures edge the yard. Employee parking, a fenced tree nursery, and site fencing separate the area from the service road. South of these buildings, a gravel drive loops around a formation peak with piles of discarded building materials and equipment lining its edge and a mixing circle at its south end (*see Figure 3-22*). This central formation peak screens much of the debris from the service road and maintenance yard. A small shed and fenced area for horses lies between the mixing circle and service road.

A large water tank and pump building lie at the base of another formation opposite the service drive from the maintenance buildings. A short gravel drive connects these structures to the service road (*see Figure 3-23*). Two large wastewater lagoons surrounded by fencing are located east of the service road at the southern extreme of the study area. A gravel drive connects this area to the service road and continues east beyond the study area boundary (*see Figure 3-24*).

The other two developed nodes are found southwest of the Visitor Center. Cedar Pass Lodge lies along the Loop Road approximately 1,000 feet to the west, with the main building facing the road. A large parking lot occupies most of the space between the building and road. The rear of the building is typical of a service court for a restaurant, with a large refrigeration unit, and trash and recycling receptacles (*see Figure 3-25*). A wide drive east of this building leads to the Lodge cabins, which are set in two facing rows. The drive narrows to a single lane and forms an oblong circle drive between the cabins with a wide planted strip between the lanes.

A dozen cabins lie on the west side of the drive and nine structures lie to its east. The structures are evenly spaced except for a gap on the west side and two gaps on the east side where cabins have been removed. The structures vary by size depending on use and number of rental units—there is a large employee residence, a laundry room, as well as single and triple unit cabins. The employee residence has a fenced side and back yard as well as a number of shrubs and trees (*see Figure 3-2*). A few trees lie to either side of the main Lodge and a variety of trees and shrubs are scattered between and around the rear of most cabins, helping to create an enclosed space between the rows of structures (*see Figure 3-27*). Vegetation in the planted strip varies from dense tree growth at either end (again enclosing this interior space to an extent) to scattered trees over turf or turf only in the middle. Otherwise only an occasional tree lies here and there around the perimeter of this area. The siting of the cabins and large trees create one of the more formalized spaces in the Cedar Pass Developed Area. In contrast with the central spaces of the residential area, the row of cabins creates a long, rectilinear space defined by the front façades of the structures, straight parallel drives and linear tree plantings.

On the west side of the main Lodge, a service drive leaves the parking lot and swings around to the rear of the building. A branch off this drive heads south, running parallel to the cabin drive before curving back to the east to tie into the end of the cabin drive. This drive connects to a small maintenance building southwest of the main building, and halfway down its length, to a mobile unit residential area used by Lodge employees. There are no plantings in this area and a large formation rises to the west of these two buildings (*see Figure 3-28*). A fenced propane storage area lies to the north of the mobile units. A defined turf area encompasses the cluster's perimeter, adjacent to the surrounding native prairie grasses.

The campground is the westernmost development node within the study area and stretches along South Dakota Highway 377 to the Loop Road intersection at the western boundary of the study area. A large formation physically and visually separates the Lodge from the campground. The area is accessed via a drive from Highway 377, which provides access to the amphitheater parking lot to the left and the campground to the right. The pavement widens at the campground entrance booth. A loop drive services the group camping area. It extends from the main drive to the east and rejoins the main drive on either side of this booth. Beyond the booth, the main drive separates to form two loop drives. Each loop drive has a cross link with campsites lining the edges of the drives, and a central comfort station. The group area has two comfort stations set outside its loop. Trails to the comfort stations are the only formal pedestrian circulation features in the area. Bollards line the edge of each drive inside the campgrounds. Each campsite is composed of a parking space and a picnic table covered by a sun/wind shelter. Overall, the campground is characterized by open lawn with a few scattered shade trees and open prairie grassland beyond. The sun/wind shelters dominate the ground plane in the two main campground loops, while only a few closely situated rows of these structures are found in the group camping loop (*see Figure 3-29*).

The diamond-shaped amphitheater is located southeast of the eastern group camping loop and amphitheater parking. It occupies slightly sloped terrain at the western base of a large formation separating the campground from the Lodge. The formation rises steeply behind the projection screen (*see Figure 3-30*). The amphitheater is connected to its parking lot by a winding path; a second path joins the amphitheater to the group camping site.

LAND USE

Within the confines of the study area there are a variety of land uses. These include:

— **visitor accommodations**: visitor services available at the park include restrooms at the Visitor Center and Lodge and four comfort stations at the campground. Other accommodations include a restaurant and gift shop within the Lodge and a bookstore at the Visitor Center.

— **interpretation**: interpretive activities occur in several areas, including the amphitheater, the outdoor classroom, free-standing waysides along roads and trails, and interpretive media/exhibits and an audio-visual program and at the Visitor Center.

— **lodging**: a concessionaire provides seasonal lodging at individual cabins at the Cedar Pass Lodge.

— **recreation**: passive recreation in the Cedar Pass Developed Area includes viewing wildlife, picnicking, and attending interpretive programs at the amphitheater. Active recreation includes informal walks through the campground and unauthorized access of formations. Camping and picnicking are the primary active recreational uses. Picnic tables are located the group and individual campsites.

— **administration**: park offices are housed in the Visitor Center and in the administration building cluster behind the Visitor Center.

— **maintenance**: several buildings comprise the maintenance facility. The facility provides equipment storage, fuel storage, horse stables, a small nursery, equipment washing, a mixing circle, and chemical storage. The area is also used as a storage site for discarded equipment and building materials, and garbage burning. A fire cache, located between the maintenance area and Visitor Center, houses fire fighting equipment for the park. A maintenance building for the Lodge is located to its southwest. A museum collections storage building is currently under construction.

— **utility**: utilities located in the area include water, electric, and propane storage. A water storage tank and pump house provide water. Wastewater lagoons for water treatment are located off the service road near the south boundary.

— **housing**: single-family homes for permanent park personnel and apartments for seasonal personnel are located south of the administration building cluster. Housing for the concession manager is located southeast of the Lodge. A mobile home and two RVs provide housing for Lodge personnel west of the cabins.

CIRCULATION

Circulation in the Cedar Pass Developed Area consists of two highways, a state road, and a variety of sidewalks and trails. South Dakota Highway 377 and Badlands Loop Road border the study area to the north and provide access to points beyond. Both highways are two-lane asphalt roads slightly elevated above the surrounding grade. From Interior, South Dakota, Highway 377 heads north and borders the site for approximately a quarter mile before terminating at the Badlands Loop Road (*see Figures 3-31 and 3-32*). Bordering the northeastern portion of the study area for approximately a quarter mile, the Badlands Loop Road forms a loop connecting to I-90. Located off these two major roads are three main access points to the site: the campground drive, Cedar Pass Lodge Drive, and a service road.

The campground drive is accessed from South Dakota Highway 377. After an initial short paved section, the remainder of the drive is gravel. A road arises leading east into the amphitheater parking lot. The second turn off the drive is another east turn onto a loop road that provides access to the amphitheater and group campground. The first portion is paved, but the road changes to gravel at the amphitheater. It remains gravel as it loops around the group campground. The main campground drive widens at the group campground to accommodate an entrance booth in the center of the road (*see Figure 3-33*). The group campground loop rejoins the main road approximately 100 feet past the booth. The road then forks to provide access to the two campgrounds. Both drives are gravel and loop through the campground in an irregularly curved manner to accommodate gravel pull-offs for individual camp sites (*see Figure 3-34*).

The entrance to Cedar Pass Lodge drive originates from the Badlands Loop Road just east of its intersection with South Dakota Highway 377. A paved road—Cedar Pass Lodge Drive—provides access to Lodge parking, the service area behind the Lodge, and the cabins. The road continues from the parking lot on the east side of the Lodge and enters the cabin area (*see Figure 3-26*). Through the cabins, the drive is a one-way loop with a large area of turf and trees in the center. Two gravel lanes cut across the drive to connect the two sides of the loop. Near Cedar Pass Lodge, a gravel service road leads from the western end of the Lodge parking lot to the concession maintenance building and service area behind the Lodge. The service road then proceeds south to the propane tanks and mobile home, then turns east, terminating at the end of Cedar Pass Lodge drive loop. Near the southern boundary of the park, the former wastewater lagoon access drive is visible as a trace road. The road heads south, then forks to connect to a former borrow pit site and the maintenance facility.

The service road originates at the Badlands Loop Road just west of the Visitor Center and runs south through the site (*see Figure 3-35*). It is a non-public, unmarked road, paved in asphalt for most of its length, becoming gravel just south of the maintenance cluster. From the Badlands Loop Road, a road leading east provides access to the Visitor Center parking. As the service road

proceeds, another road leading east directly behind the Visitor Center provides access to the administration parking lot. Continuing beyond the parking, the service road expands to form overflow parking space. Two hundred and fifty feet beyond the overflow parking, a spur road leads east and connects to an older road section (*see Figure 3-13*). A remnant of the original alignment of the service road, 200 feet east of the present service road, provides access to the apartments and to a loop through the single-family homes. The main service road continues south where a gravel drive to the east provides access to the fire cache. Approximately half a mile south of the fire cache is an intersection; to the west is the paved entrance to the maintenance yard and to the east a gravel drive to the water storage. The service road continues to the park's south boundary (*see Figure 3-21*). Approximately 600 feet from the southern park boundary, a ten- to fourteen-foot gravel drive heads east and provides access to the new wastewater lagoon before continuing out of the study area (*see Figure 3-24*).

Parking

Parking lots are located throughout the study area at key locations. A paved parking lot with forty to fifty marked bays is located in front of the Visitor Center. Another paved parking area comprised of two lots is located behind the Visitor Center. One is a rectangular lot located directly south of the Visitor Center; the other is an expansion of the service road (*see Figure 3-9*). Located between the Resource Protection Office and the Conference Center is a paved parking lot with a gravel extension along the east side. Located in front of the Lodge is a paved parking lot with spaces for approximately sixty to seventy vehicles. The amphitheater parking area, located off the campground access road also provides paved parking. The maintenance yard has a graveled parking lot accessed by the service road (*see Figure 3-21*).

Pedestrian Circulation

Sidewalks provide the means for pedestrian circulation within the developed area. A concrete walk twelve feet wide provides access from the Visitor Center parking to the front entrance of the center. Four-foot-wide walks continue around the perimeter of the building to provide access to the administrative parking lot behind. An eight-foot-wide sidewalk begins at the southeastern corner of the administrative parking and connects to a system of wooden boardwalk sidewalks throughout the administrative cluster (*see Figure 3-11*). In the residential areas concrete sidewalks connect entrances, garages, and patios.

The circulation at the Lodge is less formal. The loop road through the cabins and the open space between the cabins allow pedestrian movement to and from the Lodge building. To enter the Lodge from the cabins, pedestrians must walk through the service area at the rear of the building and then along either the east or west side the building.

A six-foot-wide trail runs parallels to the south edge of the Badlands Loop Road, connecting the Visitor Center and Lodge parking with the outdoor classroom adjacent to the amphitheater parking area. Bollard lights line the asphalt trail (*see Figure 3-5*). At the outdoor classroom, a single asphalt walk heads south, winding towards the amphitheater. Another asphalt walk from the group campground loop provides access to the south end of the amphitheater and includes a flight of concrete steps. Other asphalt walks are located within the campground area, providing access to the four comfort stations.

TOPOGRAPHIC MODIFICATIONS

Topographic modifications evident within the Cedar Pass Developed Area are associated with the grading for the construction of buildings, vehicular and pedestrian circulation, and utilities. Because the approach to facility design at Cedar Pass was to disturb as little of the natural environment as possible, the use of cut and fill and large areas of land disturbance to construct buildings were minimized. Most importantly, existing facilities have been sited to minimize impacts to the formations (see Geology and Natural Systems discussions earlier concerning naturally-occurring topographic features).

The most dramatic topographic modifications associated with the area are wastewater treatment lagoons. The former wastewater lagoons contained four ponds, two large ponds approximately one to one and a half acres and two smaller ponds approximately half an acre in size. The larger ponds are estimated to have had an original depth of ten feet. Plans are underway to restore the ponds to native prairie vegetation by filling the ponds and then farming for several years to stabilize soil fertility (*see Figure 3-36*).[29] New wastewater lagoons have been installed east of the service road near the south park boundary. These ponds are approximately two acres in size. Some of the soil excavated from these ponds has been mounded between the ponds and the service road. Roads include graded swales and pitched road beds to direct stormwater to the swales (*see Figure 3-24*).

The topographic forms of sensitive geologic formations are undergoing measurable changes resulting from unauthorized access by visitors. Human-generated alterations, in the form of trails, paths, footholds, and the compacting and flattening of features, is evident on formations in the campground and Visitor Center areas.

[29] NPS PMIS System # 52569, Fill-in and Rehabilitate Old Lagoon Site, September 1999.

VEGETATION

Vegetation introduced as part of facility development primarily includes plants that are found regionally. These include:

Trees

Acer negundo	Box Elder
Celtis occidentalis	Hackberry
Fraxinus pennsylvanica	Green Ash
Jumiperus virginiana	Redcedar
Ulmus americana	American Elm
Ulmus pumila	Siberian Elm

Shrubs and Small Trees

Prunus americana	Wild Plum
Prunus pumila	Sand Cherry
Prunus virginiana	Chokecherry
Rhus aromatica	Skunkbush Sumac, Fragrant Sumac
Rosa spp.	Wild Rose
Symphoricarpus spp.	Corralberry, Snowberry

Small groupings of cedar trees anchor the front corners of the Visitor Center and are scattered around the parking lot and along the back of the building. Deciduous trees dot the surrounding landscape. Mown turf grass surrounds the Visitor Center and parking area. A grove of Siberian elms, possibly including other species, is located southwest of the Visitor Center. Siberian elms are potentially invasive and have already begun to spread by seed to surrounding areas (*see Figure 3-37*).

The vegetation in the residential area includes areas of mown turf grass and scattered evergreen and deciduous trees. There are few specimen shrubs or massings of shrubs. The eastern edge of the area is where the maintained residential landscape abuts naturally occurring vegetation.

Mown turf grass is the predominant vegetation type around Cedar Pass Lodge and in the parking medians. Deciduous trees occur sporadically along the perimeter of the Lodge including a large Siberian elm off the southwest corner. Cedars and deciduous trees and shrubs are located behind the Lodge and extend into the cabin area. The manager's residence has two raised planting beds on either side of the entrance containing an assortment of ornamental plants. The cabin area consists mainly of mown grass with evergreen trees between the cabins and deciduous trees located in the common lawn area, which provides much needed shade (*see Figure 3-27*). A defined edge exists between the mown grass in the Lodge area and the surrounding grasslands (*see Figure 3-38*).

The vegetation in the campground consists of mown grass with scattered deciduous trees. The grass is patchy at the base of these trees where visitors seek shade. Natural grassland vegetation exists beyond the perimeter of the maintained campground landscape.

BUILDINGS AND STRUCTURES

B-01 Ben Reifel Visitor Center (Cedar Pass Visitor Center)

The Ben Reifel Visitor Center is a low, one-story masonry and glass Modernist building located on the south side of Highway 240—the Badlands Loop Road—a short distance from the Interior entrance to the park. It was dedicated on September 16, 1959, following fifteen months of construction under the initiative of Mission 66. It was built for and still functions as the park interpretive center, gift shop and administration building (*see Figures 3-39* and *3-40*). The NPS architect Cecil Doty was the designer; and the Rapid City firm of Lucas, Craig, & Whitwam was the architect of record. The Visitor Center is set against the rising rock formations at the entrance to the pass, and at the corner where the service road leads south to park housing, there are various maintenance and additional administration buildings.

The building has a flat roof with pre-finished, sheet-metal, gravel stops. An exposed-concrete foundation-wall system supports the exterior walls, composed of random-sized split-faced concrete masonry units (*see Figure 3-41*). The rough texture and color of the concrete masonry units resembles the striated layers of the Badlands rock formations. There is some cracking of the mortar in various areas due to settling. The roof of the Visitor Center shelters a relatively large recessed entry porch area that contains an exterior film theater with fixed seating and an exterior access to the public restrooms. The entry porch is composed of a concrete slab on grade, covered by a wooden-beam roof supporting tongue-and-groove decking. The open porch has been enclosed by painted plywood supported by steel tubing that is not original to the building. A ramp to the entry porch, also not original to the building, is not universally accessible (*see Figure 3-42*). The windows are hollow-metal steel fabrications with insulated glass on the front façade and steel-sash casement window systems on the rear.

Near the building's front entrance is the gift shop; a display room interpreting the park's geology; and a small interior theater containing display cases interpreting the flora, fauna, and native peoples of the area. Park administrative offices are located along the south side of the building.

Several areas of the foundation have moisture damage and evidence of settling. The floor of the exterior theater is in poor condition. Moisture has entered some of the concrete window sills causing the steel re-bar in the sills to rust. This has caused oxide jacking, a condition where the moisture in the sill has expanded through freeze-thaw cycles and split the face from the concrete sills (*see Figure 3-43*). Other exterior systems that include flashing and rain gutters are well maintained and in good condition.

B-02 Cedar Pass Lodge

The Cedar Pass Lodge is located on the south side of the Badlands Loop Road, between the Interior entrance to the park and the Visitor Center. It consists of a central original structure, which has received later additions to both the north and south sides (*see Figure 3-44*). The central original structure was constructed circa 1928 for Ben Millard and Clara Jennings, and has a simple gable roof with a projecting gable pavilion at the entrance (*see Figure 3-45*). The architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. Deep roof eaves contain round log rafters, which are exposed at the underside. Wood decking comprises the substructure. The roof is covered with sheet metal roofing and appears to be in fair condition. The log roof eaves are in good condition.

The north and south additions have flat roofs with large projecting overhangs and fascias faced with stained diagonal tongue-and-groove dimensioned lumber. The body of the Lodge complex has painted and lightly textured stucco finished walls, in good condition.

The original Lodge building has two large, wood-framed windows flanking the main entrance that have long and narrow horizontal muntins, in fair condition. The north and south additions contain tempered aluminum storefront window systems with insulating glass that are in fair condition. The entry and service doors are of brushed metal with hollow metal frames. The rear of the building contains pieces of mechanical equipment and a long, rectangular walk-in freezer unit (*see Figure 3-46*).

B-03 Cedar Pass Lodge Cottage

The cottage is located across the drive to the cabins and directly east of the Cedar Pass Lodge (*see Figure 3-47*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The cottage is an L-shaped, one-story residence with simple gable roofs and a projecting gable pavilion at the main entrance. The roofs are covered with pre-finished metal roofing, with no downspouts or gutters. The roof edges and eaves contain exposed rafter tails with wood sheathing. The wood elements are painted and are in fair condition. The walls of the cottage consist of lightly textured and painted stucco. The stucco is in fair condition. The windows consist of wood casement units set into wood frames and sills. Windows are painted and are in fair condition. The cottage doors consist of wood slab doors with a wood screen door. The entry doors have several small horizontal shaped glass lights. The doors are painted and are in fair condition.

B-04 Cedar Pass Laundry Building

The laundry building is located directly south of the Cedar Pass Lodge. Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. It is a rectangular, one-story building with a simple gabled roof. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias are constructed of 1-by-8-inch painted wood with the eaves containing exposed log rafter tails and spaced sheathing. These exposed logs contain some rot and are in fair to poor condition. The wall surfaces of the laundry building are of lightly textured painted stucco. The laundry building was clad with log siding that has since

been removed and stucco covering reapplied. The material still contains evidence of this alteration. Eaves and fascias are in generally fair condition. The windows are the original horizontal divided lights with an awning sash at the bottom (*see Figure 3-49*). The stucco wall surface curves and returns into the wood frame and the windows contain a simple, sloping wood sill. The windows are in fair condition. The entry door consists of a slab wood door set in a wood frame. The cabins and accompanying service buildings were originally clad with log siding for a rustic look. The split log siding was replaced with stucco in 1949. The protruding roof beams of the laundry building still contain evidence of the original log finish (*see Figure 3-48*).

B-05 Cedar Pass Lodge Maintenance Building

The maintenance building is a small, one-story, rectangular storage building containing a simple gable roof covered with asphalt shingles, in good condition (*see Figure 3-50*). It is located south of Cedar Pass Lodge and west of the laundry building. Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof has no downspouts or gutters. Rafters are exposed at the eaves. Fascias consist of 1-by-1-inch painted cedar boards. Rafter tails are in fair to poor condition. Some rafter tails show signs of rot due to moisture. The exterior walls of the maintenance building consist of lightly textured painted stucco, in fair condition. Some areas lack paint and have been damaged due to material storage leaning against the building. The stucco wall surfaces curve and return into the wood frame of the windows that contain a simple, sloping wood sill. The windows are casement sashes that contain divided wood lights, painted and in fair to poor condition. The door to the maintenance building consists of a two-panel wood door in wood frame. The door is in poor condition.

B-06 Cedar Pass Lodge Cabins # 1, 1A, 2, 2A

This cabin is a seasonal rental building located directly south of the laundry building within the cabin compound. It is a small, one-story, four-unit structure with a simple gable roof and a bay facing the front and a projection on the rear (*see Figure 3-51*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The cabins were originally clad with log siding that was replaced with stucco in 1949. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood in fair condition. The front projecting bay that contains an exterior door to one of the units is sheathed in split face multi-colored concrete masonry units. The wall surfaces of the rest of the cabin are lightly textured painted stucco, in fair condition. The original, wood, horizontal-slider windows have been replaced with aluminum double-hung sashes, with the exception of two wooden three-over-one, double-hung windows on the rear projection of the building (*see Figure 3-52*). There are window air conditioners projecting from the lower sash of a window in the rear of each unit. The windows are in fair to poor condition. The cabin entry doors consist of a slab wood door set in a wood frame with a wood screen door. The entry doors are a variety of configurations, some containing small glass vision panels. The screen doors and doors are generally in fair condition. The cabin contains a concrete platform running across the building, connecting the front entries of all of the units. The cabin has surface-mounted conduit and fuse boxes.

B-07 Cedar Pass Lodge Cabin #3

This cabin, set in the cabin compound south of Cedar Pass Lodge, is a small, one-story structure with simple gable roofs and a front gable sheathed in split face concrete masonry units with a window in the main entry door (*see Figure 3-53*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The exterior walls of the rest of the cabin are of lightly textured painted stucco. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The original wood horizontal-slider windows have been replaced with aluminum double-hung sashes. The windows are in fair to poor condition. The cabin entry doors consist of a slab wood door set in a wood frame with a wood screen door, in fair condition. An air conditioner has been cut into the north side of the cabin. There is a small concrete slab stoop at the entry door. This cabin has a surface-mounted conduit and fuse box.

B-08 Cedar Pass Lodge Cabin #4

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope, which is shallower than that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-09 Cedar Pass Lodge Cabin #5

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof, and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope, which is shallower than that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum, replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame

containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-10 Cedar Pass Lodge Cabin #6

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope that is shallower than that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-11 Cedar Pass Lodge Cabin #7

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof (*see Figure 3-55*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles and contains no downspouts or gutters. Fascias are constructed of 1-by-6-inch painted wood with exposed rafter tails and spaced sheathing at the eaves. Fascias and eaves are generally in fair condition. The wall surface of the cabin is lightly textured painted stucco. The cabin entry door consists of a slab wood door set in a wood frame with a wood screen door. The doors are in fair condition. The windows are of a horizontal slider configuration with horizontal divided lights at each sash, original to the construction of the cabin. The stucco wall surface curves and returns into the wood frame, and the windows contain a simple, sloping wood sill. The windows are in fair condition. The cabin has had an air conditioner cut into the side of the cabin. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition.

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof (*see Figure 3-55*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles and contains no downspouts or gutters. Fascias are constructed of 1-by-6-inch painted wood with exposed rafter tails and spaced sheathing at the eaves. Fascias and eaves are generally in fair condition. The wall surface of the cabin is lightly textured painted stucco. The cabin entry door consists of a slab wood door set in a wood frame with a wood

screen door. The doors are in fair condition. The windows are of a horizontal slider configuration with horizontal divided lights at each sash, original to the construction of the cabin. The stucco wall surface curves and returns into the wood frame, and the windows contain a simple, sloping wood sill. The windows are in fair condition. The cabin has had an air conditioner cut into the side of the cabin. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition.

B-13 Cedar Pass Lodge Cabin #9

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof (*see Figure 3-55*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles and contains no downspouts or gutters. Fascias are constructed of 1-by-6-inch painted wood with exposed rafter tails and spaced sheathing at the eaves. Fascias and eaves are generally in fair condition. The wall surface of the cabin is lightly textured painted stucco. The cabin entry door consists of a slab wood door set in a wood frame with a wood screen door. The doors are in fair condition. The windows are of a horizontal slider configuration with horizontal divided lights at each sash, original to the construction of the cabin. The stucco wall surface curves and returns into the wood frame, and the windows contain a simple, sloping wood sill. The windows are in fair condition. The cabin has had an air conditioner cut into the side of the cabin. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition.

B-14 Cedar Pass Lodge Cabin #10

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof (*see Figure 3-56*). A bedroom addition on the rear has doubled the size of the footprint of the original building (*see Figure 3-57*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface mounted conduit and fuse boxes.

B-15 Cedar Pass Lodge Cabin #11

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small one-story, rectangular structure with a simple gable roof (*see Figure 3-56*). A bedroom addition on the rear has doubled the size of the footprint of the original building (s*ee Figure 3-57*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured, painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-16 Cedar Pass Lodge Cabin #12

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a bedroom addition on the rear that has doubled the size of the footprint of the original building (*see Figures 3-56* and *3-57*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured, painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-17 Cedar Pass Lodge Cabin #S 14, 15, 16, 16A

This cabin, set in the cabin compound south of Cedar Pass Lodge, is a small, one-story, four unit T-shaped structure with a simple gable roof (*see Figure 3-58*). Three units face the lane, and one is placed in an ell on the rear, accessed by a concrete path around the north end of the building (*see Figure 3-59*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood in fair condition. The wall surface of the cabin is lightly textured painted stucco, in fair condition. The original wood horizontal-slider windows are in place on the front of the cabin, typical of the original windows of all of the cabins (*see Figure 3-60*). These windows have been replaced with aluminum double-hung sashes at the rear unit and are in poor condition. There are air conditioners projecting through the rear walls of the units. The cabin entry doors consist of a slab

wood door set in a wood frame with a wood screen door. The doors are generally in fair condition. The cabin contains a wood platform running across the building, connecting the entries of the three front units. The cabin has surface-mounted conduit and fuse boxes.

B-18 Cedar Pass Lodge Cabin #18

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof, and a small flat roofed bathroom addition on the south end (*see Figure 3-61*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen doors and doors are generally in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-19 Cedar Pass Lodge Cabin #19

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small flat roofed bathroom addition on the south end (s*ee Figure 3-61*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen doors and other doors are generally in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-20 Cedar Pass Lodge Cabin #20

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small flat roofed bathroom addition on the south end (s*ee Figure 3-61*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a

wood frame containing a small glass vision panel, with a wood screen door. The screen doors and doors are generally in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-21 Cedar Pass Lodge Cabin #21

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope, which is shallower than that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-22 Cedar Pass Lodge Cabin #22

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope, which is shallower than that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch, painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-23 Cedar Pass Lodge Cabin #23

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a small angular bathroom addition on the northwest corner (*see Figure 3-54*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. The roof of the addition has a roof slope that is shallower than

that of the main cabin. Fascias and eaves are constructed of 1-by-6-inch painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small 3-by-8-foot wood platform at the front entry, painted, in fair condition. This cabin is not air conditioned and has surface-mounted conduit and fuse boxes.

B-24 Cedar Pass Lodge Cabin #33

Set in the cabin compound south of Cedar Pass Lodge, this cabin is a small, one-story, rectangular structure with a simple gable roof and a steeply pitched off-center roof over the entry porch (*see Figure 3-62*). Constructed circa 1928 for Ben Millard and Clara Jennings, the architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is covered with asphalt shingles with no downspouts or gutters. Fascias and eaves are constructed of 1-by-6-inch, painted wood, in fair condition. The wall surfaces of the cabin are of lightly textured painted stucco. The windows are double-hung aluminum replacements for the original wood horizontal sliders. The windows are in fair to poor condition. The cabin entry door consists of a slab wood door set in a wood frame containing a small glass vision panel, with a wood screen door. The screen door and entry door are in fair condition. This cabin contains a small wood platform at the front entry, painted, in fair condition. An air conditioning unit has been installed through the south wall of the cabin and has surface mounted conduit and fuse boxes.

B-25 Campground Comfort Station Group 1

This comfort station is much newer than the other three comfort stations within the campground, and is placed south of the amphitheater (*see Figure 3-63*). It is a small, rectangular building with a gabled roof. The roof has asphalt shingles with exposed rafters and eaves that are painted, and the paint is in good condition. The shingles are in good condition.

The building has vertically scored plywood siding, which is painted and in good condition. The doors are composed of built-up wood doors and wood frames, which are in good condition. The ADA-accessible men's and women's restrooms are connected to the campground by a crushed stone path.

B-26 Campground Comfort Station Group 2

This comfort station was constructed as part of the Mission 66 campground improvements (*see Figure 3-64*). It is a rectangular concrete masonry building with a low sloping roof with pointed gable ends, Usonian in design. The roof has projecting wood beams at gables with tongue-in-groove wood decking. The roof is covered with corrugated metal roofing, which is in good to fair condition. The wood fascias and soffits are covered with pre-finished metal material, which is in fair condition. The stack bond concrete masonry walls are painted, and in good condition.

Above the concrete masonry there is a band of wood plywood at the windows up to the eaves. The wood is painted and in good to fair condition. The windows, both fixed and operable, have

clear and frosted glass. The fixed wood frames are painted and in good to fair condition. The operable windows have a steel hopper sash with a screen. These are in fair condition. The doors are hollow metal with hollow metal frames, which are painted. These are in good condition.

B-27 Campground Comfort Station A

This comfort station was constructed as part of the Mission 66 campground improvements (*see Figure 3-65*). It is a rectangular concrete masonry building with a low sloping roof with pointed gable ends, Usonian in design. The roof has projecting wood beams at gables with tongue-in-groove wood decking. The roof is covered with corrugated metal roofing, which is in good to fair condition. The wood fascias and soffits are covered with pre-finished metal material, which is in fair condition. The stack bond concrete masonry walls are painted, and in good condition.

Above the concrete masonry there is a band of wood plywood at the windows up to the eaves. The wood is painted and is in good to fair condition. The windows, both fixed and operable, have clear and frosted glass. The fixed wood frames are painted and are in good to fair condition. The operable windows have a steel hopper sash with a screen. These are in fair condition. The doors are hollow metal with hollow metal frames, which are painted. These are in good condition.

B-28 Campground Comfort Station B (Amphitheater Vault Toilet)

This comfort station was constructed as part of the Mission 66 campground improvements (*see Figure 3-66*). It is a rectangular concrete masonry unit building with a low sloping roof with pointed gable ends, Usonian in design. The roof has projecting wood beams at gables with tongue-in-groove wood decking. The roof is covered with corrugated metal roofing, which is in good to fair condition. The original wood of the fascias and soffits are covered with pre-finished metal material, which is in fair condition. The stack bond concrete masonry walls are painted, and in good condition.

Above the concrete masonry there is a band of plywood at the windows up to the eaves. The wood is painted and is in good to fair condition. The windows, both fixed and operable, have clear and frosted glass. The fixed wooden frames are painted and are in good to fair condition. The operable windows have a steel hopper sash with a screen. These are in fair condition. The doors are hollow metal with hollow metal frames, which are painted. These are in good condition.

B-29 Administration Building

The administration building, constructed in 1999, is a one story, modular, L-shaped, prefabricated building with simple end gables (*see Figures 3-67 and 3-68*). It is located south of the Visitor Center at the far south end of the parking lot. The roof material is a pre-finished steel with pre-finished aluminum K-style gutters and rectangular downspouts. The exterior wall finish is vinyl siding. Windows are aluminum clad horizontal sliders. The three entry doors are pre-finished steel with vision panels and are all wheelchair accessible with ADA-conforming wooden ramps with tubular steel railings. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-30 Conference/Maintenance Building

The conference/maintenance building is located directly east of the administration building (*see Figure 3-69*). The building was originally constructed in the 1980s as a "pole barn" garage. Sixty percent of the building was enclosed in 1994 for use as administrative space for maintenance. The conference room served as the library for the park until 1999. The building form is composed of a simple rectangular prefabricated module with simple end gables. The roof is brown asphalt with PVC gutters and downspouts. The exterior wall surface is of painted vertically-scored plywood siding. Fascias and eaves are composed of conventional lumber and plywood for soffits. The color of the building is of a buff-sand color finish, inspired by the color of the landscape, and is consistent with the traditional colors of the majority of the older buildings within the park.

B-31 Collection Storage/Fitness Center Building

The collection storage/fitness center is a small, one-story, rectangular building with simple end gables and a roof pitch approximately 4:12. It is located directly to the south of the Resource Protection Building (*see Figure 3-70*). This building was constructed as a "pole barn" garage in the 1980s on an existing concrete slab that was originally constructed for a Civilian Conservation Corps (CCC) era garage (the original garage was torn down in the 1960s). In 1994, the garage was enclosed and converted into offices for the GIS program and law enforcement rangers with the rear portion serving as collection storage. In 1999 the front portion of the building was converted into the fitness center when the Natural Resource Management staff moved into the new administrative and headquarters building, freeing up space in the Ranger Station and the GIS lab. The architecture employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The roof is of pre-finished steel roofing with no gutters or downspouts. The exterior wall finish is lightly textured stucco. Former openings have been closed although their locations remain visible. The windows consist of aluminum clad horizontal slider units. The entry door, which is not original to the building, is embossed steel set in a wooden frame and is in fair condition.

B-32 Resource Protection Building (CCC Ranger Station)

Set east of the conference/maintenance building, this building is a one-story, U-shaped, lightly-textured stucco-clad building with a simple peaked roof (*see Figure 3-71*). The architecture of this structure employs traditional simple Western building forms in materials and colors that harmoniously blend with the landscape. The inner court of the U plan has been in-filled. The roof is sheathed in non-original pre-finished steel. The rafter tails of the original portion of the building are exposed with painted roof sheathing. The roof is edged with PVC gutters with PVC downspouts, in fair condition. The windows are the original painted wood frame and sills, which have been retrofitted with, anodized aluminum double-hung sashes. The paint of the frames is failing. The main entry door is flush steel set in a wood frame.

B-33 Natural Resources Office Building

The natural resources office building is a simple one-story, rectangular and modular building that was constructed in 2001. It was assembled off site and moved to its present location. The roof is of pre-finished sheet metal, with metal fascias and soffits. The exterior walls are sheathed in bossed plywood that has been painted (*see Figure 3-72*). The windows consist of aluminum clad horizontal slider units. The entry doors are pre-finished steel with vision panels. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-34 Residence #28

This single-family, one-story, staff residence was built in 1952-53, directly south of the CCC-era buildings (*see Figure 3-73*). There is a projecting gable denoting the main living area inside. The building also includes an attached single-car garage. The roof is medium pitched with gable ends and no overhangs, and there is a narrow covered porch stretching across the front of the house. The roof is sheathed in standing-seam metal, not original to its construction. The exterior walls are of wide-profile cedar, painted, with vertical, painted tongue-and-groove cedar boards in the gables below the living room windows and on the sides and back. Fascias and eaves are painted dimensioned lumber, in fair condition. The windows have been replaced with a mix of vinyl clad horizontal sliders and double-hung windows. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-35 Residence #29

This single-family, one-story, staff residence was built from1952-53, directly south of the CCC-era buildings (*see Figure 3-74*). There is a projecting gable denoting the main living area inside. The building also includes an attached, single-car garage. The roof is medium pitched with gable ends and no overhangs, and there is a narrow covered porch stretching across the front of the house. The roof is sheathed in standing-seam metal, not original to its construction. The exterior walls are wide profile cedar, painted, with vertical, painted tongue-and-groove cedar boards in the gables below the living room windows and on the sides and back. Fascias and eaves are painted dimensioned lumber, in fair condition. The windows have been replaced with a mix of vinyl clad horizontal sliders and double-hung windows. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-36 Residence #30

This single-family, one-story, Mission 66-era residence is located in the housing compound south of the administration building complex (*see Figure 3-75*). The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements placed in the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-37 Garage #30A

This building is a one-vehicle detached garage which is original to the construction of Residence #30 (*see Figure 3-75*). The finishes of the garage match that of the house. The low sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements in the original wooden frames. There is a small concrete slab patio that connects the garage and house. These are in good to fair condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-38 Residence #31

This single-family, one-story, Mission 66-era residence is located in the housing compound south of the administration building complex (*see Figure 3-76*). The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements placed in the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-39 Garage #31A

This building is a one-vehicle, detached garage that is original to the construction of Residence #31 (*see Figure 3-76*). The finishes of the garage match that of the house. The low sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements in the original wooden frames. A breezeway has been installed between the garage and the residential unit. The breezeway consists of tubular steel elements clad with prefabricated cedar trellises. These also are in good to fair condition. There is a small concrete slab patio that connects the garage and house. These are in good to fair condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-40 Residence #32

This single-family, one-story, Mission 66-era residence is located in the housing compound south of the administration building complex (*see Figure 3-77*). The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements placed in the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-41 Garage #32A

This building is a one-vehicle, detached garage that is original to the construction of Residence #32 (*see Figure 3-77*). The finishes of the garage match that of the house. The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements into the original wooden frames. A breezeway has been installed between the garage and the residential unit. The breezeway consists of tubular steel elements clad with prefabricated cedar trellises. These also are in good to fair condition. There is a small concrete slab patio that connects the garage and house. These are in good to fair condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-42 Residence #33

This single-family, one-story, Mission 66-era residence is located in the housing compound south of the administration building complex (*see Figure 3-78*). The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung, aluminum windows are recent replacements placed in the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-43 Garage #33A

This building is a one-vehicle, detached garage original to the construction of Residence #33 (*see Figure 3-78*). The finishes of the garage match that of the house. The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung, aluminum windows are recent replacements in the original wooden frames. A breezeway has been installed between the garage and the residential unit. The breezeway consists of tubular steel elements clad with prefabricated cedar trellises. These are also in good to fair condition. There is a small concrete slab patio that connects the garage and house. These are in good to fair condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-44 Residence #34

This one-story, Mission 66-era, single-family dwelling is located in the housing compound to the south of the administration building complex (*see Figure 3-79*). The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements placed in the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-45 Garage #34A

This building is a one-vehicle, detached garage original to the construction of Residence #34 (*see Figure 3-79*). The finishes of the garage match that of the house. The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in lightly textured stucco. The double-hung aluminum windows are recent replacements into the original wooden frames. A breezeway has been installed between the garage and the residential unit. The breezeway consists of tubular steel elements clad with prefabricated cedar trellising. These also are in good to fair condition. There is a small concrete slab patio that connects the garage and house. These are in good to fair condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-46 Residence #46

This single-family, one-story, 1970s-era residence is located in the housing compound south of the administration building complex and serves as housing for the park Superintendent (*see Figure 3-80*). The residence has a low, pitched roof of a pre-finished sheet metal with wide overhangs, and PVC gutters and downspouts. Fascias and soffits are finished in dimensioned plywood. The exterior walls are finished in vertical-groove plywood siding. The double-hung aluminum windows are recent replacements in the original wooden frames, in fair condition. A wooden deck has been added to the rear of the house, painted, in good condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-47 Garage #46A

This building is a one-vehicle, detached garage original to the construction of Residence #46 (*see Figure 3-80*). The finishes of the garage match that of the house. The low, sloped roof with wide overhangs is of a pre-finished sheet metal. Fascias and soffits are finished in dimensioned plywood. The fascias and soffits are painted and in good to fair condition. The exterior walls are finished in vertical-groove plywood siding. The double-hung aluminum windows are recent replacements into the original wooden frames. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-48 Seasonal Apartment #135

This building, constructed in 1976, is a one-story, four-family apartment building located in the housing compound to the south of the administration building complex (*see Figure 3-81*). Each unit has a recessed entry porch. The low, pitched roof is of a pre-finished sheet metal with wide overhangs. Fascias and soffits are finished in dimensioned plywood. The exterior walls are finished in lightly textured stucco in fair condition. The double-hung aluminum windows are recent replacements placed in the original wooden frames. Entry doors consist of flush wood with wood and glass storm doors in fair condition. This is one of four multi-unit buildings that enclose a common yard. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-49 Seasonal Apartment #45

This building is a one-story, Mission 66-era, four-family apartment building located in the housing compound to the south of the administration building complex (*see Figure 3-82*). Each unit has a recessed entry porch. The low, pitched roof is of a pre-finished sheet metal with wide overhangs. Fascias and soffits are finished in dimensioned plywood. The exterior walls are finished in lightly textured stucco in fair condition. The double-hung aluminum windows are recent replacements in the original wooden frames. Entry doors consist of flush wood with wood and glass storm doors in fair condition. This is one of four multi-unit buildings that enclose a common yard. At the rear of the building is a wood screened outdoor laundry line. The screens consist of 1-by-12-inch, board-on-board, painted fences in fair to poor condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-50 Seasonal Apartment #51

This building is a one-story, Mission 66-era, four-family apartment building located in the housing compound to the south of the administration building complex (*see Figure 3-82*). Each unit has a recessed entry porch. The low pitched roof is of a pre-finished sheet metal with wide overhangs. Fascias and soffits are finished in dimensioned plywood. The exterior walls are finished in lightly textured stucco in fair condition. The double-hung aluminum windows are recent replacements into the original wooden frames. Entry doors consist of flush wood with wood and glass storm doors in fair condition. This is one of four multi-unit buildings that enclose a common yard. At the rear of the building is a wood screened outdoor laundry line. The screens consist of 1-by-12-inch, board-on-board, painted fences in fair to poor condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-51 Seasonal Apartment #52

This building is a one-story, Mission 66-era, four-family apartment building located in the housing compound to the south of the administration building complex (*see Figure 3-82*). Each unit has a recessed entry porch. The low pitched roof is of a pre-finished sheet metal with wide overhangs. Fascias and soffits are finished in dimensioned plywood. The exterior walls are finished in lightly textured stucco in fair condition. The double-hung aluminum windows are recent replacements in the original wooden frames. Entry doors consist of flush wood with wood and glass storm doors in fair condition. This is one of four multi-unit buildings that enclose a common yard. At the rear of the building is a wood-screened outdoor laundry line. The screens consist of 1-by-12-inch, board-on-board, painted fences in fair to poor condition. To the north of this building is a small, relatively new storage building. It is a prefabricated building constructed off site and moved to its present location. The exterior walls are of grooved vertical plywood siding with a slightly peaked sheet-metal roof. It has large sliding doors facing into the courtyard of the four apartment buildings. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

B-52 Fire Cache, #177

The fire cache was constructed in late 2002. It is a long, steel-structured, peaked building with three large truck bays at the west end, under a roof that is higher than the rest of the building (*see Figure 3-19*). The roof and walls are finished in sheets of corrugated metal. The windows are aluminum horizontal sliders. Its industrial architecture and materials are not in keeping with the masonry or wood of the buildings that elsewhere blend into the landscape.

B-53 Maintenance Shop

The maintenance shop, with initial construction in 1960, faces the maintenance cold storage building to the north. The two buildings share a drive and large paved area (*see Figure 3-83*). The walls are constructed of concrete masonry in a stack bond with a low, sloped roof pitched from front to back. The walls are in fair condition. The paint is peeling and some cracking has occurred due to settlement. The building has a rectangular plan with four low and two high vehicle bays. The building has K-style downspouts and gutters, which are in good condition. The overhead doors are non-insulated steel panels with vision panels. These are in fair condition. The fascias are in poor condition. They are lacking paint.

B-54 Maintenance Cold Storage

The maintenance cold storage building, with initial construction in 1961, faces south toward the maintenance shop (*see Figure 3-84*). The walls are constructed of concrete masonry units in a stack bond with a low, sloped roof pitched from front to back. The walls are in fair condition. The paint is peeling and some cracking has occurred due to settlement. The building has a rectangular plan with six low and two high vehicle bays. The building has K-style downspouts and gutters, which are in good condition. The building has aluminum windows with insulated glass and slider vent units. These are in good condition. The overhead doors are non-insulated steel panels with vision panels. These are in fair condition. There is a small office addition at the west (*see Figure 3-85*). It has wood lap-siding with a partially corrugated gable roof, which is in fair condition. The aluminum fascias are in poor condition. They are lacking paint.

B-55 Maintenance Storage Building

The maintenance storage building, constructed in 1988, is located north of the maintenance shop (*see Figure 3-86*). It is a long, corrugated-metal, paneled building with a peaked, asphalt-shingled roof. The building contains six tall truck bays and fifteen short truck bays, with no overhead doors. The aluminum fascias are in fair condition.

B-56 Sand Shed

The sand shed, constructed in 1977, is located to the west of the maintenance buildings (*see Figure 3-87*). It has a rectangular plan. The south end has lower walls than the north end, causing a break in the continuous gabled roof. There are corrugated-metal panel walls and decking, which are in fair condition. The paint finish is fading and some of the panels are dented. There is a sliding barn door at the south end and an overhead steel door at the east. Both are in fair condition.

B-57 Hazmat Building

The hazmat building is a small, rectangular structure placed near the maintenance buildings within a small canyon that is used as a repository for used materials and equipment (*see Figure 3-88*). It has a low, sloping, peaked roof with wide overhangs. The roof is sheathed in asphalt shingles. The fascia and soffits are of dimensioned lumber. The walls are finished in vertical-striated plywood. The north side of the building has a steel, sliding, barn-type door, and the west side has a steel door. Park staff have indicated that this building may have been constructed at the Pinnacles Ranger Station in the 1970s to serve as a tack shed for wilderness rangers and later moved to the Cedar Pass Developed Area.

B-58 Lodge Employee Mobile Home

The Lodge employee mobile home was placed in the park in 2003. It is a new, prefabricated mobile home with a low, pitched asphalt roof and vinyl siding (*see Figure 3-89*). The color of the building is not in keeping with the traditional colors of the majority of the older buildings within the park.

S-01 Cedar Pass Lodge Ice House

The ice house consists of a refrigeration trailer unit that has been permanently installed on a concrete slab (*see Figure 3-90*). An independent post system supports a flat roof with a wide fascia of diagonal wood siding, stained, and in fair condition. It is placed just west of the Cedar Pass Lodge, accessed from the sidewalk on the edge of the Lodge parking lot.

S-02 Interpretive Shelter

The interpretive shelter is a rectangular structure with a gable roof, open on two sides, with the other two sides enclosed with stucco walls and colored to blend with the landscape (*see Figure 3-91*). The structure is in good condition. The roof is of pre-finished metal with wood eaves and wood fascia. These are in good condition. There are heavy metal connections at the columns and roof. The asphalt slab is in good condition.

S-03 Campground Shed

The campground shed is a prefabricated, recently-placed, small, wooden structure with a low, pitched, gabled roof, which was constructed off site and placed here on wooden runners (*see Figure 3-92*). The roof is of asphalt shingles and the walls are of vertical-grooved and textured plywood, with wide sliding doors on one side. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

S-04 Campground Entrance Booth

The campground entrance booth, built during the Mission 66 era, has a rectangular plan with a shed roof (*see Figure 3-93*). There is a small booth for park staff that contains sliding aluminum horizontal windows and a metal door and frame. These are in good condition. There is a deep, long roof overhang, which contains an information panel between the columns and the pay telephone. The walls are lightly-textured stucco that has been painted. They are in good condition. The corrugated metal roof is also in good condition. There are plywood soffits and wood fascia, which are painted and in good condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

S-05 Amphitheater Stage

The amphitheater stage is a tall, rectangular building with a shed roof. It has vertical-groove plywood siding, which is in good condition (*see Figure 3-94*). The corrugated metal roof is in good to fair condition. The steel overhead stage door is painted and is in good condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

S-06 Amphitheater Projection Booth

The amphitheater projection booth is a small rectangular building with simple shed roof that is in fair condition (*see Figure 3-94*). The lightly-textured stucco walls are painted. The asphalt-shingle roof has a wood fascia and plywood soffit, which is painted. They are in good condition. The entry door at the rear of the booth is of solid wood, painted, and in good condition. The color of the building is in keeping with the traditional colors of the majority of the older buildings within the park.

S-07 Amphitheater Retaining Wall

The amphitheater retaining wall is a low concrete structure set into the landscape to the east of the projection booth. It supports a chain link fence, is battered, and in good condition (*see Figure 3-94*).

S-08 Air Quality Monitoring Station (NE Entrance Air Quality Building)

Across the service road and southwest of the fire cache, the air quality monitoring station is a square concrete building with adjacent metal scaffolding that houses monitoring equipment on top (*see Figure 3-95*).

S-09 Sewage Treatment Lift Station

Between the fire cache and maintenance area, a sewage treatment lift station is located along the east side of the service road. The structure is comprised of three upright, rectangular, metal structures on a concrete pad and a junction box on a post surrounded by metal bollards (*see Figure 3-96*).

S-10 Cedar Pass Tack Room

The tack room is a small, one-story, wood building with a wood-frame and gable roof which has cedar shingles (*see Figure 3-97*). The roofing is in poor condition with cupped and missing shingles. The wooden lap siding is painted and in fair condition. The wooden divided-window sashes are in poor condition.

S-11 Water Supply Tank

The water supply tank is a large round metal water tank located in the park maintenance area (*see Figure 3-98*).

S-12 Water Supply Pump Building

The water supply pump building is a pre-engineered structure, which was recently constructed (*see Figure 3-98*). It has a simple rectangular plan with a gabled, corrugated-metal roof and wall panels, which are in good condition. The doors are of hollow metal and flat steel and are in good condition.

S-13 Wastewater Lagoons and Structures

In addition to the partially enclosed concrete retaining wall and visible pipes, most of the structures related to the wastewater lagoons are underground (*see Figure 3-24*).

S-14 Concrete Box Culverts

Two large concrete box culverts with perpendicular walls create a box culvert under the Badlands Loop Road and SD Highway 377 (*see Figure 3-99*).

S-15 Timber Footbridge

Along the trail from the Visitor Center to the Lodge, a timber footbridge, consisting of wood slats held together by side posts, crosses a small wash (*see Figure 3-100*).

S-16 Concrete Block Retaining Wall

There is a short concrete-block retaining wall with capstones in front of the building adjacent to the parking lot (*see Figure 3-101*).

SMALL-SCALE FEATURES

Various small-scale features are located throughout the Cedar Pass Developed Area. These features are listed below and their locations noted on existing conditions maps; important or unusual features are described herein in greater detail. Types of small-scale features include signage, fencing, trash receptacles, and lighting. Several small-scale features are unique or only occur in specific locations. Features unique to the Visitor Center are a metal flagpole, galvanized-steel bike racks, and a wood informational kiosk (*see Figure 3-10*). Decorative gravel landscape installations in a variety of forms can be found around the Lodge and in the cabin common area (*see Figure 3-27*). Stone plaques (indicating tree dedications) are located north of the administration cluster and in the maintenance area. Portable picnic structures with attached curved roofs are made of galvanized metal and wood and can be found in the cabin and maintenance areas (*see Figure 3-102*). The amphitheater has wood benches on concrete bases (*see Figure 3-103*). A wooden interpretive display cart is housed inside the outdoor classroom adjacent to the amphitheater parking lot.

Signage is a common feature found throughout the park in a variety of forms. A brown stucco sign with white raised lettering rests on a concrete base in front of the Visitor Center to identify it (*see Figure 3-1*). A similar but smaller sign identifying the Lodge is located on the shoulder of the road opposite the building. Other informational and traffic signs, located throughout the study area, range from wood with routed lettering to metal signs with painted lettering.

Several types of fencing occur throughout the site. Wood post-and-rail fencing can be found at the Visitor Center, in front of the resource building, and in the residential area. Board screen fencing also occurs throughout the park to provide screening for different features, such as trash receptacles in the campground. This fencing provides backyard privacy for many of the residences. The board screen fencing is variable in height, though typically about six feet high, and is painted to match adjacent buildings or is sealed with a clear finish. Chain link fencing with metal screening slats surrounds the propane tanks that are located west of the cabins at the Lodge, east of the residential area, and at the maintenance yard. Wood post-and-wire fencing surrounds the nursery adjacent to the maintenance yard and the newly installed wastewater lagoons located near the south entrance of the park (*see Figures 3-21 and 3-24*). The park boundary is defined by metal post-and-wire fencing. A metal access gate, like that at the southern entrance, is located at the entrance to the campground near the entrance booth. Wooden bollards with angled tops are used along roadsides to keep cars from leaving designated circulation corridors (*see Figure 3-104*).

Another common feature found in various forms throughout the site are trash and recycling receptacles. The most common trash receptacle type is the round metal can with a detachable lid found at the Visitor Center, inside three-sided pale fencing in the campground, and adjacent to cabins and other buildings (*see Figure 3-105*). Another common trash receptacle type is an upright top-loading metal bin with a hinged lid. The standard recycling receptacle is a double bin with a hinged lid, while the similarly-designed trash receptacle has a single bin. These upright types are located along the perimeter of the Visitor Center and Lodge parking lots and throughout the campground area (*see Figure 3-41*). Large metal dumpsters with plastic hinged

roofs are located throughout the developed areas, typically along the perimeter of parking lots and behind buildings.

Electrical and HVAC utility boxes and concrete water valve caps can be found close to most buildings. Fire hydrants are located throughout the developed areas and are most often accompanied by fire boxes mounted on posts. Metal frame with wood surface picnic tables are found near the cabins, in the campground, in the residential area, and behind the Visitor Center. Metal benches and plastic lawn chairs can also be found near the cabins. Other small-scale features found in developed areas include timber overhead lighting posts; irregular, cut-log edging; water spigots on the sides of buildings and mounted on posts in gravel beds; drinking fountains; concrete and corrugated metal culverts; and concrete or gravel splash basins along buildings at gutter outlets. Wood and metal bollards with affixed light fixtures, both solar and electrical, can be found alongside some of the trails throughout the site. Concrete wheelstops and curbs edge most parking lots (*see Figure 3-5*). Vending machines are located at the Lodge and on the south side of the conference building.

Picnic shelters composed of a concrete pad with a curved wooden roof and sides on metal supports can be found throughout the campground area (*see Figure 3-106*). RV hookups contained in metal boxes and RV dump station connections are also located in the campground area.

Several small-scale features associated with residential uses are located in the residential area. These include swing sets, portable storage buildings, clotheslines, doghouses, hose reels, satellite dishes, mail boxes on posts, mounted TV antennas, and large concrete culverts set up as play equipment (*see Figure 3-14*). Covered walkways between the garages and homes were being repaired at the time of the June 2003 field visit.

The maintenance yard contains small-scale features that support maintenance tasks, such as propane tanks, and heavy equipment including snow plows and trailers. Abandoned equipment and large piles of building materials and rubbish are located adjacent to the maintenance yard (*see Figure 3-22*).

VIEWS AND VISTAS

In a scenic landscape as vast and dramatic as the Badlands, views and vistas are critical to a meaningful visitor experience. Many of the viewpoints in the Badlands region are experienced by automobile, rendering road design integral to accessing and understanding the natural surroundings. The Badlands Loop Road was originally routed by the South Dakota Highway Department to bypass the rugged terrain of the formations, opting for a more economic route through cattle-grazed grasslands. Ben Millard altered this decision by insisting that scenery was the reason for the road and thus promoted a route that captured the best the Badlands had to offer. Winding through Cedar Pass, the planned vistas from the Badlands Loop Road offer a glimpse of the rich scenery within and surrounding the study area (*see Figure 3-32*).[30]

At Cedar Pass, a natural opening in the Wall formation offers views into the study area. From here, the development is visible in front of a cluster of small formations. Beyond the developed area, grasslands and other small formations are visible for as far as the eye can see. The Badlands formation known as the Wall creates the background for most views to the north from within the study area (*see Figure 3-1*). The Visitor Center is located to take advantage of views of the Wall to the east, north, and west. The administrative cluster dominates the view south from the Visitor Center.

The view north from the Lodge and parking lot also focuses on the surrounding Wall formation. Due to the flat topography of the developed area, most of the formation is visible from the Lodge cabins. The service area at the rear of the Lodge building is highly visible from the cabins and is incompatible with the residential setting (*see Figure 3-25*). Views to the northeast from the cabins capture the rear of the Visitor Center, parking lot, administrative cluster, residential area in the distance, and the fire cache (*see Figure 3-107*). The administrative cluster and fire cache are most prominent in this view due to the light color of the administrative buildings, which contrasts with the surroundings, and the two-story height of the fire cache, which contrasts with the one-story buildings that otherwise characterize the study area (*see Figure 3-108*). The southern formation blocks the view into the maintenance area. The view southwest from the Lodge extends across the grasslands to the campground picnic shelters in the distance. To the west, the formation cluster between the Lodge and campground is visible. However, located at the base of the formation, a mobile home and two RVs interfere with this expansive view (*see Figure 3-28*).

From the campground area, the Wall dominates the view north; to the east the amphitheater is nestled into the side of the small formation (*see Figure 3-30*). To the south, the view extends across the grasslands; the fire cache can be seen in the distance to the east and the former lagoons in the foreground. The view to the west stretches out across the grasslands.

The small formation between the Lodge and campground offers an informal observation point within the study area (*see Figure 3-109*). From a vantage point of seventy feet above the

[30] Jay Schuler, *A Revelation Called The Badlands, Building a National Park; 1909-1939* (Interior, SD: Badlands Natural History Association, 1994 second printing), 28-29.

surrounding area, a panoramic view from the formation captures the development clusters within a natural setting of grasslands and formations. Only the fire cache interrupts this view.

POTENTIAL ARCHEOLOGICAL RESOURCES

NPS archeological resource maps indicate no known prehistoric archeological sites within the study area. Given the continuous tourism-related and community use of the study area beginning in the early 20th century, it is likely that several historic-period sites contain artifacts and other material. These sites are associated with the Millard family's early tourism development and the development of the park by the NPS and include the former dance hall site, razed cabins, Lodge dormitories, CCC structures, early NPS buildings, and road traces. The former locations of these missing features are indicated on *Map 4-2*.



John Milner Associates, Inc., 2003

Figure 3-1: (2A-16) View northeast of Badlands formation, the Wall, and Visitor Center sign.



John Milner Associates, Inc., 2002

Figure 3-2: (G-09) View north of eastside wash with Badlands formations in the background.



John Milner Associates, Inc., 2002

Figure 3-3: (I-22) Badland Sparse Vegetation Complex and Badlands Loop Road corridor.



John Milner Associates, Inc., 2003

Figure 3-4: (2A-08) View northwest of Western Wheatgrass Alliance Grassland.



John Milner Associates, Inc., 2002

Figure 3-5: (D-09) View northeast of small Eastern Cottonwood Woodland and trail between Visitor Center and Lodge with Badlands formations in the background.



John Milner Associates, Inc., 2003

Figure 3-6: (2B-05) View north across project area with grasslands in the foreground and formations in the background.



John Milner Associates, Inc., 2002

Figure 3-7: (J-10) Intersection of the Badlands Loop Road and South Dakota Highway 377.



John Milner Associates, Inc., 2002

Figure 3-8: (C-07) View east of Visitor Center parking and formations in the background.



John Milner Associates, Inc., 2002

Figure 3-9: (T-14) View north of administrative and overflow parking behind the Visitor Center.



John Milner Associates, Inc., 2003

Figure 3-10: (2A-18) Front of Visitor Center including parking lot, sidewalks, flagpole, bike rack, kiosk, and informational signs.



JOHN MILNER ASSOCIATES, INC., 2002

Figure 3-11: (T-11) Administration cluster and boardwalk sidewalks.



JOHN MILNER ASSOCIATES, INC., 2002

Figure 3-12: (T-09) Resource Protection and Collection Storage buildings area with adjacent parking lot.



John Milner Associates, Inc., 2002

Figure 3-13: (R-15) Spur connecting the service road to a section of the former service road.



John Milner Associates, Inc., 2002

Figure 3-14: (Q-24) View east into the residential area drive and various small-scale features including a basketball goal, play equipment, and vertical board fencing.



John Milner Associates, Inc., 2002

Figure 3-15: (R-14) Single-family residence west of the road segment across from the southern intersection of the loop.



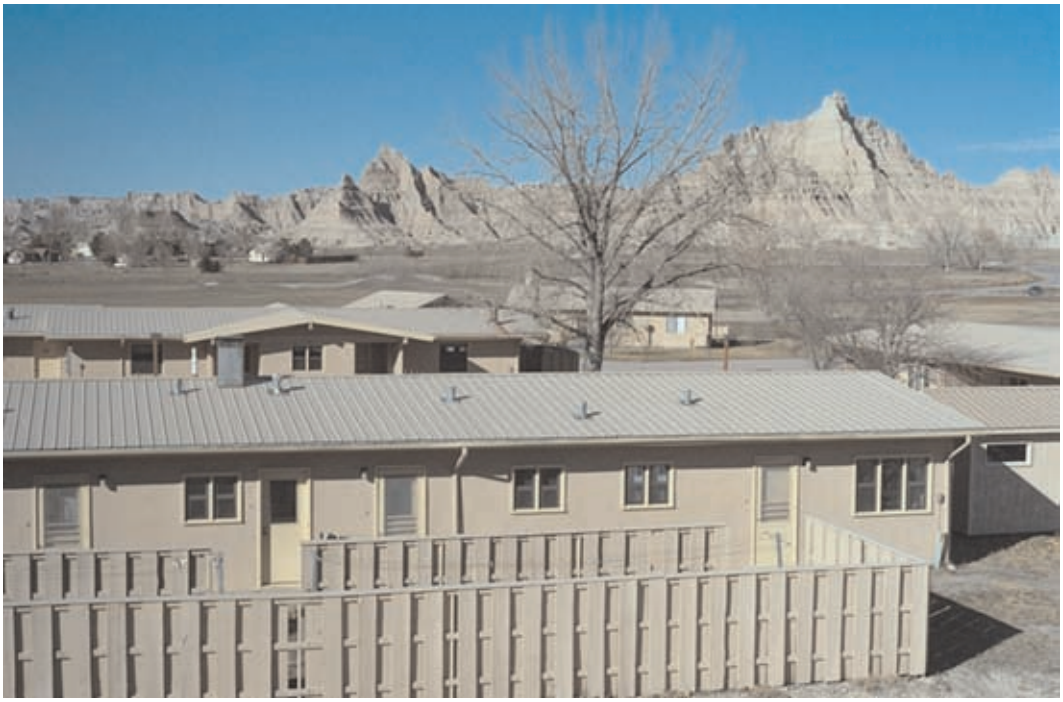
John Milner Associates, Inc., 2002

Figure 3-16: (R-06) Representative view of the fencing and vegetation around residences.



John Milner Associates, Inc., 2002

Figure 3-17: (R-23) View of the apartment cluster courtyard and parking.



John Milner Associates, Inc., 2002

Figure 3-18: (S-07) Vertical board fencing enclosing a clothes drying yard east of the apartment cluster.



John Milner Associates, Inc., 2003

Figure 3-19: (2A-23) View north of the fire cache and its surrounds.



John Milner Associates, Inc., 2002

Figure 3-20: (O-08) The service road passing through a gap in the formations.



John Milner Associates, Inc., 2002

Figure 3-21: (O-11) View south, capturing the maintenance building complex, parking area, and plant nursery.



John Milner Associates, Inc., 2002

Figure 3-22: (P-05) Mixing circle and debris piles south of the maintenance area.



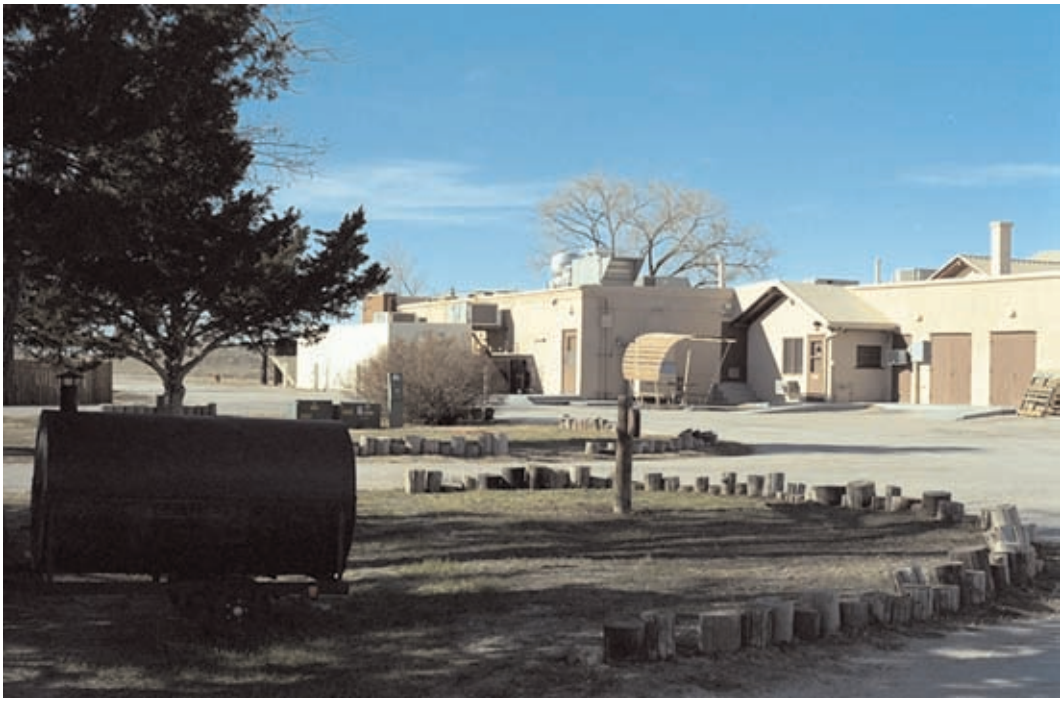
John Milner Associates, Inc., 2002

Figure 3-23: (N-23) The water tank and building connected to the service road via a short gravel drive.



John Milner Associates, Inc., 2003

Figure 3-24: (2B-01) View east of the wastewater lagoons and access drive.



John Milner Associates, Inc., 2002

Figure 3-25: (E-03) View of the service area at the rear of the Lodge building.



John Milner Associates, Inc., 2002

Figure 3-26: (E-15) The Lodge drive through the cabin area and its associated planted central space.



John Milner Associates, Inc., 2002

Figure 3-27: (E-10) View of a typical cabin and associated plantings with formations in the distance.



John Milner Associates, Inc., 2003

Figure 3-28: (2A-03) View west of the cabins to Lodge employee RVs and modular homes.



John Milner Associates, Inc., 2002

Figure 3-29: (L-03) View of the campground drive, wood bollards, and picnic shelters.



John Milner Associates, Inc., 2002

Figure 3-30: (I-21) View of the amphitheater at the base of a formation.



John Milner Associates, Inc., 2002

Figure 3-31: (H-21) View southwest along South Dakota Highway 377.



John Milner Associates, Inc., 2002

Figure 3-32: (B-18) View northeast along the Badlands Loop Road with formations in the background.



John Milner Associates, Inc., 2002

Figure 3-33: (J-06) Campground entrance station, road to the group camping area, and path accessing the amphitheater.



John Milner Associates, Inc., 2002

Figure 3-34: (K-18) Typical campground gravel road, campsite pull-off, and wood bollards.



John Milner Associates, Inc., 2002

Figure 3-35: (B-21) View south of the service road just south of the Visitor Center.



John Milner Associates, Inc., 2002

Figure 3-36: (2A-14) View of the former wastewater lagoons.



John Milner Associates, Inc., 2002

Figure 3-37: (F-07) Siberian elms that have seeded into natural area.



John Milner Associates, Inc., 2003

Figure 3-38: (2A-05) A defined edge between the developed area mown grass and the surrounding grasslands south of the Lodge.



Bahr Vermeer Haecker, November 2002

Figure 3-39: (BVH-01) View southeast of the Ben Reifel Visitor Center.



Bahr Vermeer Haecker, November 2002

Figure 3-40 : (BVH-02) View northeast of the Ben Reifel Visitor Center.



Bahr Vermeer Haecker, November 2002

Figure 3-41: (BVH-03) Detail of the masonry exterior walls of the Visitor Center.



Bahr Vermeer Haecker, November 2002

Figure 3-42: (BVH-04) The ramp accessing the porch of the Visitor Center.



Bahr Vermeer Haecker, November 2002

Figure 3-43: (BVH-05) A window on the rear of the Visitor Center.



Bahr Vermeer Haecker, November 2002

Figure 3-44: (BVH-02) Cedar Pass Lodge.



Bahr Vermeer Haecker, November 2002

Figure 3-45: (BVH-07) The original Cedar Pass Lodge.



Bahr Vermeer Haecker, November 2002

Figure 3-46: (BVH-08) Rear of the Cedar Pass Lodge.



Bahr Vermeer Haecker, November 2002

Figure 3-47: (BVH-09) Lodge cottage.



Bahr Vermeer Haecker, November 2002

Figure 3-48: (BVH-10) Cedar Pass Lodge laundry building.



Bahr Vermeer Haecker, November 2002

Figure 3-49: (BVH-11) Window detail of the Cedar Pass Lodge laundry building.



Bahr Vermeer Haecker, November 2002

Figure 3-50: (BVH-12) Lodge maintenance building.



Bahr Vermeer Haecker, November 2002

Figure 3-51: (BVH-13) Cabin (Rooms 1, 1A, 2, 2A).



Bahr Vermeer Haecker, November 2002

Figure 3-52: (BVH-14) Window detail of cabin.



Bahr Vermeer Haecker, November 2002

Figure 3-53: (BVH-15) Cabin 3.



Bahr Vermeer Haecker, November 2002

Figure 3-54: (BVH-16) Cabin 4. Similar to cabins 5, 6, 21, 22, and 23.



Bahr Vermeer Haecker, November 2002

Figure 3-55: (BVH-17) Cabin 8. Similar to cabins 7 and 9.



Bahr Vermeer Haecker, November 2002

Figure 3-56: (BVH-18) Cabin 11. Similar to cabins 10 and 12.



Bahr Vermeer Haecker, November 2002

Figure 3-57: (BVH-19) Rear of Cabin 12. Similar to cabins 10 and 11.



Bahr Vermeer Haecker, November 2002

Figure 3-58: (BVH-20) Cedar Pass Lodge cabin (Rooms 14, 15, 16, and 16A).



Bahr Vermeer Haecker, November 2002

Figure 3-59: (BVH-21) Rear of Cedar Pass Lodge cabin.



Bahr Vermeer Haecker, November 2002

Figure 3-60: (BVH-22) Detail of original window, Cedar Pass Lodge cabin.



Bahr Vermeer Haecker, November 2002

Figure 3-61: (BVH-23) Rear of cabin 18, with cabin 19 to the right. Similar to cabin 20.



Bahr Vermeer Haecker, November 2002

Figure 3-62: (BVH-24) Cabin 33.



Bahr Vermeer Haecker, November 2002

Figure 3-63: (BVH-28) Group campground comfort station 1.



Bahr Vermeer Haecker, November 2002

Figure 3-64: (BVH-27) Group campground comfort station 2.



Bahr Vermeer Haecker, November 2002

Figure 3-65: (BVH-26) Campground comfort station loop A.



Bahr Vermeer Haecker, November 2002

Figure 3-66: (BVH-25) Campground comfort station loop B.



Bahr Vermeer Haecker, November 2002

Figure 3-67: (BVH-29) View south of administration building.



Bahr Vermeer Haecker, November 2002

Figure 3-68: (BVH-30) View east of administration building.



Bahr Vermeer Haecker, November 2002

Figure 3-69: (BVH-31) Conference/maintenance building.



Bahr Vermeer Haecker, November 2002

Figure 3-70: (BVH-32) Collection storage/fitness center building.



Bahr Vermeer Haecker, November 2002

Figure 3-71: (BVH-33) Resource protection building.



Bahr Vermeer Haecker, November 2002

Figure 3-72: (BVH-34) Natural resource office building.



Bahr Vermeer Haecker, November 2002

Figure 3-73: (BVH-35) Residence #28.



Bahr Vermeer Haecker, November 2002

Figure 3-74: (BVH-36) Residence #29.



Bahr Vermeer Haecker, November 2002

Figure 3-75: (BVH-37) Residence #30.



Bahr Vermeer Haecker, November 2002

Figure 3-76: (BVH-38) Residence #31.



Bahr Vermeer Haecker, November 2002

Figure 3-77: (BVH-39) Residence #32.



Bahr Vermeer Haecker, November 2002

Figure 3-78: (BVH-40) Residence #33.



Bahr Vermeer Haecker, November 2002

Figure 3-79: (BVH-41) Residence #34.



Bahr Vermeer Haecker, November 2002

Figure 3-80: (BVH-42) Residence #46.



Bahr Vermeer Haecker, November 2002

Figure 3-81: (BVH-43) Seasonal apartment #135.



Bahr Vermeer Haecker, November 2002

Figure 3-82: (BVH-44) Seasonal apartment #52, similar to seasonal apartment #45 and #51.



Bahr Vermeer Haecker, November 2002

Figure 3-83: (BVH-46) Maintenance shop.



Bahr Vermeer Haecker, November 2002

Figure 3-84: (BVH-47) Maintenance cold storage.



Bahr Vermeer Haecker, November 2002

Figure 3-85: (BVH-48) Maintenance shop office addition.



Bahr Vermeer Haecker, November 2002

Figure 3-86: (BVH-49) Maintenance storage building.



Bahr Vermeer Haecker, November 2002

Figure 3-87: (BVH-50) Sand shed.



Bahr Vermeer Haecker, November 2002

Figure 3-88: (BVH-51) Hazmat building.



John Milner Associates, Inc., 2003

Figure 3-89: (2A-04) Lodge employee mobile home.



Bahr Vermeer Haecker, November 2002

Figure 3-90: (BVH-53) Cedar Pass Lodge ice house.



Bahr Vermeer Haecker, November 2002

Figure 3-91: (BVH-54) Interpretive shelter.



Bahr Vermeer Haecker, November 2002

Figure 3-92: (BVH-55) Campground shed.



Bahr Vermeer Haecker, November 2002

Figure 3-93: (BVH-56) Campground entrance booth.



Bahr Vermeer Haecker, November 2002

Figure 3-94: (BVH-57) Amphitheater screen, projection booth, and retaining wall.



John Milner Associates, Inc., 2003

Figure 3-95: (Q-04) Air quality monitoring station.



John Milner Associates, Inc., 2003

Figure 3-96: (Q-01) Sewage treatment lift station.



Bahr Vermeer Haecker, November 2002

Figure 3-97: (BVH-58) Cedar Pass tack room.



Bahr Vermeer Haecker, November 2002

Figure 3-98: (BVH-59) Water supply tank and water supply pump building.



John Milner Associates, Inc., 2002

Figure 3-99: (C-10) Concrete box culvert.



John Milner Associates, Inc., 2003

Figure 3-100: (D-05) Timber footbridge.



John Milner Associates, Inc., 2002

Figure 3-101: (T-06) Concrete block retaining wall.



John Milner Associates, Inc., 2003

Figure 3-102: (F-09) Portable picnic sun/wind shelters.



John Milner Associates, Inc., 2002

Figure 3-103: (J-02) Amphitheater benches and guardrails.



John Milner Associates, Inc., 2003

Figure 3-104: (K-19) Wood bollards and trash receptacles at campground.



John Milner Associates, Inc., 2002

Figure 3-105: (K-11) Board fencing partially enclosing trash receptacles at the campground.



John Milner Associates, Inc., 2003

Figure 3-106: (K-10) Picnic shelter at campground area.



John Milner Associates, Inc., 2002

Figure 3-107: (G-01) View northeast from the Lodge capturing the Visitor Center and administration area.



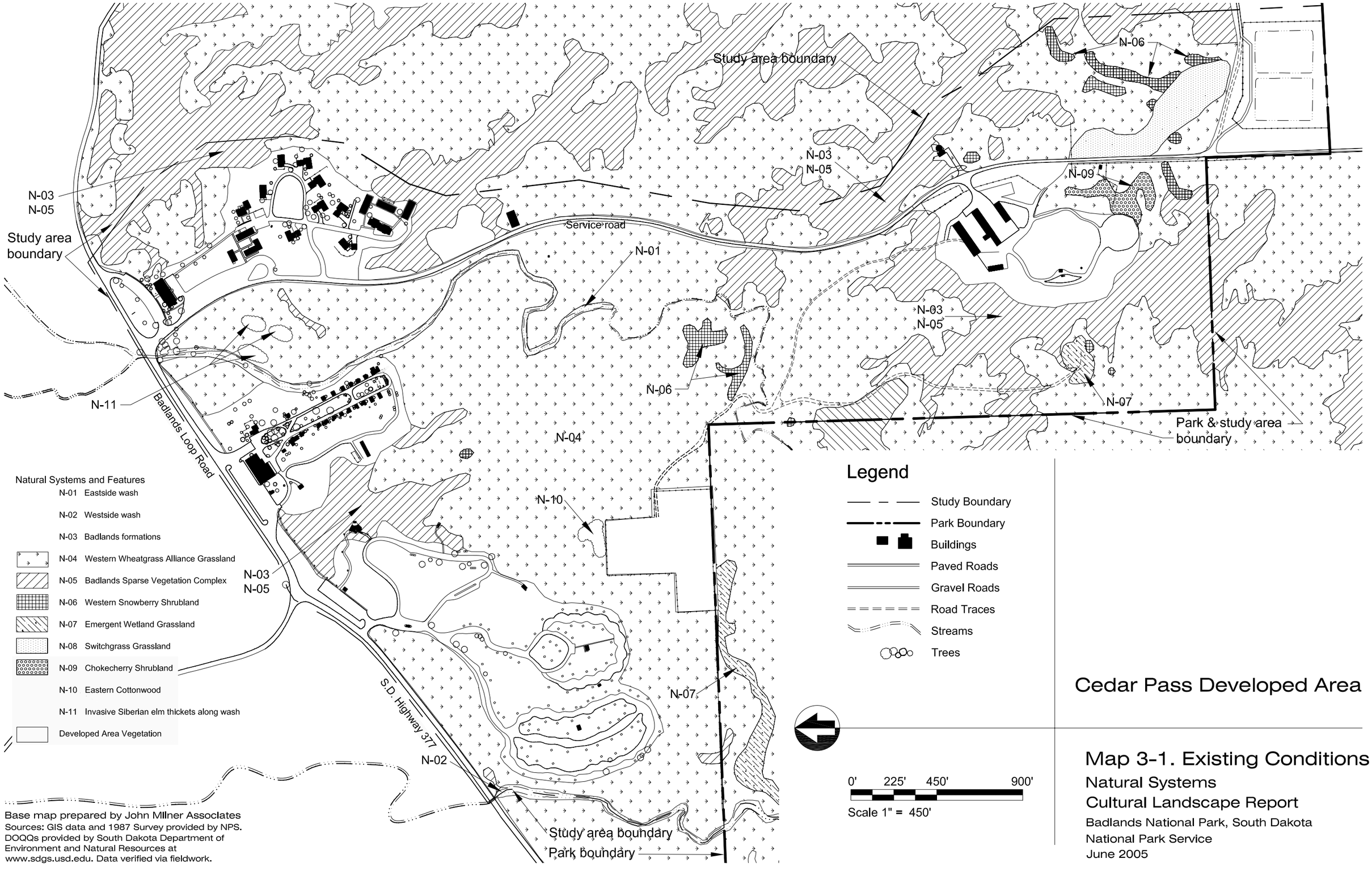
John Milner Associates, Inc., 2003

Figure 3-108: (2A-07) The view southeast from the Lodge is dominated by the fire cache.



John Milner Associates, Inc., 2002

Figure 3-109: (I-25) View of cabins from the top of the small formation between the Lodge and the campground.



Natural Systems and Features

- N-01 Eastside wash
- N-02 Westside wash
- N-03 Badlands formations
- N-04 Western Wheatgrass Alliance Grassland
- N-05 Badlands Sparse Vegetation Complex
- N-06 Western Snowberry Shrubland
- N-07 Emergent Wetland Grassland
- N-08 Switchgrass Grassland
- N-09 Chokecherry Shrubland
- N-10 Eastern Cottonwood
- N-11 Invasive Siberian elm thickets along wash
- Developed Area Vegetation

Base map prepared by John Millner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Road Traces
- Streams
- Trees

0' 225' 450' 900'

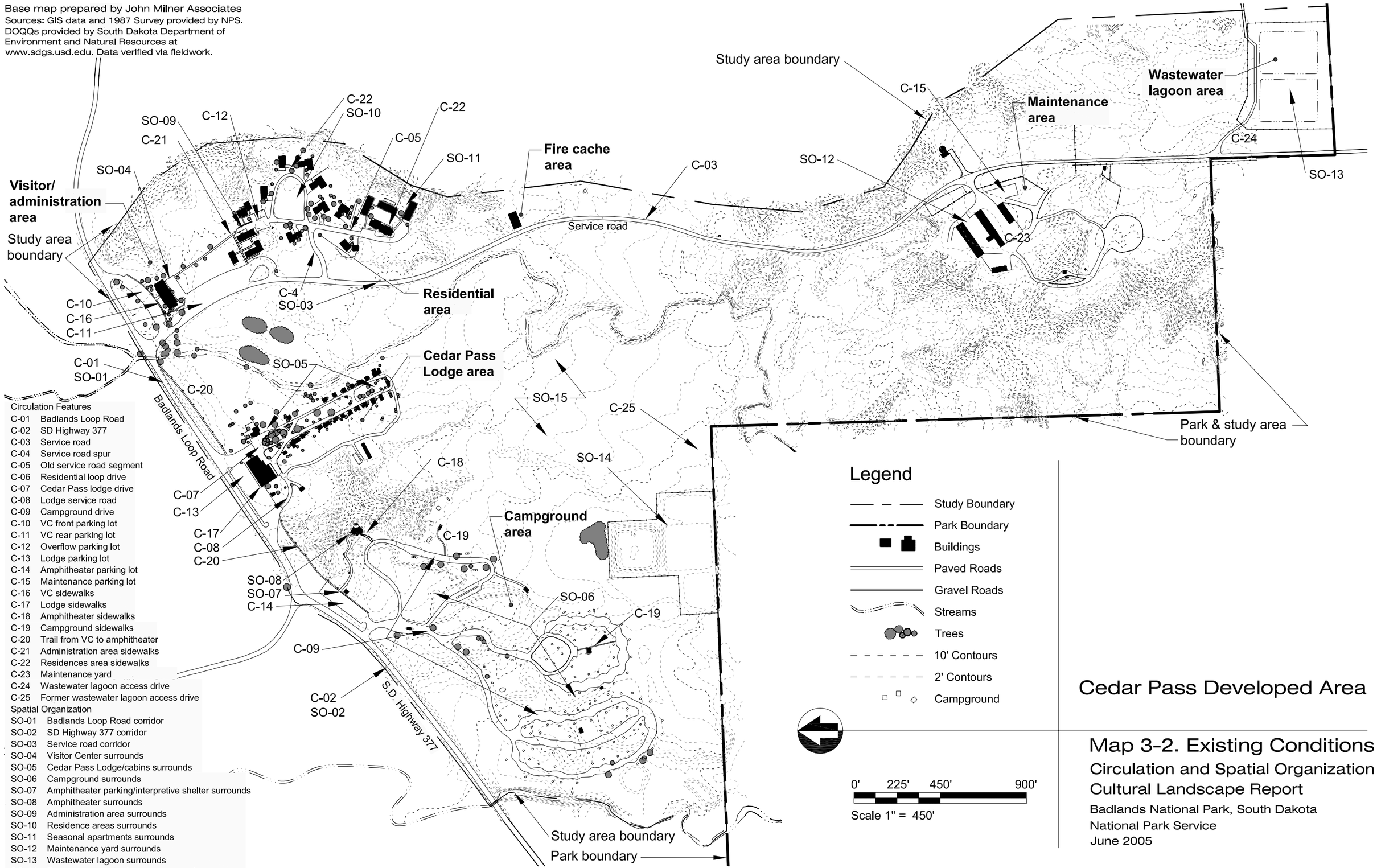
Scale 1" = 450'

Cedar Pass Developed Area

Map 3-1. Existing Conditions

Natural Systems
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.



Circulation Features
- C-01 Badlands Loop Road
- C-02 SD Highway 377
- C-03 Service road
- C-04 Service road spur
- C-05 Old service road segment
- C-06 Residential loop drive
- C-07 Cedar Pass lodge drive
- C-08 Lodge service road
- C-09 Campground drive
- C-10 VC front parking lot
- C-11 VC rear parking lot
- C-12 Overflow parking lot
- C-13 Lodge parking lot
- C-14 Amphitheater parking lot
- C-15 Maintenance parking lot
- C-16 VC sidewalks
- C-17 Lodge sidewalks
- C-18 Amphitheater sidewalks
- C-19 Campground sidewalks
- C-20 Trail from VC to amphitheater
- C-21 Administration area sidewalks
- C-22 Residences area sidewalks
- C-23 Maintenance yard
- C-24 Wastewater lagoon access drive
- C-25 Former wastewater lagoon access drive

Spatial Organization
- SO-01 Badlands Loop Road corridor
- SO-02 SD Highway 377 corridor
- SO-03 Service road corridor
- SO-04 Visitor Center surrounds
- SO-05 Cedar Pass Lodge/cabins surrounds
- SO-06 Campground surrounds
- SO-07 Amphitheater parking/interpretive shelter surrounds
- SO-08 Amphitheater surrounds
- SO-09 Administration area surrounds
- SO-10 Residence areas surrounds
- SO-11 Seasonal apartments surrounds
- SO-12 Maintenance yard surrounds
- SO-13 Wastewater lagoon surrounds
- SO-14 Former wastewater lagoons surrounds
- SO-15 Open meadow

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Streams
- Trees
- 10' Contours
- 2' Contours
- Campground

0' 225' 450' 900'

Scale 1" = 450'

Cedar Pass Developed Area

Map 3-2. Existing Conditions
Circulation and Spatial Organization
Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Study area boundary
SS-53
S-11, 12
SS-54, SS-55
Ve-03
Wastewater lagoon area
S-13
T-02
SS-56
S-10
T-05
Visitor/ administration area
Study area boundary
Fire cache area
Service road
S-09
S-08
Residential area
B-55
B-54
B-53
B-56
B-57
Maintenance area
Cedar Pass Lodge area
Park & study area boundary
T-01
Campground area
Badlands Loop Road
S.D. Highway 377
Badlands Loop Road
Study area boundary
Park boundary

Topography
T-01 Former wastewater lagoons
T-02 New wastewater lagoons
T-05 Borrow pits
Vegetation
Ve-03 Maintenance area nursery
Buildings and Structures
B-53 Maintenance shop
B-54 Maintenance cold storage
B-55 Maintenance storage building
B-56 Sand shed building
B-57 Hazmat building
S-08 Air quality monitoring station
S-09 Sewage treatment lift station
S-10 Tack room (horse barn)
S-11 Water supply tank
S-12 Water supply pump building
S-13 Wastewater lagoons and structures
Small-scale Features
SS-53 Abandoned equipment/junk piles
SS-54 Maintenance equipment
SS-55 Portable research vehicles
SS-56 Wood post and wire fencing

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Streams
- Trees
- 10' Contours
- 2' Contours

0' 225' 450' 900'
Scale 1" = 450'

Cedar Pass Developed Area

Map 3-3. Existing Conditions

Topography, Small Scale Features, Vegetation, and Buildings
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005

V-01 Views of area from top of Cedar Pass - out of area shown.

V-07 Views along Badlands Loop Road.

V-03 Views of surrounding formations.

Visitor/ administration area

Study area boundary

Fire cache area

Views are enclosed by formations.

Study area boundary

Wastewater lagoon area

Maintenance area

Service road

Residential area

V-09 Views from inside Visitor Center Porch.

V-04 - View toward Visitor Center area and residences is partially obscured by Siberian elms.

V-02 - Open view of surrounding formations.

V-08 View of fire cache.

Cedar Pass Lodge area

V-04 Views to formation screen views to amphitheater and campground.

V-05 Panoramic views of surroundings from top of formation.

Views are enclosed by formations.

Park & study area boundary

Badlands Loop Road

V-04 - Views of surrounding landscape and formations.

V-06 Views across grassland, formations screen view to maintenance area.

V-06 Views from amphitheater are enclosed by the topography.

Campground area

V-07 Views along Badlands Loop Road of Cedar Pass Developed Area and surrounding landscape.

Badlands Loop Road

V-06 - View of surrounding landscape and formations.

S.D. Highway 377

V-06 - View of surrounding landscape and formations.

Study area boundary

Park boundary

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Streams
- Trees
- Views
- Views enclosed by formations

Views and Vistas

V-01	View of area from top of Cedar Pass
V-02	View from Visitor Center area
V-03	View from residence area
V-04	View from Lodge and cabin area
V-05	View of area from top of formation west of Lodge
V-06	View from campground area
V-07	View from Badlands Loop Road
V-08	Views of new buildings
V-09	Views from inside Visitor Center porch

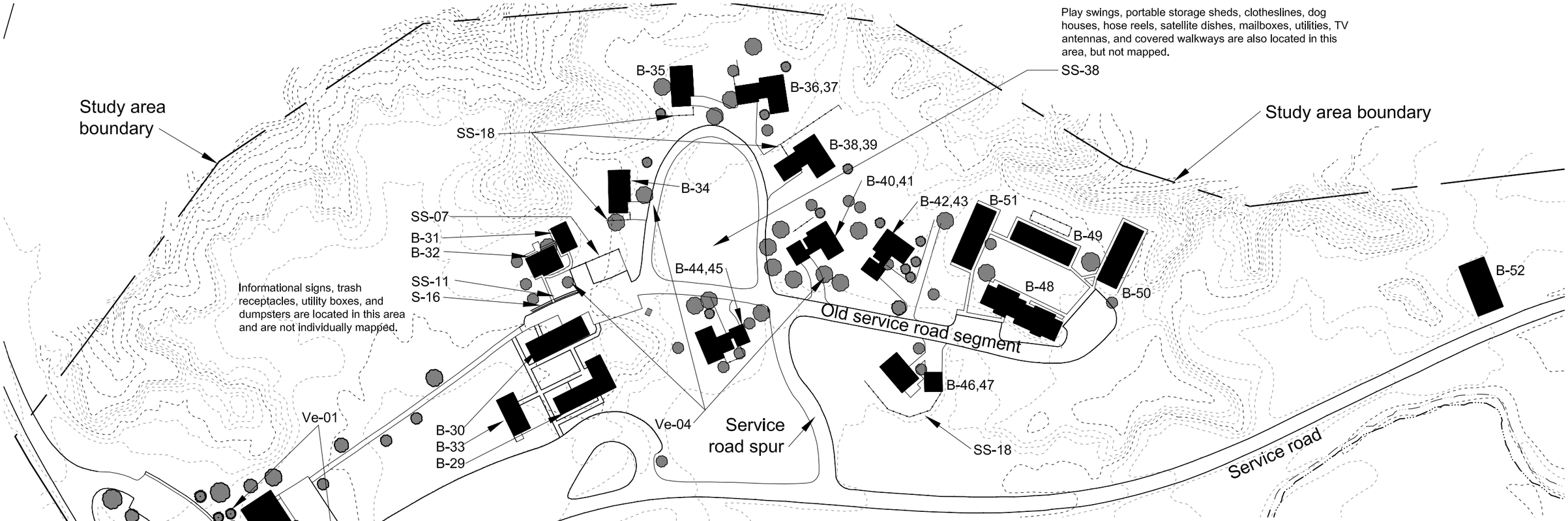
0' 225' 450' 900'

Scale 1" = 450'

Cedar Pass Developed Area

Map 3-4. Existing Conditions

Views and Vistas
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Vegetation
- Ve-01 Visitor Center landscape
- Ve-04 Residential landscape

Buildings and Structures
- B-01 Ben Reifel Visitor Center
- B-29 Administration building
- B-30 Conference/office building
- B-31 Collection storage building
- B-32 Resource Protection
- B-33 Natural Resources Office
- B-34 Residence #28
- B-35 Residence #29
- B-36 Residence #30
- B-37 Garage #30A
- B-38 Residence #31
- B-39 Garage #31A
- B-40 Residence #32
- B-41 Garage #32A
- B-42 Residence #33
- B-43 Garage #33A
- B-44 Residence #34
- B-45 Garage #34A
- B-46 Residence #46
- B-47 Garage #46A
- B-48 Seasonal apartment #135
- B-49 Seasonal apartment #45
- B-50 Seasonal apartment #51
- B-51 Seasonal apartment #52
- B-52 Fire cache
- S-14 Concrete box culverts
- S-15 Timber footbridge
- S-16 Concrete block retaining wall

Small-scale Features
- SS-01 Visitor Center sign
- SS-03 Phone box
- SS-04 Flagpole
- SS-06 Kiosk
- SS-07 Post and rail fencing
- SS-11 Bike racks
- SS-18 Pale fencing
- SS-38 Circular concrete culverts
- SS-40 Play swings
- SS-41 Portable storage sheds
- SS-42 Clotheslines
- SS-43 Dog houses
- SS-44 Hose reels
- SS-45 Satellite dishes
- SS-46 Mail boxes and stands
- SS-47 Gas utilities
- SS-48 TV antennas
- SS-50 Covered walkways

Legend

- Study Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Fencing
- Streams
- Trees
- 10' Contours
- 2' Contours

0' 75' 150' 300'

Scale 1" = 150'

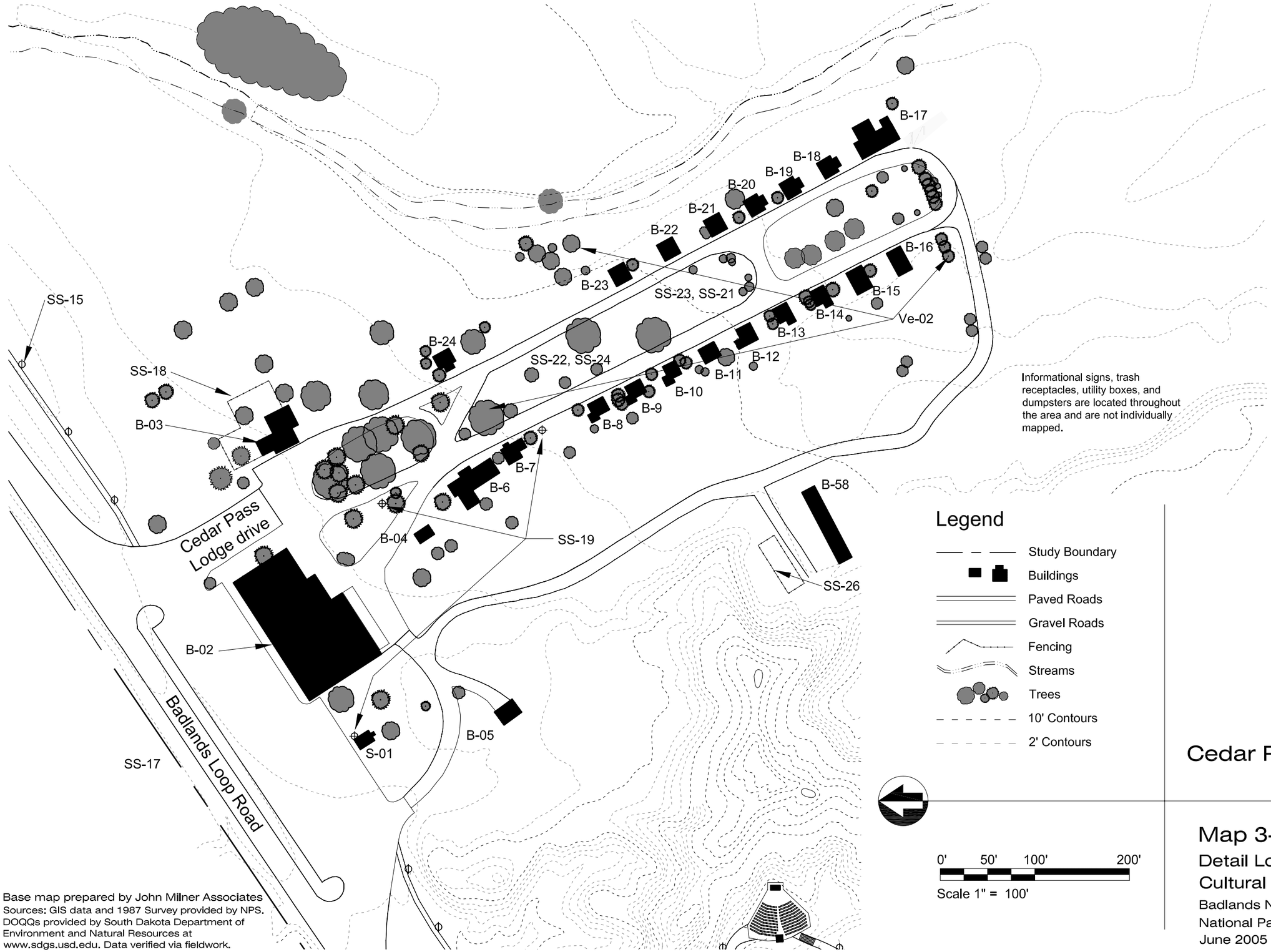
Cedar Pass Developed Area

Map 3-5. Existing Conditions

Detail Visitor Center & Residential
Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Informational signs, trash receptacles, utility boxes, and dumpsters are located throughout the area and are not individually mapped.

Vegetation

Ve-02 Cedar Pass Lodge landscape

Buildings and Structures

B-02 Cedar Pass Lodge
B-03 Lodge cottage
B-04 Lodge laundry building
B-05 Lodge maintenance building
B-06 Cabin (1-1A-2-2A)
B-07 Cabin (3)
B-08 Cabin (4)
B-09 Cabin (5)
B-10 Cabin (6)
B-11 Cabin (7)
B-12 Cabin (8)
B-13 Cabin (9)
B-14 Cabin (10)
B-15 Cabin (11)
B-16 Cabin (12)
B-17 Cabin (14-15-16-16A)
B-18 Cabin (18)
B-19 Cabin (19)
B-20 Cabin (20)
B-21 Cabin (21)
B-22 Cabin (22)
B-23 Cabin (23)
B-24 Cabin (33)
B-58 Lodge employee mobile home
S-01 Lodge ice house

Small-scale Features

SS-15 Bollard lights
SS-17 Cedar Pass Lodge sign
SS-18 Pale fencing
SS-19 Timber overhead lighting post
SS-21 Benches
SS-26 Chain link fencing

Legend

- Study Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Fencing
- Streams
- Trees
- 10' Contours
- 2' Contours

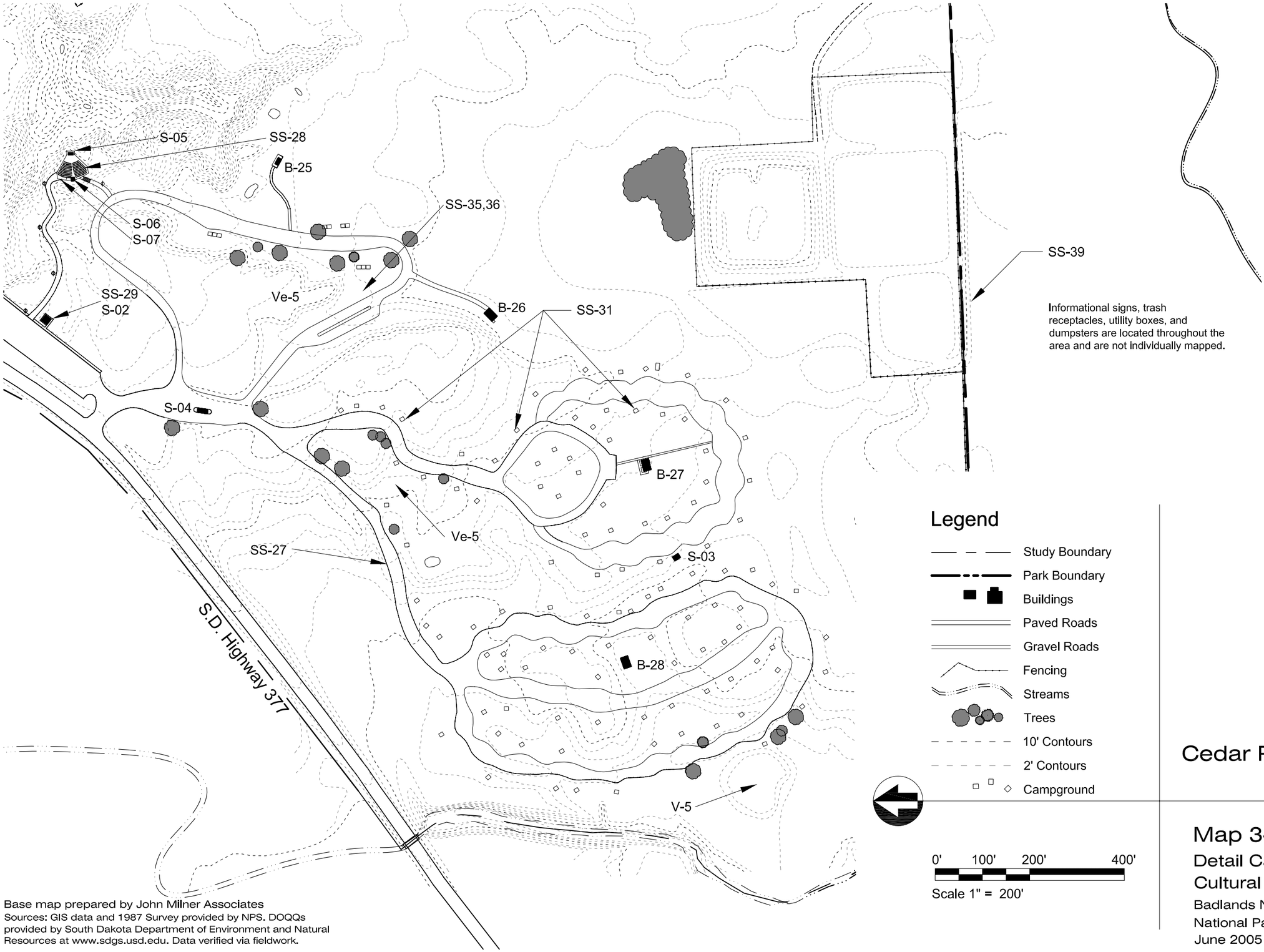
0' 50' 100' 200'

Scale 1" = 100'

Cedar Pass Developed Area

Map 3-6. Existing Conditions

Detail Lodge & Cabins Area
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Informational signs, trash receptacles, utility boxes, and dumpsters are located throughout the area and are not individually mapped.

Vegetation
- Ve-05 Campground landscape

Buildings and Structures
- B-25 Campground comfort station 1
- B-26 Campground comfort station 2
- B-27 Campground comfort station A
- B-28 Campground comfort station B
- S-02 Interpretive shelter
- S-03 Campground shed
- S-04 Campground entrance booth
- S-05 Amphitheater stage
- S-06 Amphitheater projection booth
- S-07 Amphitheater retaining wall

Small Scale Features
- SS-27 Timber bollards
- SS-28 Amphitheater benches
- SS-29 Interpretive display cart
- SS-31 Picnic shelters
- SS-36 RV dump station connections

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Fencing
- Streams
- Trees
- 10' Contours
- 2' Contours
- Campground

0' 100' 200' 400'

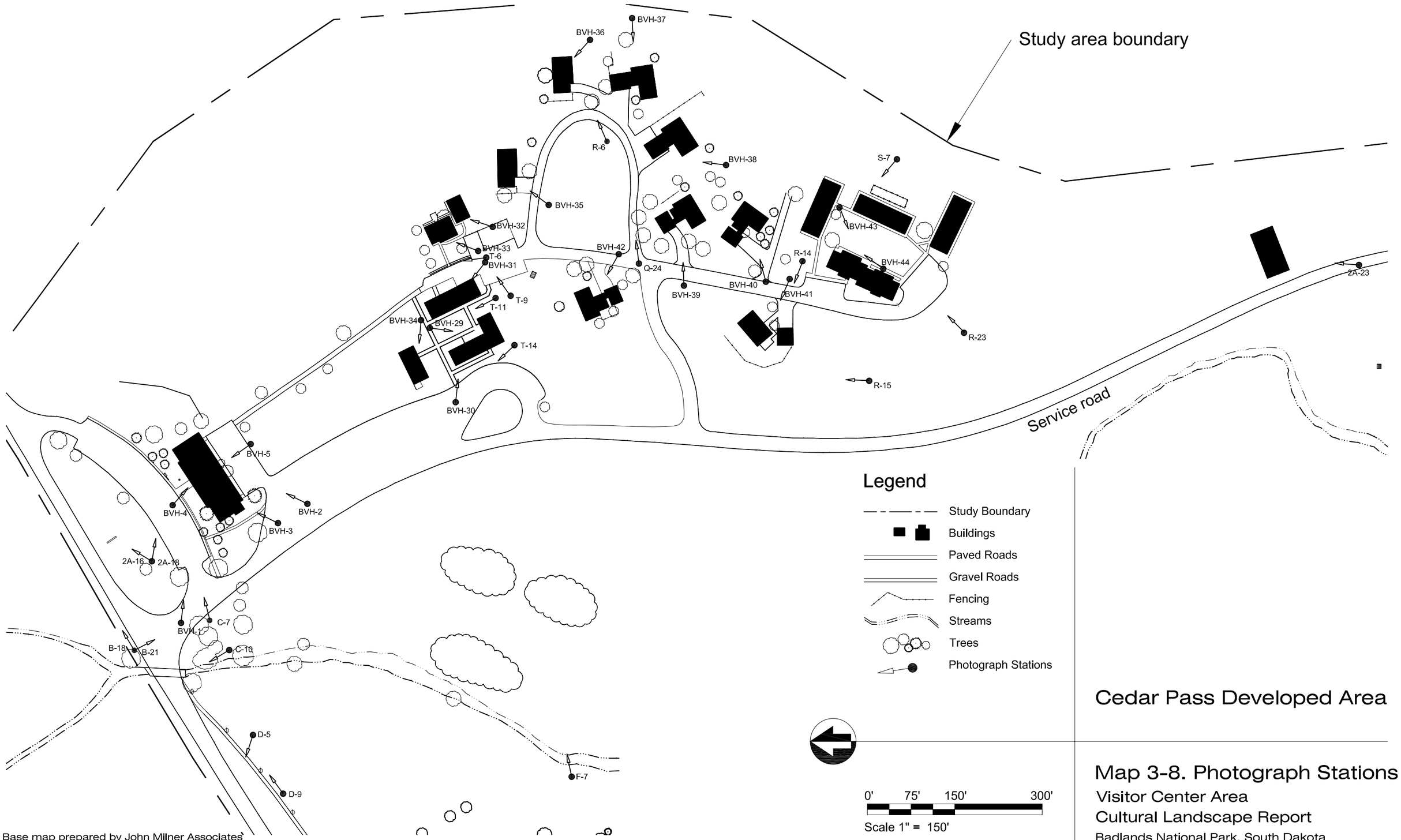
Scale 1" = 200'

Cedar Pass Developed Area

Map 3-7. Existing Conditions

Detail Campground Area
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

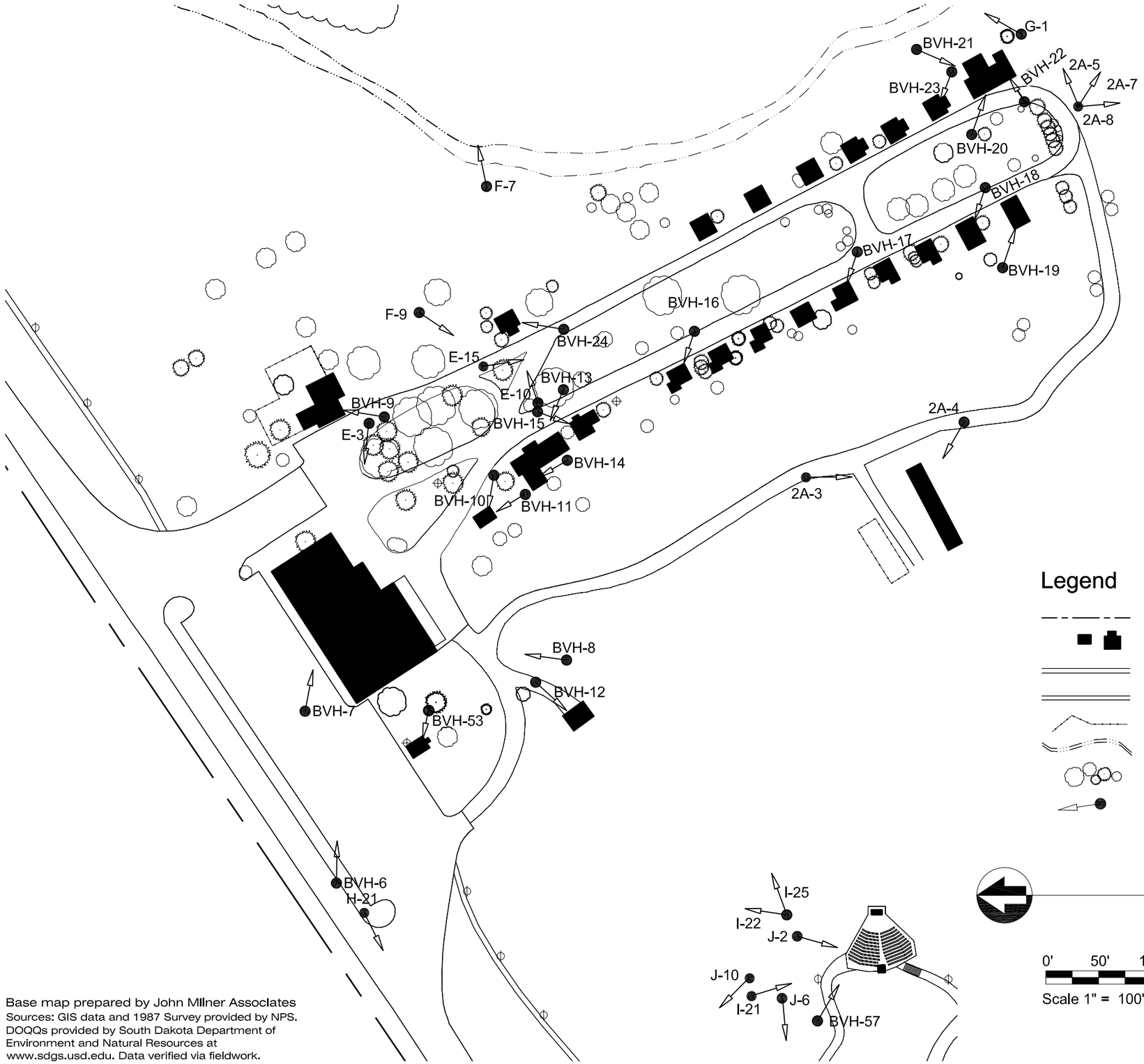


Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of
Environment and Natural Resources at
www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 3-8. Photograph Stations

Visitor Center Area
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Base map prepared by John Mllner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Fencing
- Streams
- Trees
- Photograph Stations

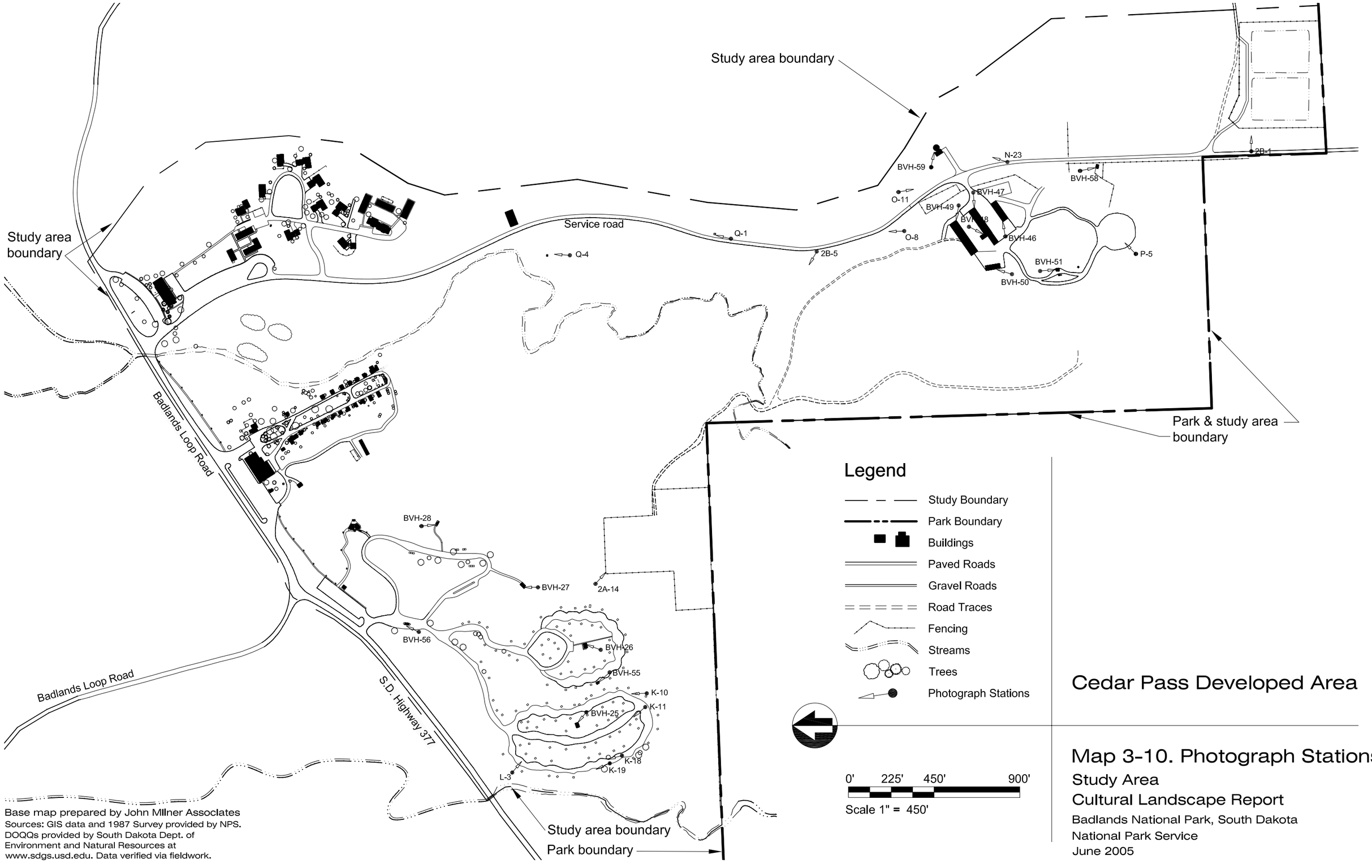
0' 50' 100' 200'

Scale 1" = 100'

Cedar Pass Developed Area

Map 3-9. Photograph Stations

Cedar Pass Lodge Area
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Dept. of
Environment and Natural Resources at
www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 3-10. Photograph Stations

Study Area
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Chapter Four

Analysis and Evaluation

CHAPTER FOUR

ANALYSIS AND EVALUATION

INTRODUCTION

The Analysis and Evaluation chapter of a Cultural Landscape Report (CLR) is an essential tool for unraveling the complexities of cultural landscape resources. The analysis process involves the review of collected documentation of a site's social and physical history and the placing of this information within the context of American history to determine its relevance, importance, and representation of a period and/or practice. The criteria for conducting the analysis are based upon National Register of Historic Places guidance. From the analysis, a statement of significance (how a place's meaning relates to history), and a period of significance (when place-shaping events occurred), can be determined. Further analysis compares physical conditions of a place during the determined period(s) of significance with current physical conditions, supports an understanding of the degree to which the conditions have changed since the period of significance, and identifies features dating from the period of significance that contribute to the landscape's overall significance. Features that are not associated with the historic period(s) of significance are also identified. These are referred to as non-contributing resources.

The analysis process examines the presence, or lack, of historic features and intrusive non-historic features. This information is used to determine historic integrity. The significance and integrity information is critical to formulating appropriate treatment recommendations in Part II of a CLR. The pages that follow provide an evaluation of significance, a comparative analysis that considers the origin of extant features and their evolution over time, and identifies features that were associated with the Cedar Pass landscape in the past but are no longer extant. Utilizing the significance evaluation and comparative analysis, the integrity of the historic landscape as established during the period of significance is assessed.

SIGNIFICANCE EVALUATION

CURRENT NATIONAL REGISTER STATUS OF CEDAR PASS

Properties listed in the National Register of Historic Places must be significant to American history, architecture, archeology, engineering, or culture and must exhibit this significance in districts, sites, buildings, structures, and objects that retain integrity of location, design, setting, materials, workmanship, feeling, and association.

Properties listed in the National Register of Historic Places must also meet at least one of the following four Criteria:

A) be associated with events that have made a significant contribution to the broad patterns of our history; or

B) be associated with the lives of persons significant in our past; or

C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D) have yielded or be likely to yield information important in prehistory or history.[1]

At Cedar Pass, although the landscape as a whole has yet to be evaluated for National Register-level significance, there are a limited number of resources that have been individually evaluated. These include the Cedar Pass Road, the Cedar Pass to Northwest Entrance Road, and the Ben Reifel Visitor Center.

The proposed boundary of the historic Cedar Pass to Northwest Entrance Road is a thirty-mile long, approximately twenty-two-foot-wide corridor running along the Loop Road from the intersection of the Loop Road with the road to Interior (SD 377). The proposed boundary of the historic Cedar Pass is a 2.2-mile long, approximately twenty-two-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 proposed National Register boundaries of these two historic roads overlap with the Cedar Pass Developed Area CLR study area.

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. Both roads were found to possess significance under 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.

As noted in the draft nominations, these roads are significant for their association with efforts conducted over a three-decade period to establish Badlands National Monument, and were

> a critical feature of the park because it was believed that the badlands environment was too formidable, too hot, and visitors would be too exposed unless they were able to experience it via a motor trail through the park. However, an important feature of [these roads] was that [they] met the design standards of landscape architecture embraced by the National Park Service. As a result, the road[s] [were] designed to be so located that tourists [would] be able to see the scenery, to minimize the man-made intrusions, and to emphasize the absolutely uninhabited feeling of the region. The road[s] [themselves were] recognized as a

[1] US Department of the Interior, National Register Bulletin 16A: *How to Complete the National Register Nomination Form* (Washington: Government Printing Office, 1991), 35.

> man-made intrusion and the original design considered routes that "would cause less damage to the formations" while still providing access to areas of major importance.[2]

Under separate consideration, the Ben Reifel Visitor Center at Cedar Pass was determined eligible for the National Register of Historic Places in 2002. It was deemed significant under National Register Criteria 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 that retains substantial integrity.[3] The Determination of Eligibility (DOE) notes that the Visitor Center

> displays 11 of the 12 features characteristic of its building type and style (Allaback 2002, 274-275), including low, horizontal massing and a spare decorative scheme. Several elements of the design, such as the exterior restrooms and prominent covered porch, can be particularly attributed to the style of Cecil Doty, the building's designer and chief designer at the Western Office of Design and Construction (WODC). Like other visitor centers of the time, the interior spatial arrangement separates public visitor areas from more private park administration zones. ...The period of significance is 1958–66, beginning with the construction of the building and ending with the conclusion of the Mission 66 historic context.

Although the Ben Reifel Visitor Center is not yet fifty years old, the DOE notes that it possesses adequate historic significance to justify National Register listing under Criterion Consideration G.

The findings of a significance evaluation conducted on behalf of this CLR are entirely consistent with the National Register-level evaluations of the historic roads and the Visitor Center. However, the extensive investigation into the history of the landscape of Cedar Pass suggests potential areas for augmenting and expanding our understanding of the site's significance. The specific recommendations for expanded thematic areas, contexts, and periods of significance are presented in detail below.

SUMMARY STATEMENT OF SIGNIFICANCE

Based on the landscape research, documentation, analysis, and evaluation conducted by John Milner Associates, Inc. (JMA) on behalf of the Cedar Pass Developed Area, the site appears to possess significance at the state level as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the NPS's Mission 66 initiative within the areas of Architecture, Landscape Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the

[2] Ken Karsmizki, Draft "National Register Nomination Cedar Pass to Northwest Entrance Road" (Bozeman, MT: Western History Research, 9/1993), 8.
[3] Carey and 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.

period ca. 1928 through 1966. Despite the fact that Mission 66-era Cedar Pass development is less than fifty years of age, Cedar Pass appears to meet the eligibility requirements of Criterion Consideration G as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.

These findings are consistent with the significance evaluation information developed for individual landscape features. However, they also expand upon the contexts, thematic areas, and periods of significance by comprehensively considering the Cedar Pass landscape as a whole.

The extended period of significance reflects a continuum of use of Cedar Pass by various individuals and agencies to site services and amenities for visitors endeavoring to experience the dramatic Badlands landscape. Early private efforts to develop a tourist site eventually coexisted with federal initiatives to establish park administrative and maintenance functions. Each campaign to address visitor and park administrative needs is completely and comprehensively built upon previous efforts. The approach to the Cedar Pass site development that rendered the park's natural wonders accessible—yet did not intrude upon their integrity—culminated in the efforts of the Mission 66 initiative.

Little physical developments resulted from the ideas put forth during the master planning efforts undertaken between 1938 and 1950. Mission 66 not only culminated the master planning process by establishing a blueprint for Cedar Pass site development, it also resulted in a built environment that survives today with a high degree of integrity. Although the design style was new, the way in which the plan fit the land and allowed for visitor interaction with the park's important resources reflected ideas espoused during earlier private tourism initiatives and the New Deal era.

Little of the built environment survives from either the early tourism and New Deal eras, and Cedar Pass Developed Area retains low integrity of these two periods. Today, the developed area most closely approximates its character during the Mission 66 period.

HISTORIC CONTEXTS

The events associated with the development of the Cedar Pass area did not occur in isolation, but are related to events and park developments within the region, state, and nation. Evaluation of the significance of Cedar Pass has considered the various historic contexts that influenced its site development and master planning. At Cedar Pass, relevant contexts for the historic landscape include:

1. Early tourism associated with Western Landscapes and Parks, ca. 1928–1938;

2. The New Deal and Conservation, the Work of the Civilian Conservation Corps, ca. 1938–1941; and

3. The NPS Mission 66 initiative, ca. 1956–1966.

It should be noted that as of yet, the South Dakota Historic Preservation Office has no contextual study for early tourism in the state, a study that would support a more detailed evaluation of this context than has been possible here. Nevertheless, tourism has been evaluated in association with many of the early western parks and activities at those evaluated appear consistent with the activities associated with the Cedar Pass Developed Area of the Badlands.

Efforts on the part of the NPS to develop this site were closely tied to the national influence of the automobile and the accessibility this newly affordable form of transportation offered to distant places worth visiting. Beginning in the 1920s, the automobile dramatically influenced the landscape at Cedar Pass. Initial exploration of the area had been on horseback or on foot. It was not until a suitable and safe road had been constructed through the otherwise rugged and impassable terrain that the Badlands became a viable tourist attraction. The sheer isolation of the place also demanded that services, such as overnight accommodations and dining facilities, be offered to the visitor who likely had traveled some distance to reach the park.

The first person known to have developed tourist facilities at Badlands was Ben Millard. By 1938 when the NPS began to seriously consider establishing the area as a national monument, Millard had already provided a number of cabins, a dining lodge, and a dance hall. These amenities offered a kind of oasis of human contact at the end of a long and arduous road.

In the 1938 Master Plan for the proposed Badlands National Monument, Millard's tourist facilities were described as substandard, and their removal was recommended. Five years later, a new master plan reversed this recommendation and built upon Millard's extant features. This practice of working with existing development rather than obliterating it would become a primary tenet of the Mission 66 initiative. Further research is recommended to ascertain details as to how this decision came about.

The Mission 66 initiative was developed by professional architects, landscape architects, engineers, and planners within the NPS, many of whom had been integrally involved in park planning and development programs before, during, and after World War II. One figure was Thomas Vint, a landscape architect trained at the University of California, Berkeley.[4] Many of Vint's ideas about community planning appear to have influenced Cedar Pass development as it evolved over time, beginning with the master plans of 1938 and 1943, and culminating with the ten-year Mission 66 plan.

Landscape architects such as Thomas Vint applied their knowledge of landscape architecture and garden design history, gained through degree training, to accomplishing the social and physical agenda of the Mission 66 program. They brought historic landscape design tools to bear on a new style. For example, the overlooks that are characteristic of road and trail design from the period likely grew out of A.J. Downing's 19th century romantic notions of the use of viewpoints and vistas.[5] Loop roads became an important feature of park roads, providing a stopping and resting point that afforded visitors spectacular and often panoramic views of the landscape. In some ways the Loop Road designed as part of Mission 66 functioned like the traffic circles of

[4] Linda Flint McClelland, *Building the National Parks: Historic Landscape and Design Construction* (Baltimore: Johns Hopkins University Press, 1998), 160.
[5] McClelland, *Building the National Parks*, 20, 211.

urban parkways. A loop road configuration allowed for improved traffic flow and smooth transitions between the main road and overlooks and other pull-offs. The loop road and associated overlooks typically followed a curvilinear route, deferring to the contours of the land. Unlike the rustic design that sought to blend with and abstract the natural environment, Mission 66 used curvilinear forms that most likely drew from modernist principles.

By emphasizing form, modernists avoided the axis or central focal point as a unidirectional viewpoint for drawing visitors through the landscape. Instead, the curvilinear route allowed the visitor to circumnavigate the landscape, taking in multiple views from multiple vantage points. This new way of encompassing volumes of space is consistent with ideas expressed about modernism in landscape architecture by practitioners like Garrett Eckbo and James Rose. Eckbo contended that "the modern space is multifaceted and omni directional," while his contemporary James Rose spoke of "space rather than style as the true province of landscape architecture," of "ground forms evolving from the division of space," and "space without the restrictive coercion of the singular axis."[6]

Landscape architects of the mid-20th century established their own vocabulary of form, often adopting gestures from the past and utilizing them in a new way, such as to express a concern for human activities, an augmented understanding of ecology and the greater landscape, or their hopes for 20th century technologies. Architectural forms, while orthogonal in plan and elevation, were consistent with the goal of understanding volumetric space. They afforded new opportunities for interaction with the landscape through the use of permeable divisions of space composed of large windows, screen panels, and horizontal extensions that merged interior and exterior space. Such philosophies came to serve the programmatic intentions of the Mission 66 initiative. In turn, the expanded role of interpretation and pedagogy, a keystone of the Mission 66 initiative, became a tool for landscape preservation.[7]

Planning at Cedar Pass can be understood as an expression of Mission 66 concepts based on readings of Linda Flint McClelland's *Building the National Parks*, Conrad Wirth's *Parks, Politics, and the People*, Amanda Zeman'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. These planning efforts incorporate the following design principles:

— improving access by developing interpretive facilities as close to the resource as possible;

— expanding on interpretive opportunities by extending interpretation into the landscape through a range of experiential activities;

— establishing synergies between educational programs and signature park resources;

— using curvilinear forms to allow for multiple views and an unimpeded processional;

[6] Marc Treib, "Axioms for a Modern Landscape Architecture," in *Modern Landscape Architecture: A Critical Review* (Cambridge, MA: MIT Press, 1993), 55.
[7] McClelland, *Building the National Parks*, 466.

— managing visitor movement;

— clustering relatively dense site planning of new facilities and complexes;

— utilizing a unifying design concept that makes use of an armature or datum along which development occurred;

— employing zoning of like uses;

— practicing the visual and physical separation of different uses;

— avoiding fragile resources in site developments;

— incorporating existing features into new designs; and

— espousing 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.

CRITERION A

The CLR team's research and evaluation indicates that the landscape and associated resources of the Cedar Pass Developed Area of Badlands National Park is significant under Criterion A for its association with a series of important events, trends, and activities that have made a significant contribution to the broad patterns of our history including:1) early tourism; 2) CCC Development and New Deal Master Planning; and 3) the NPS Mission 66 Initiative within the areas of Architecture, Landscape Architecture, Social History/Tourism, Recreation, and Community Planning and Development. Many of these trends, particularly those that have occurred during the 20th century, are closely tied to Criterion C activities, culminating in expressions of architecture and landscape architecture that characterize the built environment of Cedar Pass Developed Area at Badlands National Park.

Development at Cedar Pass initially occurred within the private sector, and was intended to promote the importance of the site and accommodate visitor needs. Two factors that are known to have influenced Ben Millard and his sister Clara Jennings' choice to develop Cedar Pass include the availability of land for purchase and its topography, which was better suited to development than other sites. It is also possible that Millard chose this location because of its vantage point for good views of the formations, as well as its close proximity to local transportation routes.[8] Although further research is needed to determine Millard's exact reasons for locating his tourist facilities—the Lodge and cabins—on the flat land below Cedar Pass, it appears that by doing so, Millard set a precedent that the NPS followed.

[8] The reason that land was still available to purchase at this site was due to the fact that Senator Peter Norbeck had persuaded Congress to pass legislation prohibiting private purchase of federal land in those areas that had not yet been claimed. See Jay Shuler, *A Revelation called the Badlands* (Interior, SD: Badlands Natural History Association, 1989, 1994), 27.

Senator Peter Norbeck and Ben Millard, two of the most influential proponents of establishing a park at the Badlands worked together to establish an appropriate road that would lead visitors through the difficult terrain and provide opportunities for viewing the spectacular landscape. Working together with the State Highway Commission, they were intent on finding a route that emphasized the scenery. Senator Norbeck is known for his conviction that roads should follow the contours of the land and circumnavigate natural resources, that is, that the natural resources should dictate the path.

Millard and Norbeck were ultimately successful in attracting federal interest in the site as a national park. Under the purview of the NPS, the Badlands was authorized in 1929 with the caveat that adequate land acquisition and appropriate road development would precede park establishment.

Although early exploration of the Badlands was on horseback or by foot, and visitation was encouraged by the railroad companies during the late 19th century, 20th century monument designation required highway construction to support the increasing automobile travel through the area. Travel by automobile also required better roads, which were promoted nationwide by the Good Roads Movement.[9] Safe passage through the otherwise treacherous Badlands was a concern of early park planners. Although efforts began as early as 1930, it was not until 1940 that roads were complete to provide sufficient access for the American public.

As leisure time increased and families began taking more frequent vacations, the number of drivers grew and automobiles became larger, more varied and more affordable. Increased travel led to an unprecedented demand for services within and around the sites visited. By the end of the 1930s, the National Park System was overburdened by an influx of visitors interested in recreation, edification, and release from increasingly urban lifestyles. Five factors significantly influenced the popularity of national parks and put pressure on the NPS: general population growth; overall increase in travel within America; a boom in the popularity of outdoor recreation; national emphasis on wilderness preservation; and growth of the "conservation" movement.[10]

Park officials determined the need for a master plan to help them respond to visitor needs. With completion of the first plan in 1938, master planning became the primary tool for park development at Cedar Pass. The first plan, however, was never entirely implemented and underwent various revisions over the next fifteen years. A lack of funding produced piecemeal development until Mission 66, when development plans were fully realized.[11]

The Mission 66 initiative was intended to anticipate the full range of issues associated with visitor needs, and provide a vision for comprehensive development. Although the earlier master plans were never fully implemented, many of their ideas were consistently carried forward from one plan to the next. Many of the NPS landscape architects who played important roles in the

[9] Karsmizki, Draft "National Register Nomination Cedar Pass to Northwest Entrance Road," 2.
[10] Ronald F. Lee, "Public Use of the National Park System, 1872-2000," NPS, March 14, 2002. Quoted in Amanda Zeman, Draft "National Register of Historic Places Multiple Property Determination of Eligibility, Grand Canyon Village Mission 66 Planning Effort" (Grand Canyon, AZ: National Park Service, February 24, 2003), 5.
[11] Zeman, Draft "Determination of Eligibility, Grand Canyon Village Mission 66 Planning Effort," 5.

pre-World War II park development era led the Mission 66 program.[12] Because one of the Mission 66 concepts recommended incorporating existing work into new plans, the Cedar Pass master plans built upon the earlier master plans and accommodated existing site development, thus reflecting a continuous development approach reaching back to the Early Tourism Period beginning in ca. 1928.

The tenets of the various Cedar Pass master plans indicated an intention to protect natural resources, carefully site development outside of significant views, and provide visitors with comfortable and commodious accommodations. With more reliable and substantial funding during Mission 66, NPS landscape architects could effect their ideas about conservation. They felt "the best way to protect the resources was to control human movement and design facilities that could properly meet each park's usage needs"[13]

Mission 66 planning efforts incorporated approaches involving the siting of facilities with the same functions in a fashion similar to land use zoning. NPS planners carefully considered the relationship of each area of land use to others and the surrounding environment in ways that would increase the efficiency of park operations, and facilitate movement, visitor comfort, and interpretation of resources. Although this was a specific tenet of Mission 66 design, it built upon a practice already in place at Badlands: residential and utility uses were zoned into clusters and partitioned from visitor use areas as early as 1940. The Mission 66 program updated facilities, expanded educational and interpretive opportunities, and provided improved amenities for national park visitors.

Other considerations that influenced zoning were the placement of visitor facilities to view primary resources; topography; access to transportation routes; and availability of water. In some ways these planning principles can be seen to model suburban planning principles of the period. Since the 1920s local jurisdictions had used zoning ordinances, master plans, and comprehensive plans to control the use and character of residential neighborhoods. Topography was a strong determinant of design, as was the availability of water and site drainage, and the size and shape of buildings. At the Badlands, considerations of climate, topography, and water accessibility also influenced planning.[14]

In *Building the National Parks,* Linda Flint McClelland provides an overview of the essential characteristics of Mission 66 park planning and landscape design with a discussion of the role of landscape architects in national parks as follows:

> The primary function of the landscape architect was to "steer the course of how the land [was] to be used" through "the creation, maintenance, and growth of the Master Plan" and by translating studies of park professionals—historians, geologists, archeologists, naturalists, architects, and engineers—into "an orderly and well-conceived development plan." [15]

[12] "Mission 66 Research Working Meeting," Washington, DC, May 28-29, 2003.
[13] Zeman, Draft "Determination of Eligibility, Grand Canyon Village Mission 66 Planning Effort," 6.
[14] See David L. Ames and Linda Flint McClelland, National Register Bulletin: *Historic Residential Suburbs* (Washington: US Department of the Interior, National Park Service, 2002).
[15] McClelland, *Building the National Parks*, 32.

Mission 66 was the first comprehensive planning program ever undertaken by the NPS. Although park master plans were initially intended to address the specific needs of an individual park, they were standardized under Mission 66 to consider system-wide needs and a cohesive approach to park management and facility development. During Mission 66, the WODC set the standards for the program. This program resulted in a constructed model that is recognizable today as a standard system for providing connections between the visitor and the environment.

Providing information to the visitor to improve interpretation occurred at various parks in the 1930s with the construction of early museums. These tended to be small, uncomfortable places offering minimal information. An early example of an information station was a booth-like structure constructed at Cedar Pass that operated only during the summer months. During the early NPS planning years, much thought went into how to improve the dissemination of information in order to provide the visitor with a more fulfilling and informative experience. By the 1950s, the museums were evolving into buildings that provided both initial contact between visitors and park staff as well as a palette of information encompassing indigenous features and cultural resources. This was a primary goal of the Mission 66 Visitor Center concept.[16]

Very little has been written to date on the significance of Mission 66 planning and design in the national parks, and there is no definitive contextual study of landscape architecture during the Mission 66 period. Visitor Centers are addressed in Sarah Allaback's book, *Mission 66 Visitor Center: The History of a Building Type*.[17] As noted by Allaback, the Visitor Center was the foundation of programmatic planning and design principles that drove the Mission 66 initiative. This building housed the functions fundamental to the successful execution of Mission 66.

CRITERION C: EMBODIES THE DISTINCTIVE CHARACTERISTICS OF A TYPE, PERIOD, OR METHOD OF CONSTRUCTION, OR REPRESENTS THE WORK OF A MASTER

Under Criterion C, Cedar Pass Developed Area is significant in the areas of Architecture and Landscape Architecture for its association with Mission 66-era design, park master planning, and facility design for visitor amenities and park administration.

Mission 66 was a vehicle for providing improved programmatic facilities and comfort to an increased number of visitors.

Linda McClelland states that:

> Education and interpretation took on particular importance in Mission 66. Through new visitor centers, information stations, publications, exhibits, campfire talks, conducted trips, roadside displays, and audiovisual presentations, Mission 66 endeavored to develop the informational and

[16] Conrad Wirth, *Parks, Politics and the People* (Norman, OK: University of Oklahoma Press, 1980), 45.
[17] Former NPS historian Ethan Carr is in the process of writing a contextual study of landscape architecture of the Mission 66 era.

> interpretive programs of the parks to help visitors enjoy the parks and use them wisely.[18]

The most significant undertaking of the Mission 66 initiative at the Badlands was the design and construction of a Visitor Center. This was a multifaceted unit, which not only informed the visitor about the landscape, natural resources, and history of the area; but also allowed the visitor to see the landscape from the vantage point of a place protected from extreme temperatures.

Early on in the Mission 66 program, NPS architects at WODC identified three potential locations for the placement of Visitor Centers:

> 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.[19]

Placement of the visitor center was crucial; architects were encouraged to make use of surrounding views in their designs, and to bear in mind that their location influenced further development of the park's building program. It was felt that placement "affects how, in what sequence, the story is told as well as how much or how little."[20]

Sarah Allaback argues that while any of a dozen locations on the edge of a natural area would orient visitors in wilderness parks, most historical parks could not be adequately understood without providing interpretation in close proximity to the historic resources. NPS Naturalist Paul Schultz commented: "a visitor center should be in touch with the feature it interprets." At Badlands National Park, the placement of the Visitor Center at the entrance to the formations was equally crucial to the experience. Here the Visitor Center is nestled at the foot of a wall of formations, in an area that stands before the dominant and overwhelming mass of land formations that the visitor can go on to experience by taking the Loop Road. The Visitor Center is immediately accessible and visible from the road as it approaches from the north entrance.

The use of modern materials and design ideas, such as horizontality and a clean style with minimal detail, can be seen in buildings constructed at Cedar Pass Developed Area during the Mission 66 period. These were intended to enhance the quality of the visitor experience without detracting from the setting and the natural resource. Mission 66 used new structural forms, modern materials—glass, concrete, and steel—and machine-driven methods of construction for sturdy, low-maintenance, permanent structures that could serve the modern-day needs of the traveling public on a large scale. [21]

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[18] McClelland, *Building the National Parks*, 465.
[19] Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type* (Washington: US Department of the Interior, Government Printing Office, 2000), 28.
[20] Allaback, quoted from "A Report on Visitor Centers" (Washington, DC: Department of the Interior, ca. January 1960), National Park Service History Collection, Harpers Ferry Center.
[21] McClelland, *Building the National Parks*, 464.

Property types associated with Mission 66 design and planning efforts include Visitor Centers and other accommodations, circulation systems, employee housing, and administrative and maintenance facilities. The types and models for required structures were standardized throughout the National Park System. Architects established consistent criteria for employee housing, for example, that included one, two, or three bedrooms, all with the same floor plan, which provided a simple low-cost durable design. At Cedar Pass, modern construction and materials were used as early as 1952 when prefabricated housing was added to the staff residential area.

Working to avoid intrusion into the natural resource areas, loop roads provided a means of access and organized individual zones of development. Loop roads allowed condensed land use, thereby supporting a conservation ethic. For example, in the residential area, houses were placed around a loop road that conserved land, took advantage of views, separated them from public areas, and contributed to a sense of community. The same principles were applied to site planning and development of the campground: loop roads served to develop a greater number of campsites along a single road.

Loop roads formed the armature for each of the individual zones, connecting clusters of buildings associated with administration, residential, utility, and campground use areas. Visual buffers used topography and screening elements such as plantings to separate functions. At the residential area, for example, plantings obscured views of the buildings for visitors.

Zoning was also implemented through small-scale design features. At the campground, for example, barriers keep visitors limited to the designated camping area and off the surrounding landscape. Signage was an important tool to control movement, imbue an attitude of stewardship, and convey much needed interpretive information to visitors. This was particularly evident in overlooks and trails that afforded opportunities to better view and understand the scenery without disturbing the landscape. Trails were carefully placed and overlooks were designed as compact development areas that were carefully considered for their spatial relationships, internal orientation and organization, as well as the views they afforded to the important surrounding natural resources. From patterns of spatial organization, to small-scale features, Cedar Pass continues to reflect the principles of Mission 66, which defined and redefined visitation in the mid-20th century though its landscape and building features.

COMPARATIVE ANALYSIS

Today, the Cedar Pass Developed Area landscape reflects aspects of all of its past uses; however, features associated with the Mission 66 design initiative are by far the most prevalent. Many features from the Early Tourism Period were incorporated into the Mission 66 site design. To determine the degree to which Cedar Pass has changed over time, the landscape during the period of significance and in 2003 were compared. This comparison links extant features to their period of origin and assesses whether they contribute to the site's historic significance. Those features that are not associated with a significant historic period are identified as non-contributing. The landscape characteristics defined in Chapter 3 are used as the basis for the comparative analysis. For each characteristic, the discussion begins with the evolution of the landscape from the early period of significance through the end date of the period of significance

followed by a discussion of its character today. Non-contributing features—those that have been added to the landscape since the end of the period of significance—and missing features—resources that are known to have been part of the site during the period of significance—are also indicated for each landscape characteristic. *Map 4-1* and *4-2* show contributing resources, and *Map 4-3* shows missing features.

NATURAL SYSTEMS AND FEATURES

Both during the period of significance and today, the Cedar Pass Developed Area is characterized by the contrast of the Badlands formations set against the open prairie. All of the natural systems present during the period of significance remain. Native plant communities and wildlife continue to inhabit this area. Similarly, the two extant washes continue to run through the area and have experienced only minor natural alterations since the end of the period of significance. The most notable change to natural systems has been the introduction of invasive exotic plants that have the potential to disrupt native communities. The non-native Siberian elms at the Lodge, which were likely planted after the period of significance, have escaped and are currently naturalizing in the area along the eastside wash. Another minor alteration to natural features includes the removal of portions of a minor formation to allow for the construction of the portable administration buildings.

#	Feature	Contributing/ Non-contributing
N-01	Eastside wash	C
N-02	Westside wash	C
N-03	Badlands formations	C
N-04	Western wheatgrass alliance grassland	C
N-05	Badlands sparse vegetation complex	C
N-06	Western snowberry shrubland	C
N-07	Emergent wetland grassland	C
N-08	Switchgrass grassland	C
N-09	Chokecherry shrubland	C
N-10	Eastern cottonwood	C
N-11	Invasive Siberian elm thickets along eastside wash	NC

SPATIAL ORGANIZATION

The Cedar Pass Developed Area was established in a relatively level area encompassed by the Wall formation. During the Early Tourism Period, the Lodge/cabin cluster was established at Cedar Pass adjacent to the Badlands touring route. By 1942, the Lodge had taken on its current

character. In the years that followed, the NPS continued locating administrative and maintenance facilities at Cedar Pass until the current arrangement was established during the Mission 66 period. A key principle of this period was the concentration of development in zones with the surrounding natural features serving as the setting.

The overall spatial organization of the Cedar Pass Developed Area has changed little since the period of significance. Spatial patterns have changed in some portions of the site, primarily through the addition or removal of buildings. Most significant are the addition of the administrative building cluster, the fire cache, and several maintenance structures. An apartment building and single-family residence have also been added. The single-family residence was proposed by Mission 66 master plans and, therefore, contributes to historic spatial patterns of organization. The addition of the administrative cluster has greatly increased the density of structure in that area and reduced the open space between the residential and visitor areas. The addition of the fire cache in its previously undeveloped location has greatly impacted spatial organization in this area by breaking the once continuous open space, which Mission 66 planners had consciously left undeveloped. Maintenance was separated from other development. Along with the large number of buildings and structures added in the maintenance area (such as the water storage tank and pump building, a large garage, sand shed, and a number of minor structures; although some cabins have been removed) the area has been substantially enlarged in the years since the end of the period of significance. The campground has experienced only minor changes since the period of significance, including the addition of a comfort station and interpretive shelter. The alignment of the service road from the Visitor Center to the seasonal employee apartments, which bypassed the remainder of the residential area, also affected spatial organization. *Figures 4-1* through *4-4* illustrate the spatial patterns from the period of significance and today.

#	Feature	Contributing/ Non-contributing	Early Tourism	CCC	Mission 66
SO-01	Badlands Loop Road corridor	C	•	•	•
SO-02	South Dakota Highway 377 corridor	C	•		
SO-03	Service road corridor	C/NC	•	•	•
SO-04	Visitor Center surrounds[22]	C			•
SO-05	Cedar Pass Lodge/cabins surrounds	C	•	•	•
SO-06	Campground surrounds	C			•
SO-07	Amphitheater parking/interpretive shelter surrounds	C			•

[22] Surrounds in this case refers to the associated landscape features of the building or cluster noted, for example at the Visitor Center this would include the space formed by vegetation, sidewalks, fences, parking areas, and the buildings or cluster itself.

SO-08	Amphitheater surrounds	C			•
SO-09	Administration area surrounds	NC			
SO-10	Residence area surrounds	C/NC			•
SO-11	Seasonal apartments surrounds	C			•
SO-12	Maintenance yard surrounds	C/NC			•
SO-13	Wastewater lagoon surrounds	NC			
SO-14	Former wastewater lagoon surrounds	C			•
SO-15	Open meadow	C			

LAND USE

Land use within the Cedar Pass Developed Area during the Early Tourism Period included lodging, recreation, and visitor accommodations such as a restaurant and restroom facilities. During the early park development and Mission 66 periods, land uses expanded to include NPS administration, employee housing, maintenance, utility, interpretive, and recreational activities. Two important concepts during this period were leaving unused (natural) portions of the site as a setting for the developed portions and separating maintenance uses from the rest of the site. Examples of visitor accommodations and recreational activities that were developed during Mission 66 include the campground, a gift shop, and comfort stations.

The present land use at Cedar Pass has changed little since the period of significance. Lodging and visitor accommodations continue to be offered at the Cedar Pass Lodge. The campground, employee housing, and administration areas remain in the same locations and continue to perform functions similar to those performed during the period of significance (*see Figures 4-5 and 4-6*). The park's primary maintenance facility continues to be located at Cedar Pass. Changes that post-date the period of significance include the addition of the new fire cache, located in the view of the visitor and residential areas in a previously undeveloped area. While this building was sited in a former site of park maintenance facilities developed in the 1940s, the site was later abandoned in accordance with Mission 66 development plans and maintenance facilities were relocated to their current location.

#	Feature	Contributing/ Non-contributing/	Early Tourism	CCC	Mission 66
N/A	Visitor accommodations	C	•	•	•
N/A	Interpretive	C			•
N/A	Lodging	C	•	•	•
N/A	Recreation	C	•	•	•
N/A	Administration	C		•	•
N/A	Maintenance	C		•	•
N/A	Utility	C	•	•	•
N/A	Housing	C		•	•

CIRCULATION

Little is known about area roads before the Early Tourism Period. During this time, Ben Millard and Senator Peter Norbeck played key roles in the layout of the Badlands touring road that passed through Cedar Pass, later known as the Badlands Loop Road. The current road alignment at Cedar Pass Lodge also took form during this period. Today's service road roughly follows a road that was constructed in 1940 to access a water source on the White River.

One of the primary CCC activities in the park was improving roads built during the Early Tourism Period. During Mission 66, implementation of the 1950 Master Plan included adding the Visitor Center parking lot and realigning the service road around it, adding a residential loop off the service road, and constructing a parking lot for the seasonal employee apartments. Other circulation system additions included the three campground loops, amphitheater trail and parking lot, and the maintenance drive/yard. Concrete sidewalks associated with the residences, apartments, a Visitor Center, and other gravel paths, were also added during this period.

Today, most of the circulation features that were present during the period of significance survive. Key changes have included the realignment of the service road south of the Visitor Center and the addition of parking areas behind the Visitor Center and along the new service road. The realignment of the service road left an isolated segment of the former road at the residential area; a short spur was created to connect these two roads. Other circulation features that have been added or modified since the end of the period of significance include a trail from the Visitor Center to the campground area (a trail was likely present during the period of significance but has been replaced), an expansion of the amphitheater parking lot, new sidewalks associated with new buildings, an access drive west of the Lodge to temporary housing, and an expanded maintenance yard. A small service loop off the service road has been removed. Its removal was part of the Mission 66 relocation of the maintenance area, although the work was completed after the period of significance. *Map 2-1, 1966 Period Plan* illustrates the original orientation of the service road as well as the missing service loop. Since the end of the period of significance, very little has changed in association with the Visitor Center front parking lot, the Lodge parking and cabin access loop, three campground loops, and the southern portion of the service road. *Figures 4-7* and *4-8* illustrate the campground circulation from the period of significance and today.

#	Feature	Contributing/ Non-contributing	Early Tourism	CCC	Mission 66	Condition	Date of Origin
C-01	Badlands Loop Road	C	•			Good	ca. 1935
C-02	South Dakota Highway 377	C	•			Good	ca. 1928
C-03	Service road	C/NC	•	•	•	Good	1940, 52-55, 77
C-04	Service road spur	NC				Good	1977
C-05	Former service road segment	C	•			Good	ca. 1920s-55
C-06	Residential Loop Road	C			•	Good	1954
C-07	Cedar Pass Lodge drive	C	•			Fair	ca. 1940s
C-08	Lodge service road	NC				Poor	varies
C-09	Campground drive	C			•	Good	1955-59
C-10	Visitor Center front parking lot	C			•	Good	ca. 1955
C-11	Visitor Center rear parking lot	NC				Good	ca. 1974
C-12	Administration parking lot	NC				Good	1974
C-13	Lodge parking lot	C				Good	varies
C-14	Amphitheater parking lot	C			•	Good	1956
C-15	Maintenance parking lot	C			•	Fair	varies
C-16	Visitor Center sidewalks	C			•	Good	ca.1960
C-17	Lodge sidewalks	NC				Good	ca. 1969
C-18	Amphitheater walks	C			•	Fair	1956
C-19	Campground walks	C			•	Fair	ca. 1960
C-20	Trail from Visitor Center to amphitheater	C			•	Fair	ca. 1960
C-21	Administration area sidewalks	NC				Good	ca. 1969
C-22	Residences area sidewalks	C			•	Good	1955-59
C-23	Maintenance yard	C			•	Fair	varies
C-24	Wastewater lagoon access drive	NC				Fair	2002
C-25	Former wastewater lagoon access drive	C				Poor	ca. 1940s

Missing circulation systems include:

— 1940 service road segments in Visitor Center, residential, early maintenance, and CCC Camp areas.
— CCC Camp walks.
— The short road segment from the Lodge cabins west to the pit toilet/dormitory area.
— The Mission 66 service road segments from the Visitor Center to the Resource Protection building and from the residential area back to the service road.

TOPOGRAPHIC MODIFICATIONS

Given the terrain associated with the Badlands, considerable topographic modifications were necessary to accommodate development within the area during the period of significance. The Cedar Pass topography was altered to construct various road corridors and buildings, and the wastewater lagoons. The borrow pits were formed from removal of fill material. Perhaps the most substantial alterations were related to road construction, such as the approach of the Loop Road to the Visitor Center and the service road through a formation at the southern end of the site. The construction of the amphitheater and lagoons also required significant site manipulations. The majority of the historic topographic alterations remain intact. Since the end of the period of significance, the addition of several new buildings, new lagoons, and the realignment of the service road have further altered topographic features. The new wastewater lagoons have replaced those constructed during the period of significance and plans are underway to restore the original lagoon site to its natural landform. The newly constructed sewage lagoons detract from views within the maintenance area, but are recommended as falling outside the historic developed area boundary.

#	Feature	Contributing/ Non-contributing/ Undetermined	Early Tourism	CCC	Mission 66	Date of Origin
T-01	Former wastewater lagoons	C		•		ca.1940s
T-02	New wastewater lagoons	NC				2002
T-03	Circulation corridors*	C/NC				varies
T-04	Building sites**	C/NC	•	•	•	varies
T-05	Borrow pits	UD				UD

* Contributing circulation corridors include: the Badlands Loop Road, SD Highway 377, the original service road, the Lodge drive, and the campground drive. Non-contributing corridors include the post-1966 service road segments.

** Contributing building sites include: the Visitor Center, seven single-family residences, three apartment buildings, two maintenance buildings, the Cedar Pass Lodge and cabins, the amphitheater, and three campground comfort stations. Non-contributing building sites include the fire cache, post-1966 maintenance buildings, the water tank and pump building, and three administration buildings.

VEGETATION

Little is known about the planted vegetation that characterized the developed area during the Early Tourism Period. During the park development period, a 1953 plan illustrates planting recommendations for the first three single-family residences. Mission 66 period planting plans

approved in 1956 indicate proposals for ornamental vegetation associated with the residences, apartments, and Visitor Center. The extent to which these plans were actually implemented is currently not known, although it appears that at least in part, the planting plan was utilized around the Visitor Center. No information regarding planting is available for the Lodge. Only a partial proposed Mission 66 planting plan for the campground area has been found.

Today, the vegetation of the Cedar Pass Developed Area consists primarily of trees, a few shrubs, mown turf around buildings, and scattered trees with mown turf in the campground. The species represented at the Visitor Center are consistent with those indicated in the planting plans. Those include Indian currant coralberry (*Symphoricarpus orbiculatus*), silver sagebrush (*Artemisia cana*), green ash (*Fraxinus pennsylvanica*), sand cherry (*Prunus pumila*), box elder (*Acer negundo*), American elm, (*Ulmus americana*), and common hackberry (*Celtis occidentalis*). Therefore, it is likely that the vegetation located at the Visitor Center and residence area is derived from those planting plans (*see Figures 4-5, 4-6, 4-9, and 4-10*). The harsh environment of the Badlands makes vegetation management difficult. Therefore, if the planting plans were implemented, the challenging climate could be responsible for the absence of many of the individual plants from the Mission 66 period today.

#	Feature	Contributing/ Non-contributing/ Undetermined	Early Tourism	CCC	Mission 66	Condition	Date of Origin
Ve-01	Visitor Center landscape	C			•	Fair	1959
Ve-02	Cedar Pass Lodge/cabins landscape	UD				Fair	varies
Ve-03	Maintenance area nursery	NC				Fair	post 1985
Ve-04	Residential landscape	C			•	Fair	1959
Ve-05	Campground landscape	C				Fair	varies

Missing vegetation features include:

— Based on the planting plan, various individual trees and shrubs
— Depending on when plantings were installed at the Lodge, individual trees and shrubs

BUILDINGS AND STRUCTURES

Circa 1928, Ben Millard purchased the land now known as the Cedar Pass Developed Area and began to build visitor accommodations, including a dance hall and cabins.[23] By 1942, he had constructed a lodge and a series of guest cabins nearby arranged in a double row along a road corridor. The majority of these structures survive today. During the early park development period, buildings were constructed to support CCC activities, including park administration buildings and temporary barracks, which were removed (as was typical) after the CCC camp's

[23] Jay Shuler, *A Revelation Called The Badlands, Building a National park 1909-1939* (Interior, SD: Badlands Natural History Association, 1989), 26

departure. Several other buildings constructed by the CCC remained, but by the end of Mission 66, most had been removed.

Many new buildings were constructed during the Missing 66 period, including the Visitor Center, seven single-family residences, three apartments, campground comfort stations, two maintenance buildings, and the amphitheater. Only minor repairs and retrofitting have occurred to these buildings since, with little change in their appearance (*see Figure 4-11 and 4-12*). Missing buildings include those that were constructed during earlier periods and incorporated into the Mission 66 plan such as the custodian's residence, Lodge dormitory, pit toilets, and the early maintenance buildings.

The Cedar Pass Lodge, cabins, and outbuildings were modified during and after the Mission 66 period development. Additions have been constructed on either side of the Cedar Pass Lodge, and many of the cabins have experienced exterior alterations (*see Figure 4-13 through 4-16*). The only CCC building that remains today is the former ranger station, now used for Resource Protection offices. Since the end of the period of significance, some buildings and structures have been added to Cedar Pass. These include two maintenance buildings, a water tank/pump building, a fire cache, three modular administration buildings, a single-family residence, and an apartment building. A new projection booth and screen have replaced the former Mission 66 structures at the amphitheater (*see Figure 4-17 and 4-18*). An additional comfort station and interpretive shelter have been added in the campground area.

#	Feature	Contributing/ Non-contributing/ Undetermined	Early Tourism	CCC	Mission 66	Condition	Date of Origin
B-01	Ben Reifel Visitor Center	C			•	Fair	1959
B-02	Cedar Pass Lodge	C	•			Fair	1927-86
B-03	Lodge cottage	C		•		Good	1946
B-04	Lodge laundry building	C	•			Fair	1927-42
B-05	Lodge maintenance building	C	•			Fair	1927-42
B-06	Cabin #1-1A-2-2A	C	•			Fair	1927-42
B-07	Cabin #3	C	•			Fair	1927-42
B-08	Cabin #4	C	•			Fair	1927-42
B-09	Cabin #5	C	•			Fair	1927-42
B-10	Cabin #6	C	•			Fair	1927-42
B-11	Cabin #7	C	•			Fair	1927-42
B-12	Cabin #8	C	•			Fair	1927-42
B-13	Cabin #9	C	•			Fair	1927-42
B-14	Cabin #10	C	•			Fair	1927-42
B-15	Cabin #11	C	•			Fair	1927-42
B-16	Cabin #12	C	•			Fair	1927-42

B-17	Cabin #14-15-16-16A	C	•			Fair	1927-42
B-18	Cabin # 18	C	•			Fair	1927-42
B-19	Cabin #19	C	•			Fair	1927-42
B-20	Cabin #20	C	•			Fair	1927-42
B-21	Cabin #21	C	•			Fair	1927-42
B-22	Cabin #22	C	•			Fair	1927-42
B-23	Cabin #23	C	•			Fair	1927-42
B-24	Cabin #33	C	•			Fair	1927-42
B-25	Campground comfort station group 1	NC				Good	post 1985
B-26	Campground comfort station group 2	C			•	Good	1956-63
B-27	Campground comfort station A	C			•	Good	1956-63
B-28	Campground comfort station B	C			•	Good	1956-63
B-29	Administration building	NC				Good	post 1985
B-30	Conference/maintenance building	NC				Good	post 1985
B-31	Collection storage building	UD				Good	post 1985
B-32	Resource Protection building	C		•		Good	1942
B-33	Natural Resources office building	NC				Good	post 1985
B-34	Residence #28	C			•	Good	1953
B-35	Residence #29	C			•	Good	1953
B-36	Residence #30	C			•	Good	1952-55
B-37	Garage #30A	C			•	Good	1952-55
B-38	Residence #31	C			•	Good	1958-59
B-39	Garage #31A	C			•	Good	1958-59
B-40	Residence #32	C			•	Good	1959
B-41	Garage #32A	C			•	Good	1959
B-42	Residence #33	C			•	Good	1959
B-43	Garage #33A	C			•	Good	1959
B-44	Residence #34	C			•	Good	1958-59
B-45	Garage #34A	C			•	Good	1958-59
B-46	Residence #46	NC				Good	ca. 1950-70s
B-47	Garage #46A	NC				Good	ca. 1970s
B-48	Seasonal apartment #135	NC				Fair	1976
B-49	Seasonal apartment #45	C			•	Fair	1959
B-50	Seasonal apartment #51	C			•	Fair	1959
B-51	Seasonal apartment # 52	C			•	Fair	1959
B-52	Fire cache	NC				Good	2003
B-53	Maintenance shop	C			•	Fair	1960
B-54	Maintenance cold storage	C			•	Fair	1961
B-55	Maintenance storage building	NC				Good	1988
B-56	Sand shed	NC				Good	1977
B-57	Hazmat building	NC				Good	ca. 1970s
B-58	Lodge employee mobile home	NC				Good	2003
S-01	Lodge ice house	C	•			Fair	1927-42
S-02	Interpretive shelter	NC				Good	post 1985

S-03	Campground shed	NC				Good	post 1985
S-04	Campground entrance booth	NC				Good	post 1966
S-05	Amphitheater stage	NC				Good	post 1966
S-06	Amphitheater projection booth	NC				Good	post 1966
S-07	Amphitheater retaining wall	NC				Good	post 1966
S-08	Air quality monitoring station	NC				Good	post 1985
S-09	Sewage treatment lift station	NC				Good	2003
S-10	Tack room	C		•		Poor	1942*
S-11	Water supply tank	NC				Good	2002
S-12	Water supply pump building	NC				Good	2002
S-13	Wastewater lagoons and structures	NC				Good	2003
S-14	Concrete box culverts	UD				Good	UD
S-15	Timber footbridge	NC				Good	post 1985
S-16	Concrete block retaining wall	C				Good	1956-66

* This structure appears to be older than the Mission 66 period but was not noted on any maps prior to that period. It could be one of the CCC camp structures moved to this location.

Missing buildings and structures include: [24]

- Dance hall
- Campground pit toilets
- Lodge dormitory (2)
- Lodge laundry
- Lodge cabins (3)
- Lodge pit toilets (4)
- Custodian's residence
- Service station (across the Loop Road to the north)
- Early maintenance buildings (approximately 8)
- Powder magazine (just outside study area to the east)
- CCC camp (shower, mess hall, garages, quarters, oil house)

SMALL-SCALE FEATURES

Little is known about the small-scale features associated with the Early Tourism Period. The park development and Mission 66 periods witnessed the introduction of a variety of small-scale features, including the Visitor Center sign, a flagpole, portable picnic shelters, amphitheater benches, fencing, and a simulated campfire at the amphitheater. Other small-scale features likely present during the period of significance included trash receptacles, bollards, signs, lighting, and furnishings typical of residence and campground sites.

Today, many of the small-scale features from the period of significance have been replaced as they became obsolete or fell into a state of disrepair. The flagpole, amphitheater benches, and a few portable picnic shelters remain from the period of significance. The Visitor Center sign has

[24] The locations of these missing structures should be considered archeological sites (which might yield information about the site's development history) and should be treated accordingly.

been modified to include the new name of the Visitor Center (*see Figures 4-19 and 4-20*). Only a few of the portable picnic shelters remain, having been replaced by permanent picnic structures in the campground (*see Figures 4-2 and 4-8*). At the amphitheater, the simulated campfire feature is no longer present and a variety of contemporary small-scale features have been added, such as picnic tables, trash receptacles, an interpretive display cart, RV utility connections, vending machines, utility boxes, and an assortment of residential furnishings—play equipment, seating, tables, planters, and similar private garden items.

#	Feature	Contributing/ Non-contributing/ Undetermined	Early Tourism	CCC	Mission 66	Condition	Date of Origin
SS-01	Visitor Center sign	C			•	Good	1958/1979
SS-02	Informational signs (traffic, location, etc.)	NC				Good	post 1966
SS-03	Phone box	NC				Good	post 1985
SS-04	Flagpole	C			•	Good	1951
SS-05	Trash/recycle receptacles	NC				Good	post 1966
SS-06	Kiosk	NC				Good	post 1985
SS-07	Post and rail fencing	NC				Good	post 1966
SS-08	Electrical and HVAC utility boxes	NC				Good	post 1966
SS-09	Dumpsters	NC				Good	post 1985
SS-10	Wheel stops	NC				Good	post 1985
SS-11	Bike racks	NC				Good	post 1985
SS-12	Fire hose boxes	NC				Good	post 1985
SS-13	Fire hydrants	NC				Good	post 1985
SS-14	Picnic tables	NC				Good	post 1985
SS-15	Bollard lights	NC				Good	post 1985
SS-16	Stone tree dedication plaques	NC				Good	post 1985
SS-17	Cedar Pass Lodge sign	UD				Good	UD
SS-18	Board screen fencing	NC				Good	post 1966
SS-19	Timber overhead lighting post	UD				Good	varies
SS-20	Irregular cut log edging	NC				Fair	post 1985
SS-21	Benches	UD				Good	varies
SS-22	Plastic lawn chairs	NC				Good	post 1985
SS-23	Picnic shelters (portable)	C			•	Good	1956-58
SS-24	Gravel landscape decorations	NC				Fair	post 1985
SS-25	Concrete water valve caps	NC				Good	UD
SS-26	Chain link fencing	NC				Good	post 1985
SS-27	Timber bollards	NC				Fair	post 1985
SS-28	Amphitheater benches	C			•	Fair	1959

SS-29	Interpretive display cart	NC				Good	post 1985
SS-30	Metal access gates	NC				Good	post 1966
SS-31	Picnic shelters (fixed)	NC				Good	post 1966
SS-32	Drinking fountains	UD				Good	varies
SS-33	Water spigots	UD				Good	varies
SS-34	Concrete/gravel splash basin	UD				Good	varies
SS-35	RV utility connections	NC				Good	post 1966
SS-36	RV dump station connections	NC				Good	post 1966
SS-37	Vending machine	NC				Good	post 1966
SS-38	Circular concrete culverts (play equipment)	NC				Fair	post 1966
SS-39	Metal post and wire fencing	NC				Fair	post 1966
SS-40	Play swings	NC				Good	post 1985
SS-41	Portable storage sheds	NC				Good	post 1985
SS-42	Clotheslines	NC				Good	post 1966
SS-43	Dog houses	NC				Good	post 1985
SS-44	Hose reels	NC				Good	post 1985
SS-45	Satellite dishes	NC				Good	post 1985
SS-46	Mail boxes and stand	NC				Good	post 1985
SS-47	Gas utilities	NC				Good	post 1985
SS-48	TV antennas	NC				Good	post 1985
SS-49	Concrete and corrugated metal culverts	NC				Good	post 1985
SS-50	Covered walkways	C/NC			•	Good	varies
SS-51	Metal bollards	NC				Good	post 1985
SS-52	Propane tanks	NC				Good	post 1985
SS-53	Abandoned equipment/junk piles	NC				Poor	varies
SS-54	Maintenance equipment	NC				Good	post 1985
SS-55	Portable research vehicles (RVs)	NC				Good	post 1966
SS-56	Wood post and wire fencing	NC				Good	post 1985
SS-57	Wood post and plank fencing	NC				Good	post 1985

Missing small-scale features include:

- CCC camp flagpole
- Synthetic campfire
- Cedar Pass Lodge sign (which matched the form of the sign at VC)
- Fences at cabins
- Chairs on Lodge front porch
- Gas station sign
- CCC camp fuel tanks and pumps
- Light poles and fixtures at Lodge cabins

VIEWS AND VISTAS

The rich scenery within and surrounding the Cedar Pass Developed Area influenced many of the design decisions made by Ben Millard, and later, the NPS. During the Early Tourism Period, the Badlands Loop Road was planned to capture the best views of the surrounding formations and landscape. The placement of Cedar Pass Lodge allowed for panoramic views of the Wall formation. Similarly, during the Mission 66 period, the orientation of the Visitor Center and campground were influenced by the desire to capture the best views of the Wall and the surrounding formations and landscape. The Badlands formations were also considered during the siting of potentially intrusive development because of their ability to block incompatible views. The formations in the southern portion of the site, for example, block the maintenance area from view of visitor and staff residential areas. Another formation provides visual separation of the campground and Lodge.

Today, little has changed in terms of the overall views. The siting of the Visitor Center, Lodge, and campground still afford panoramic views of the formations. The maintenance area remains screened from view of visitors, and the developed portions of the site are screened from view of the campground. The view of the area from Cedar Pass remains similar to that during the period of significance; the addition/loss of buildings would appear minimal in the overall landscape. Views have been altered on a smaller site scale with the addition and removal of contributing buildings and structures. While the missing buildings have a limited impact on the viewshed, the addition of the fire cache and administrative cluster changed the appearance of their areas. The siting of the fire cache is perhaps the most disruptive change to views. The partial enclosure of the porch at the Visitor Center has altered the view of the formation from this area. The in-filling of the originally open Visitor Center front porch prohibits visitors from experiencing views of the formations to the north while on the porch and under the roof.

#	Feature	Contributing/ Non-contributing	Early Tourism	CCC	Mission 66	Date of Origin
V-01	View of area from top of Cedar Pass	C			•	1935-66
V-02	View from Visitor Center area	C			•	1959
V-03	View from Lodge and cabin area	C			•	1927-42
V-04	View of area from top of the formation west of the Lodge	C			•	1966
V-05	View from campground area	C			•	1959
V-06	View from Badlands Loop Road	C			•	1935-66
V-07	Views of new buildings	NC				varies
V-08	Views from inside Visitor Center porch*	C				1959

* The view from inside the porch has been significantly altered. (There are no missing views or vistas.)

INTEGRITY EVALUATION

Assessment of a landscape's integrity is based on an evaluation of the existence and condition of physical features dating from a property's period or periods of significance, taking into consideration the degree to which the individual qualities of integrity are present. The seven qualities of integrity assessed in accordance with National Register criteria are location, design, setting, materials, workmanship, feeling, and association. As defined in National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation*:

> **Location** is the place where the historic property was constructed or the place where the historic event occurred; **design** is the combination of elements that create the form, plan, space, structure, and style of a property; **setting** is the physical environment of a historic property; **materials** are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property; **workmanship** is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory; **feeling** is a property's expression of the aesthetic or historic sense of a particular period of time; and **association** is the direct link between an important historic event or person and a historic property.

National Register Bulletin 15 also states that:

> Integrity is the ability of a property to convey its significance….Historic properties either retain integrity (that is convey their significance) or they do not. Within the concept of integrity, the National Register Criteria recognize seven aspects or qualities that, in various combinations, define integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey significance. Determining *which* of these aspects are most important to a particular property requires knowing why, where, and when the property is significant.

Based upon the work conducted on behalf of this CLR, the Cedar Pass Developed Area landscape appears to possess a high degree of integrity for the period of significance from 1928 to 1966. By 1966, the developed area landscape reflected Mission 66 concepts of zoning uses and developing compact site features oriented to a strong organizational element, such as a linear 'spine' or road corridor. The road system, housing developments, Visitor Center, Cedar Pass Lodge, campground, and maintenance area that currently characterize the Cedar Pass landscape were in place by 1966. *(See Map 4-4 at the end of the chapter.)*

The changes that have occurred within the landscape since 1966 have served to diminish the integrity of the Mission 66 period to some degree, primarily through the addition of buildings after 1966. The loss of a few buildings and the realignment of the service road after 1966 have also weakened the site's integrity.

INTEGRITY ASSESSMENT BY ASPECT

Cedar Pass possesses a high degree of integrity of **location** based on its continuing use as a tourist destination in the same location from the early 1920s through the early 1940s. It has maintained a park headquarters in the same location as established in the late 1940s through the late 1960s.

Overall, the Cedar Pass Developed Area possesses a high degree of integrity of **design** for the Mission 66 period. For the most part, the primary character and pattern of spatial organization was established by 1966. The overall layout of the Cedar Pass landscape preserves the majority of the systems and features established during the 1960s, as well as many features from the early 1940s that were integrated into the Mission 66 development.

The addition and loss of different buildings, as well as the expansion of the maintenance yard, detract from the integrity of design in those respective areas. The administrative and maintenance areas were most affected, retaining only a medium level of integrity of design due to the associated changes in spatial organization and the incompatible design styles and forms of structures. The additional single-family residence and apartment unit, and the realignment of the service road, all of which post-date the Mission 66 period, could be viewed as continuations of the Mission 66 planning, and therefore detract only minimally from the integrity of design.

The two-story fire cache location also detracts from the integrity of design as it was in an area that was purposefully cleared of maintenance/utility structures during the Mission 66 period to isolate these uses from other areas of the site. The change in design of the campground picnic shelters detracts from the integrity of design to a lesser degree.

The Cedar Pass Developed Area retains a high degree of **integrity of setting** for the Mission 66 period. Much of the park continues to be rugged, geologically fascinating country that remains undeveloped. Cedar Pass continues to serve as a primary visitor contact point as well as a lodging and recreation facility and park headquarters. During the Mission 66 period, the NPS established an approach to land management in the developed area that survives today.

While some of the development that has occurred within the site since 1966 has changed patterns of spatial organization and character, most of these changes remain in keeping with the uses established in the 1956 Master Plan. The location of the fire cache in an area easily seen by visitors is the only change since the end of the period of significance that seriously detracts from the integrity of setting. Other later additions, such as the administrative cluster and expanded maintenance area, are relative continuations of functions and uses established during the period of significance.

Cedar Pass Developed Area features possess a medium degree of **integrity of materials** for the Mission 66 period. The dominant material that post-dates the period of significance is the metal siding and roofing associated with pre-engineered buildings. In some cases, such as roofing, the use of metal building materials is less intrusive. In the case of temporary and mobile buildings and siding of buildings, the metal stands in marked contrast to painted and unpainted wood and painted stucco. The metal-clad fire cache, temporary administrative and residential Lodge

buildings, Lodge ice vending structure, most-recently constructed single-family residence, campground interpretive shelter, new alterations to the Mission 66 residences, and replacement campground picnic shelters all detract from the integrity of materials. In addition, the original amphitheater screen has been replaced with a structure that does not use the stucco that characterized the original. Aside from those listed here, the majority of surviving buildings and structures retain a high degree of integrity of materials. It should be noted that Lodge cabins were originally clad with cedar slabs; today's stucco was added in 1949 and was characteristic of the structures by the end of the period of significance.

The Cedar Pass Developed Area retains a medium degree of **integrity of workmanship** for the Mission 66 period. The majority of the features constructed during or integrated into the Mission 66 period continue to exhibit workmanship representative of these periods. The addition of the fire cache, mobile administrative buildings, and mobile residences has diminished integrity of workmanship due to their use of different materials and construction methods. These features detract from the Mission 66 period integrity of workmanship.

The Cedar Pass Developed Area retains a high degree of **integrity of feeling** for the Mission 66 period. As the continued primary visitor contact point, headquarters, lodging, and recreation destination set among the Badlands formations and native prairie meadows, the landscape has retained its character and has changed little since the end of the period of significance. The feeling of the clustered developments, like islands within the natural landscape, continues to contribute to the site's integrity of feeling.

Generally, Cedar Pass retains a high degree of **integrity of association** for the Mission 66 period. Ben Millard's Lodge and the NPS Mission 66 developments survive in much the same configuration as when they were established, helping to convey associations with these groups and their efforts to create a tourist destination and headquarters for the park. The loss of the early tourism and CCC features during and after the period of significance has greatly diminished the integrity of feeling for this aspect of the site's history.

RECOMMENDATIONS CONCERNING EXISTING AND FUTURE NOMINATIONS TO THE NATIONAL REGISTER OF HISTORIC PLACES

The significance evaluation, comparative analysis of the historic and the existing landscape, and assessment of landscape integrity contained herein has focused on the overall landscape of the Cedar Pass Developed Area. The process for evaluating national parks as a whole and the individual resources within parks has progressed substantially since the late 1980s and early 1990s. With the NPS's publication of Linda Flint McClelland's *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916 to 1942* in 1993, and the emergence of analysis methodologies stemming from guidance provided by National Register Bulletins 18 and 30, a more holistic view of a national park's designed cultural landscape was possible.

The multiple-property listing "Historic Park Landscapes in the National and State Parks" that addresses New Deal-era historic designed park landscapes provides guidance on relevant

property types and the potential boundary of a nominated district or site. According to this multiple property listing:

> Ideally, it is desirable to identify and register the largest unit having significance and integrity as a historic park landscape…The coordinated development for parks during the historic period through a comprehensive planning process and the development of master plans provides a strong argument for this approach.

With a broad understanding of the historical significance of the development of the park, a recommendation is offered below regarding a National Register historic district encompassing Cedar Pass Developed Area. In addition, this CLR also recommends that consideration be given to completing the process for evaluating the Cedar Pass Road historic road corridor and the Cedar Pass to Northwest Entrance historic road corridor. These two potential historic resources are closely associated with the Cedar Pass Developed Area. Both proposed historic properties terminate at the Cedar Pass Developed Area.

It is important to note that the CLR scope did not include identifying and evaluating archeological resources and ethnographic resources. Any potential district of archeological sites and/or listing of additional individual sites are not addressed in this CLR. The Historic Resource Study currently under way for the whole park will be useful in addressing historic resources proximate and within the Cedar Pass Developed Area.

RECOMMENDED NATIONAL REGISTER DISTRICT

Cedar Pass Developed Area Historic District

See Map 4-5 at the end of this chapter.

Boundary

The CLR team recommends that a historic district designation be considered for the current NPS-administered lands and facilities known as the Cedar Pass Developed Area. The boundary for this proposed historic district should follow the current park boundary to the south, extending from the wash west of the campground and extending east to the existing service road at the northwest corner of the existing wastewater lagoons. The boundary on the north should follow on the north side of the Badlands Loop Road and SD 377. The historic district boundary on the west should follow the western edge of the wash. The boundary on the east should follow along the base of the steeper grades of the formations beginning at the Loop Road and running just east of the Visitor Center and Residential Area complexes, just east of the service road and ending just north of the wastewater lagoons. The wastewater lagoon facility should not be included in the proposed historic district.

Justification

Based on this CLR's landscape research, documentation, analysis, and evaluation, the site appears to possess significance at the state level as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the National Park Service's (NPS) Mission 66 initiative within the areas of Architecture, Landscape

Architecture, Social History/Tourism, Community Planning and Development, and Recreation during the period ca. 1928 through 1966. Despite the fact that Mission 66-era Cedar Pass development is less than fifty years of age, Cedar Pass appears to meet the eligibility requirements of Criterion Consideration G as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota.

The extended period of significance reflects a continuum of use of Cedar Pass by various individuals and agencies to site services and amenities for visitors endeavoring to experience the dramatic Badlands landscape. Early private efforts to develop a tourist site eventually coexisted with federal initiatives to establish park administrative and maintenance functions. Each campaign to address visitor and park administrative needs completely and comprehensively built upon previous efforts. The approach to the Cedar Pass site development that rendered the park's nature wonders accessible—yet did not intrude upon their uniqueness—culminated in the efforts of the Mission 66 initiative.



John Milner Associates, Inc., 2002

Figure 4-1 View south from amphitheater toward former wastewater lagoons in 2002; amphitheater projection booth, screen, and benches are visible.



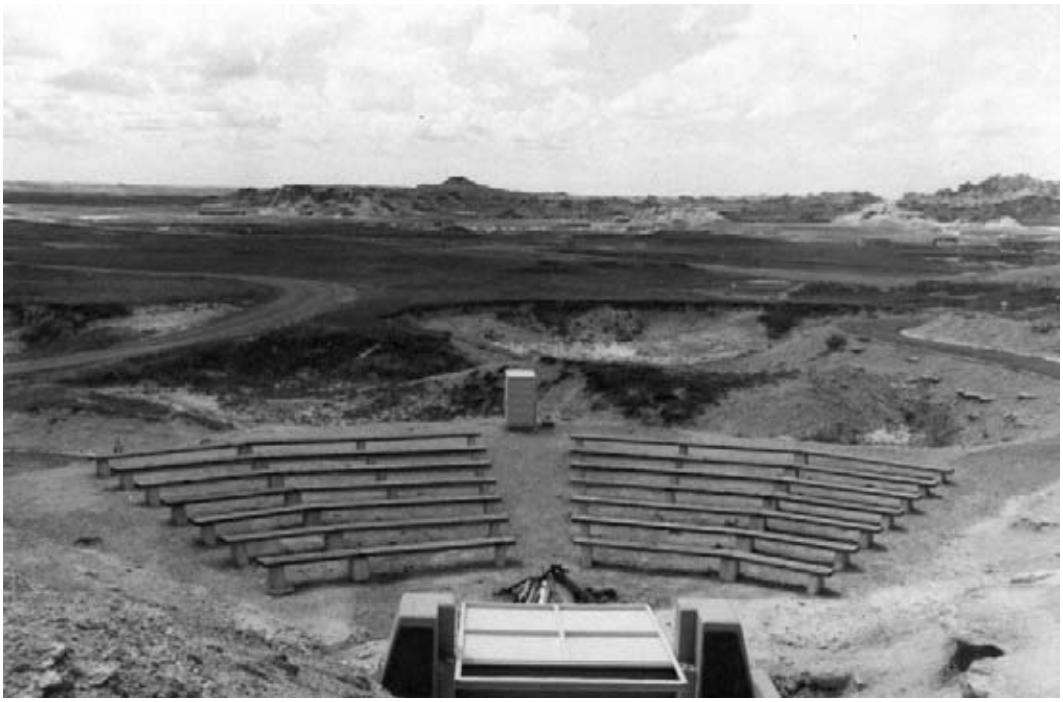
John Milner Associates, Inc., 2002

Figure 4-2 View southwest from amphitheater across group campground loop in 2002; a foot bridge, picnic shelters, scattered shade trees, and bollards are visible.



Badlands National Park Archive

Figure 4-3 View across group campground in 1959 from amphitheater; pullouts for campground sites and bollards are visible. No trees are visible.



Badlands National Park Archive

Figure 4-4 Amphitheater in 1962 with a small projection structure and folding screen. The simulated campfire is visible in the center.



John Milner Associates, Inc., 2002

Figure 4-5 View of Visitor Center façade looking south in 2002; the flagpole, mature plants, and kiosk are visible. The addition of the theater on the porch diminished the cool and inviting "veranda" appearance of the entrance area.



Badlands National Park Archive

Figure 4-6 View of Visitor Center façade looking southeast in 1959; the flagpole, immature plants, and resource protection office are visible.



John Milner Associates, Inc., 2002

Figure 4-7 View of campground in 2002 with RV waste disposal station, bollards lining road, dumpster, and comfort station.



Badlands National Park Archive

Figure 4-8 View of campground pull-offs, picnic shelters, trash receptacles, comfort station, and bollards along road in 1965.



John Milner Associates, Inc., 2002

Figure 4-9 Single-family residence at foot of Wall formation with large trees and board fencing in 2002.



Badlands National Park Archive

Figure 4-10 Single-family residence in 1957 with immature tree, shade and wind screen, and brick structure.



John Milner Associates, Inc., 2002

Figure 4-11 Entrance to Visitor Center in 2002 with informational sign and ramp.



Badlands National Park Archive

Figure 4-12 Visitor Center entrance in 1959 with open porch.



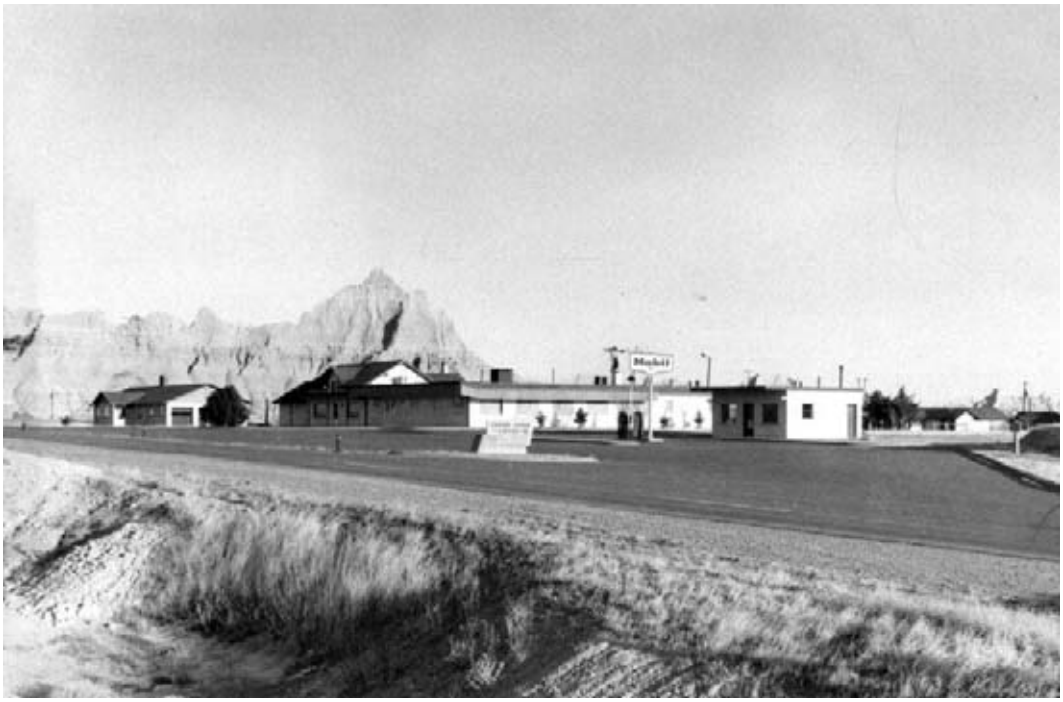
John Milner Associates, Inc., 2002

Figure 4-13 Cedar Pass Lodge in 2002 with additions to the original Lodge on either side, board fencing to east, and large trees behind the building.



Badlands National Park Archive

Figure 4-14 Cedar Pass Lodge in 1969 with a massing of plants to the west side of the building.



Badlands National Park Archive

Figure 4-15 Cedar Pass Lodge in 1960 with gas station and sign and a residence to the east; the Lodge sign is at the parking lot entrance.



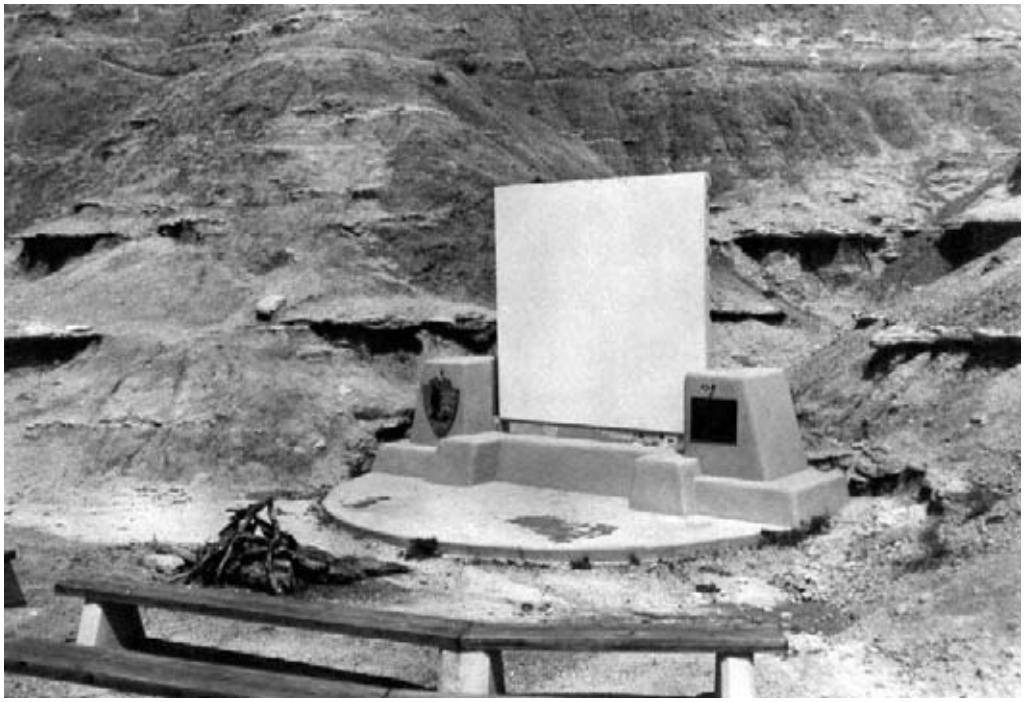
Badlands National Park Archive

Figure 4-16 The original Cedar Pass building in 1940, built by Ben Millard.



John Milner Associates, Inc., 2002

Figure 4-17 View of amphitheater screen, wood benches on concrete supports, and concrete retaining wall along the perimeter in 2002.



Badlands National Park Archive

Figure 4-18 View of amphitheater screen and base, simulated campfire, and wood benches on concrete supports in 1962.



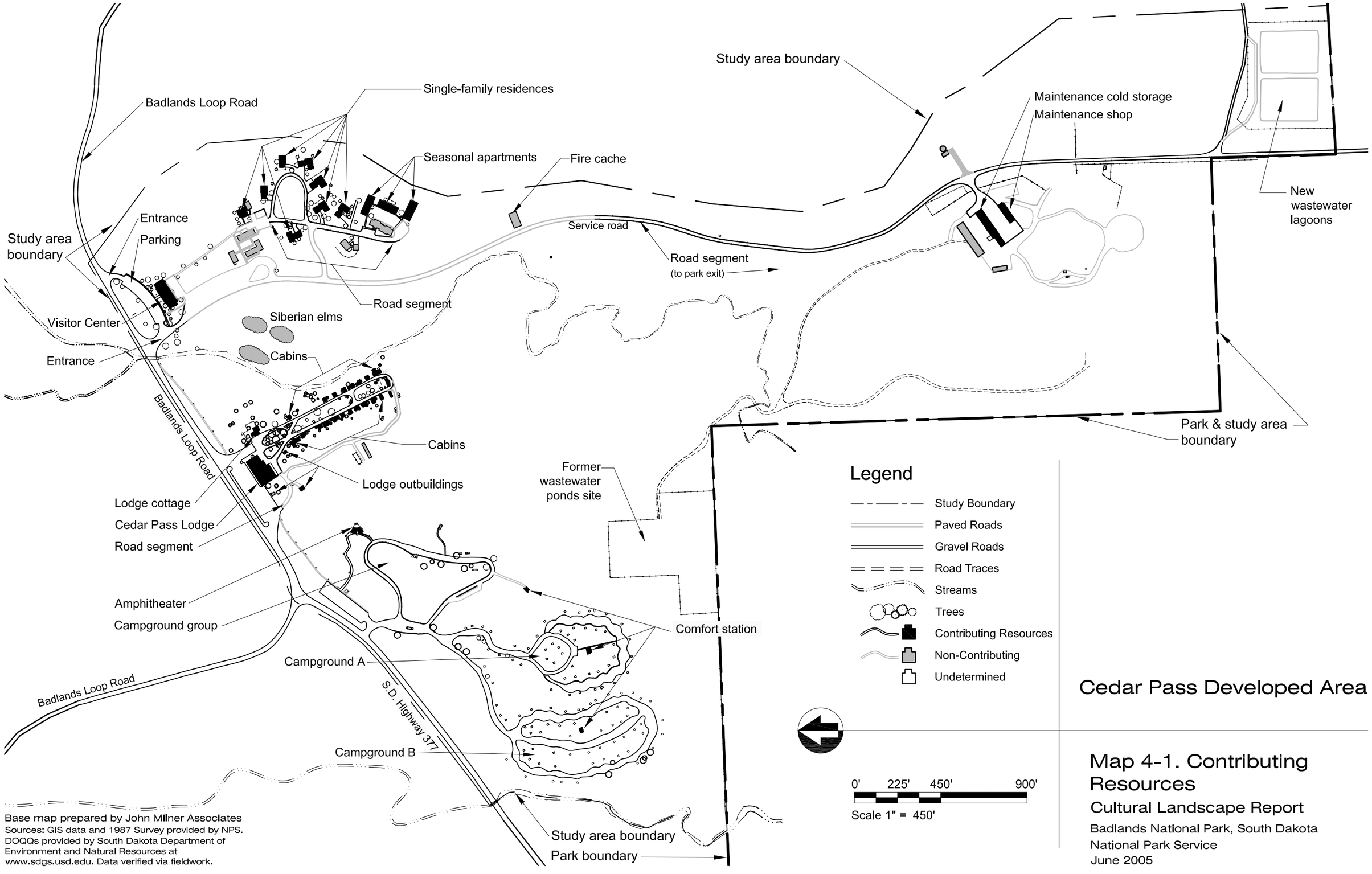
John Milner Associates, Inc., 2002

Figure 4-19 View east of Visitor Center sign in 2002 with raised lettering and the Wall formation in the background.



Badlands National Park Archive

Figure 4-20 View west of Mission 66 sign for Headquarters.



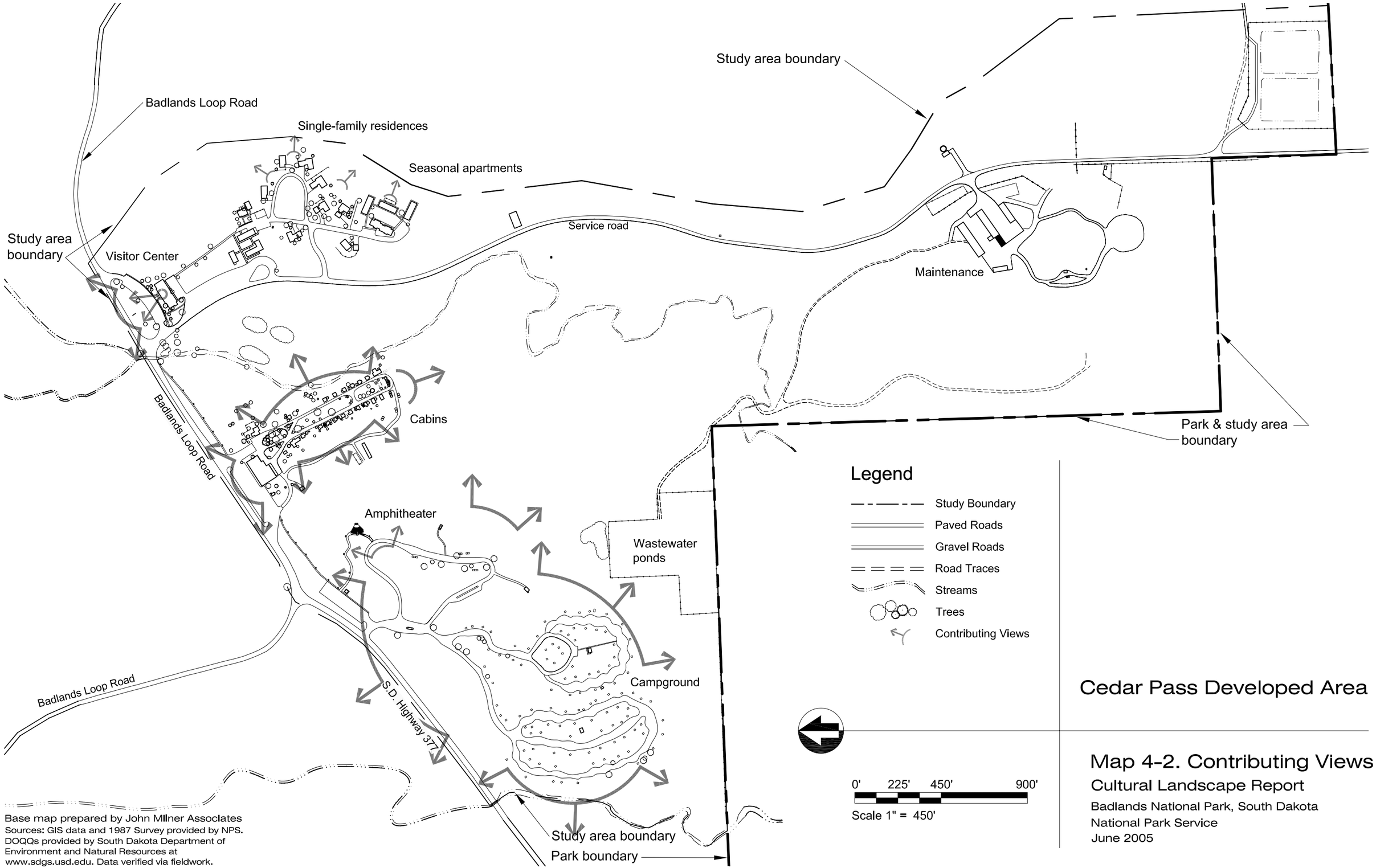
Base map prepared by John Millner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 4-1. Contributing Resources

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



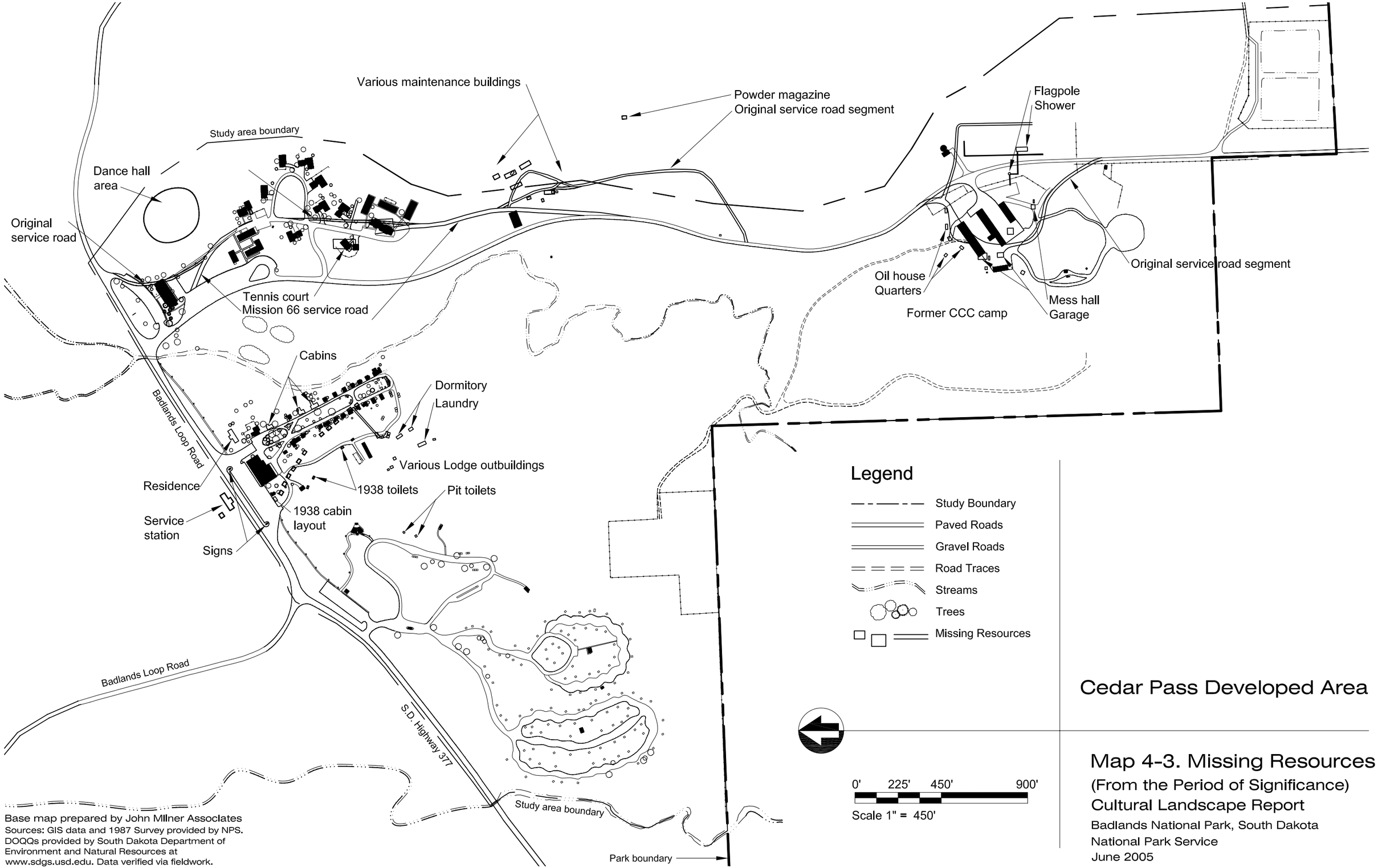
Base map prepared by John Millner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 4-2. Contributing Views

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of
Environment and Natural Resources at
www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 4-3. Missing Resources

(From the Period of Significance)
Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005

Residential area
(medium integrity)

Service road segment,
admin. cluster, fire cache
(low integrity)

Study area boundary

Wastewater lagoons
(low integrity)

Maintenance yard
(medium integrity)

Service road

Study area
boundary

All unhatched areas
have high integrity

Park & study area
boundary

Badlands Loop Road

Cedar Pass Lodge
(medium integrity)

Badlands Loop Road

S.D. Highway 377

Study area boundary

Park boundary

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of
Environment and Natural Resources at
www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Paved Roads
- Gravel Roads
- Road Traces
- Streams
- Trees
- High Integrity
- Medium Integrity
- Low Integrity

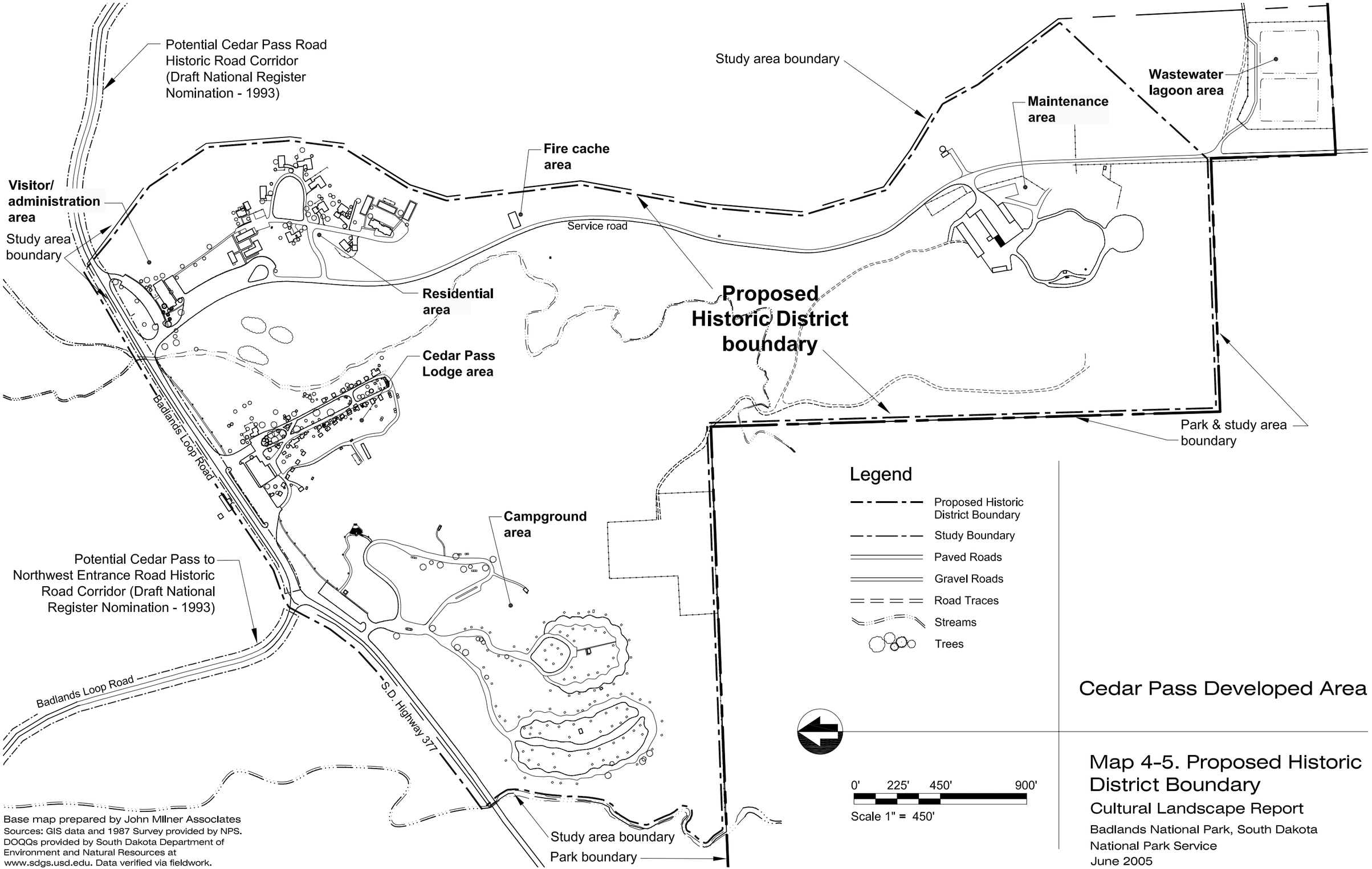
0' 225' 450' 900'

Scale 1" = 450'

Cedar Pass Developed Area

Map 4-4. Zones of Integrity

Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 4-5. Proposed Historic District Boundary

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



Chapter Five

Management Issues

CHAPTER FIVE

MANAGEMENT ISSUES

INTRODUCTION

This chapter provides a summary of landscape management issues of concern for the Cedar Pass Developed Area. The issues documented in this chapter are based upon discussions between members of the Cultural Landscape Report (CLR)/Environmental Assessment (EA) team, regional National Park Service (NPS) staff, and Badlands National Park personnel during the November 2002 CLR start-up meeting at park headquarters. Additional issues were also identified during field investigations and through review of available park planning documents. These issues guided the development of treatment recommendations and alternatives found later in this document. Issues are organized by topic, with some issues related to more than one topic.

VISITOR USE AND ACCESS

— Only a few of the Cedar Pass facilities provide universal accessibility. Accessibility improvements need to be made in the Visitor Center, administrative cluster, single-family and seasonal residences, campground, and Lodge to provide for all visitors.

— The Visitor Center facility is often at or above capacity during peak seasons. Bookstore, administrative, and interpretive space is not adequate for the need.

— Parking at the Visitor Center is not adequate during peak periods.

— Summertime high temperatures in the audio-visual area outside the Visitor Center often exceed 90 or 100 degrees. This creates an unpleasant and potentially unsafe condition for visitors.

— The location of the audio-visual area at the entrance to the Visitor Center, and between this entrance and the parking lot, often results in pedestrian congestion during peak visitation periods. The noise from visitors entering and leaving the Visitor Center and using the adjacent restrooms makes viewing the film difficult.

— Summertime high temperatures and the relative lack of shade in the campground cause many visitors to complain. The few trees in the campground often experience so much trampling that they are damaged or killed.

— Many campground users would like to see showers installed in the campground for convenience and utility.

— Pedestrian/vehicular conflicts are a problem in a number of places at Cedar Pass, especially at the Visitor Center and administration area.

— There are visitor, employee, and service circulation conflicts in the Visitor Center area.

ADMINISTRATION AND INFRASTRUCTURE

— The Visitor Center facility is often at or above capacity during peak seasons. Bookstore, administrative, and interpretive space is not adequate.

— The park lacks adequate storage space for natural and cultural resource artifacts and collections. The park plans to add new facilities in Cedar Pass to accommodate this need.

— The park has inadequate administration and maintenance facilities and there are plans to add additional buildings in the Cedar Pass Developed Area to accommodate projected needs. The park requires site and design guidance for new facilities.

— Insufficient parking areas for park employees and maintenance equipment have led to these vehicles taking up space in the overflow visitor parking area, and thus inadequate visitor parking during peak visitation periods.

— There is no separate employee parking at the Cedar Pass Lodge, leading to insufficient availability during peak use periods.

— The mobile home structures used by Lodge employees are inconsistent with the character expected of the site by visitors in association with the Lodge and campground. The park would like to develop plans for a dorm or housing structure for on-site Lodge employees.

— There are drainage problems in some areas of Cedar Pass. Culverts need to be replaced and some road and parking surfaces may require grading changes.

— When the Badlands Loop Road over Cedar Pass fails, a new corridor will be required to connect Cedar Pass with routes to the north and west. This would change the approach and/or entry to Cedar Pass and require changes to historic circulation patterns.

— The park would like to place all current above-ground utilities underground and install new utilities underground.

CULTURAL RESOURCES

— There were several phases of development activity in the Cedar Pass area in the early 20th century relating to the Lodge, CCC, and early park establishment. A comprehensive archeological survey of the Cedar Pass Developed Area is needed to identify resources before additional development occurs.

— Three cabins have been removed at the Lodge since the end of the period of significance. The park needs to consider reconstructing the three lost cabins.

— Varying remnants of historic vegetation from the park development period remain at the Visitor Center, residential area, and the Lodge. The harsh environment of the Badlands makes it difficult to maintain historic vegetation.

ENVIRONMENTAL RESOURCES

— All of Badlands National Park is rich in paleontological resources. An approach that will ensure the protection of these resources during all potential ground-disturbing activities needs to be defined.

— Siberian elms used in the landscape of the Lodge have seeded to natural areas. The park needs to define an approach to the problem of non-native species in the area.

— Light pollution is a problem across the country; the desire to prevent light pollution in isolated areas such as the Badlands National Park has been identified. As one of the developed areas in the park, Cedar Pass needs to address this issue with its current and future outdoor lighting plans.



Chapter Six

Alternatives

CHAPTER SIX

ALTERNATIVES

INTRODUCTION

The alternatives for treatment presented herein should not to be confused with the type and scope of *General Management Plan* (GMP) or *Development Concept Plan* (DCP) alternatives. Cultural landscape treatment alternatives should be viewed as conceptual 'overlay' alternatives that are compatible with and supportive of the GMP currently in progress.

Three alternatives have been developed: one no-action, and two action alternatives. The no-action alternative provides the baseline for analyzing the impacts of the action alternatives. The action alternatives are **Preservation** and **Rehabilitation**, the first two of four treatment alternatives defined by the Secretary of the Interior as approaches for managing historic landscapes. These four approaches—preservation, rehabilitation, restoration, and reconstruction—are defined and discussed in both *The Secretary of the Interior's Standards for the Treatment of Historic Properties* and NPS's Director's Order No. 28 (DO-28): *Cultural Resources Management Guideline*s.

DO-28 provides the following definitions of the four treatment alternatives for cultural landscapes:

> *Preservation* maintains the existing integrity and character of a cultural landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a cultural landscape by protecting its conditions. In light of the dynamic qualities of a landscape, maintenance is essential for the long-term preservation of individual features and integrity of the entire landscape. Stabilization involves reestablishing the stability of an unsafe, damaged, or deteriorated cultural landscape, while maintaining its existing character.
>
> *Rehabilitation* improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance.
>
> *Restoration* accurately depicts the form, features, and character of a cultural landscape as it appeared at a specific period or as intended by its original constructed design. It may involve the reconstruction of missing historic features, and selective removal of later features, some having cultural value in themselves.

> *Reconstruction* entails depicting the form, features, and details of a non-surviving cultural landscape, or any part thereof, as it appeared at a specific period or as intended by its original constructed design. Reconstruction of an entire landscape is always a last-resort measure for addressing a management objective and will be undertaken only after policy review in the regional and Washington offices.[1]

The three alternatives defined in this chapter for treatment of the Cedar Pass Developed Area have been evaluated through a Value Analysis (VA). Following this process, an Environmental Analysis (EA) of the alternatives was developed using the information generated by the VA and this CLR. (The EA is included in the Appendices of this CLR.) The following alternative descriptions are consistent with the EA alternatives. Through this process, a preferred treatment alternative was identified—Alternative C: Rehabilitation. Specific treatment guidelines, recommendations, and implementation information focusing on the preferred alternative identified as part of the VA process follow in Chapters Seven and Eight.

EVALUATION OF ALTERNATIVES THROUGH VALUE ANALYSIS

The VA was an organized, creative process focused on the requirements of the CLR for the purpose of achieving essential functions and attendant benefits at the lowest costs for materials, equipment, staffing, energy usage, facilities, professional services, and maintenance, over the life of the project. A Certified Value Specialist (CVS) guided the VA. The VA involved the participation of the NPS in the study in order to take advantage of their experience and knowledge. A multi-disciplinary team comprised of members of the CLR and EA team as well as NPS staff, analyzed the functions of the preservation and other programmatic elements under study, identified high cost areas, ascertained the benefits sought, and proposed alternatives to those planned or currently being used. The VA was organized into three distinct parts: pre-study preparation, study workshop, and post-study implementation.

The primary benefits to the CLR include the improvement of the historic preservation and sustainability aspects of the alternatives; identification of cost benefits associated with alternatives; and identification of additional research, investigations, and planning efforts required to support historic preservation and cultural resource management. The VA process had a direct impact on the preferred alternative through the identification of future planning, design, construction, and maintenance projects, and initiatives not anticipated by the CLR team. The VA aided in the creation of a more comprehensive and more functional CLR in terms of its role in supporting a streamlined process for managing change within the Cedar Pass Developed Area.

EVALUATION OF ALTERNATIVES THROUGH ENVIRONMENTAL ANALYSIS (EA)

The EA was undertaken in accordance with NPS Director's Order No.12: *Conservation Planning and Environmental Impact Analysis*, NPS management policies, and the National Environmental Policy Act. The EA process included the review and assessment of one no-action and two action alternatives based on the alternatives developed as part of the CLR process. The EA team

[1] U.S. Department of the Interior, National Park Service, Director's Order No. 28: *Cultural Resource Management Guidelines* (Washington, D.C.: Government Printing Office, 1997), 98-102.

conducted two public scoping meetings: one in Kadoka and one in Wall, South Dakota. The US Fish and Wildlife Service, the South Dakota Department of Game, Fish, and Parks, and the South Dakota State Historic Preservation officer were consulted. In addition, the EA was transmitted to several tribal and local governments.

CHARACTER AREAS

Ten character areas have been identified for the Cedar Pass Developed Area landscape (*see Map 6-1*). These character areas, based on similarities of land use, historic resource character and type, and patterns of spatial organization, are used to structure the description of alternatives in this chapter, the EA alternatives in the Appendix, and treatment information in later chapters. The ten character areas within Cedar Pass Developed Area include:

Visitor/Administrative Area – This area encompasses the Visitor Center and the administration cluster south of the Visitor Center as well as the associated parking lots and their environs.

Residential Area – This area includes the single-family houses and apartment units south of the administration area as well as the associated drives, parking lot, and their environs.

Cedar Pass Lodge Area– This area encompasses the Lodge, its cabins, and its associated support structures as well as the associated drives, parking lots, and their environs.

Campground Area – This area includes the three campground loops and the amphitheater area as well as the associated interpretive shelter, parking lot, and their environs.

Maintenance Area – This area is comprised of the maintenance cluster in the southern portion of the project area as well as the associated mixing circle, water supply structures, parking lots, house pen, and their environs.

Fire Cache Area – This area encompasses the new fire cache building south of the residential area, the associated parking area, and their environs.

Wastewater Lagoon Area (new) – This area encompasses the new wastewater lagoons in the southernmost portion of the study area, the associated drive, and their environs.

Badlands Loop Road and SD 377 Corridor – This area encompasses portions of the two road corridors that form the northern boundary of the project area.

Service Road Corridor – This area includes the service road corridor from the Badlands Loop Road to the southern park boundary.

Open Space Areas – This area encompasses all the open, undeveloped space that surrounds the other character areas. Since the old wastewater lagoons have been abandoned and are being restored to their natural landform and vegetative cover, this site is also included in this area.

ALTERNATIVES

A narrative description, supported by a conceptual site plan, is provided below for the three alternatives.

ALTERNATIVE A—NO ACTION

The no-action alternative provides a baseline for evaluating changes and impacts associated with the two action alternatives. Though the district would be managed for historic resource values, a minimum application of available preservation knowledge and technology is expected under this alternative. The NPS would continue to manage and use the Cedar Pass Developed Area cultural landscape in the current (2004) manner, without the coherent and cohesive historic preservation guidance provided in the CLR. Development and alteration would be evaluated for its effect on the historic landscape under Section 106 of the National Historic Preservation Act.

Detailed historical research yielding information about original design and construction of facilities, and building exterior and interiors; evaluation of historic integrity; and conservation assessments would all be lacking as a result. New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. Designers of new facilities, general contractors constructing them, and laborers/contractors involved in maintenance operations would not be required to have training, education, and/or experience in preservation technology. In sum, no park or developed area policies, strategies, and implementation initiatives would be available to lend a comprehensive and sustained program of guidance for preservation of the historic landscape and its buildings as outlined in this CLR (*see Map 6-1 located at end of chapter*).

The no-action alternative includes the following overarching guidelines/actions:

- The plans for expanding the Ben Reifel Visitor Center would proceed.
- Park headquarters and other park operations would remain in the Cedar Pass Developed Area, with the construction of the fire cache, an additional park office building, and the museum storage facility completed as planned.
- Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy-efficiency considerations.
- The concession operations and campgrounds would remain at the Cedar Pass Developed Area in their current location and configuration.
- Development would continue in the area to accommodate future needs as they arise.
- Repairs to buildings would not attempt to preserve historic form or materials.

- As needed, buildings, structures, and other landscape features would be altered, removed, or added. Effects of these actions would be evaluated through the Section 106 compliance process.

- Alterations to parking and road/circulation alignments would be used to address pedestrian/vehicle conflicts. Effects of these actions would be evaluated through the Section 106 compliance process. However, design of new circulation would not benefit from an understanding of historic development patterns and the sensitivity of historic resources.

- New buildings, structures, or landscape features may or may not be compatible with the Mission 66 site design principles or existing buildings, structures, and features. Effects of these actions would be evaluated through the Section 106 compliance process.

- The plans for a new laundry building, expanded amphitheater, and new shower facilities would continue to be developed. Effects of these actions would be evaluated through the Section 106 compliance process.

- Failure of the Loop Road at Cedar Pass (in the wall above the Cedar Pass Developed Area) would eventually result in changed traffic patterns. New traffic patterns may or may not attempt compatibility with Mission 66 principles of layout and design. Effects of these actions would be evaluated through the Section 106 compliance process.

- Archeological resources would be protected and preserved in place, if possible. Otherwise, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.

ALTERNATIVE B—PRESERVATION

Background

Preservation is the first of the four treatment alternatives (*see Alternative C for the rehabilitation alternative*) defined by the Department of the Interior as an approach for managing historic landscapes.

> *Preservation* maintains the existing integrity and character of a cultural landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a cultural landscape by protecting its conditions. In light of the dynamic qualities of a landscape, maintenance is essential for the long-term preservation of individual features and integrity of the entire landscape. Stabilization involves reestablishing the stability of an unsafe, damaged, or deteriorated cultural landscape, while maintaining its existing character.

In preservation, the options for replacement are limited. The expressed goal of *The Standards for Preservation and Guidelines for Preserving Cultural Landscapes* is retention of the landscape's existing form, features, and materials, provided that such actions will not result in a degraded landscape condition or threaten historic resources.

The Secretary of the Interior's Standards for the Treatment of Historic Properties with *Guidelines for the Treatment of Cultural Landscapes* addresses preservation further:

- A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

- The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

- Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

- Changes to a property that have acquired historic significance in their own right will be retained and preserved.

- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

- The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

- Chemical or physical treatments, if appropriate, would be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken (NPS 1996:19).

Additionally:

- The design of new features and systems would be undertaken by designers with a moderate level of training, education, and/or experience in preservation technology.

- The repair and maintenance of new features and systems would be undertaken by maintenance staff or contractors with a moderate level of training, education, and/or experience in preservation technology.

- Construction involving the rehabilitation and renovation of existing facilities would be undertaken by general contractors and subcontractors with a moderate level of training, education, and/or experienced in preservation technology.

Alternative B (Preservation) Description

The general scope of Alternative B is the protection and preservation of surviving historic resources through the application of a moderate level of preservation knowledge and technology, while accommodating growth within other areas of the park. Its focus is on the historic features/elements of the cultural landscape at Cedar Pass Developed Area and their integrity based on the significance evaluation presented in this CLR. Any modifications to the landscape would be directly related to the need to meet identified facility and operational needs. No new development is planned for the Cedar Pass Developed Area; new construction would take place off site, within the Pinnacles area (approximately twenty miles to the northwest of the Cedar Pass Developed Area). Historic resources at the Cedar Pass Developed Area would be protected and maintained while intrusive resources would be mitigated or removed after their useful life. The proactive management of both cultural and natural resources integral to the landscape would be minimal. Existing roads, buildings and other landscape features would be repaired with the historic nature of the resource in mind. The preservation alternative includes the following (*Map 6-2 presents the proposed alternative B*):

- The historic functions of facilities and historic land use would continue.

- All contributing historic and cultural landscape features of the Cedar Pass Developed Area would be identified, retained, and preserved.

- The site's overall spatial character derived from the environmental setting, the siting of buildings, the road and drive patterns, the pedestrian circulation patterns, and vegetation patterns would be preserved.

- As a preliminary measure, deteriorated features and materials would be stabilized and protected.

- Historic features and materials would be maintained and repairs performed when necessary.

- Limited, in-kind replacement of severely deteriorated historic features, which are vital to the site's historic character, would be undertaken.

- Accessibility, health and safety, environmental, and limited energy efficiency considerations would be applied.

- Archeological resources would be protected and preserved *in situ* to the greatest extent feasible. If disturbance were necessary, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.

- Natural systems and features (drainages, vegetation, Badlands formations, wildlife) would be protected but with limited efforts to enhance them.

- The open, undeveloped areas would remain undeveloped and in their natural state.

- New development would not occur within the Cedar Pass Developed Area and would instead be located outside the historic area in the Pinnacles area. Development planned at this time for the next ten to fifteen years would require approximately five to ten acres and could include housing, administrative/operational support facilities, and associated utilities and parking. In general, development would be situated proximate to existing facilities at the Pinnacles area and away from the Loop Road.

- New roads would not be constructed within the Cedar Pass Developed Area. However, when the Loop Road is no longer viable due to natural erosional processes, some changes in circulation and access to the site may become unavoidable.

- Limited and minimal mitigation measures would be utilized to reduce or eliminate the intrusive nature of non-historic structures and features that intrude on historic character.

- Intrusive, non-historic structures and features would only be removed after their useful life.

ALTERNATIVE C—REHABILITATION (PREFERRED ALTERNATIVE)

Background

The rehabilitation alternative is the second of the four treatment alternatives (*see Alternative B for the preservation alternative*) defined by the Department of the Interior as an approach for managing historic landscapes.

> *Rehabilitation* improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance.

In rehabilitation, the cultural landscape's character-defining features and materials are protected and maintained as they are in the treatment preservation; however, a determination is made prior to work that a greater amount of existing historic fabric has become damaged or deteriorate over time and, as a result, more repair and replacement will be required. The Standards for Rehabilitation and Guidelines for Rehabilitation allow the replacement of extensively deteriorated, damaged, or missing features using either traditional or substitute materials.

The Secretary of the Interior's Standards for the Treatment of Historic Properties with *Guidelines for the Treatment of Cultural Landscapes* addresses rehabilitation further:

- A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

- The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

- Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

- Changes to a property that have acquired historic significance in their own right will be retained and preserved.

- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

- Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

- New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials,

features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

- New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Additionally:

- The design of new features and systems would be undertaken by designers with a high level of training, education, and/or experience in preservation technology.

- The repair and maintenance of new features and systems would be undertaken by maintenance staff or contractors with a high level of training, education, and/or experience in preservation technology.

- Construction involving the rehabilitation and renovation of existing facilities would be undertaken by general contractors and subcontractors with a high level of training, education, and/or experience in preservation technology.

Alternative C (Rehabilitation) Description

The rehabilitation alternative allows for the adaptation of the historic landscape to limited new uses while protecting, to the greatest extent possible, its significant historic fabric and relationships. It promotes preservation treatment of the historic landscape while allowing new and adaptive uses. The focus is on the enhancement of the surviving historic resources through the extensive application of a high level of preservation knowledge and technology for the design/construction of new features and repair/maintenance of existing features, while accommodating growth within the Cedar Pass Developed Area. This high level of historic preservation expertise could include detailed historical research regarding building exteriors/interiors, evaluation of historic integrity, and conservation assessments. New development would be limited to critical park needs, would occur within defined and distinct areas (development sites) as defined in the CLR, and would be compatible with, or non-intrusive to, the cultural landscape (*see Map 6-3*). Where possible, new structures would be located where buildings had been removed. Any new major roads or circulation alterations would be associated with new development. Existing non-contributing structures compatible with the cultural landscape would be retained/used. The rehabilitation alternative includes the following (*see Figure 6-3*).

- All contributing features of the Cedar Pass Developed Area would be identified, retained, and preserved, to the greatest extent feasible.

- The site's overall spatial character derived from the siting of buildings, the road and drive patterns, the pedestrian circulation patterns, and vegetation patterns would be maintained

by preserving essential features and character, and utilizing Mission 66 design principles in the placement of limited compatible new features.

- The historic foundation planting design around the Visitor Center would be reestablished using the original Mission 66 period planting plans. Problematic or inappropriate plants would be substituted with more suitable but similar plants. Plants with low water and maintenance requirements are preferable.

- Historic features and materials would be maintained and repairs performed when necessary. In-kind replacement or the use of compatible material for replacement of deteriorated historic building/structure features would be allowed.

- Changes to the cultural landscape that have acquired historic significance in their own right would be retained and maintained.

- Compatible landscape and site features (such as buildings, roads, or small-scale features) that post-date the period of significance would be retained and used.

- Missing historic features that were critical to the historic character would be replaced if adequate historical, pictorial, and physical documentation exists for the feature to be accurately reproduced. A compatible new feature as a replacement would also be an option.

- Archeological resources would be protected and preserved in place to the greatest extent feasible. If disturbance was necessary, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.

- Natural systems and features (drainages, vegetation, Badlands formations, wildlife) would be protected and preserved.

- Alterations to the cultural landscape that are deemed necessary to assure its continued use would be allowed as long as these alterations do not destroy historic character such as spatial organization, land patterns, features, and materials.

- The removal of landscape and site features (such buildings, roads, or small-scale features) that post-date the period of significance, have incompatible characteristics with the surviving historic features, and detract from the overall historic character would be considered.

- Mitigation measures would be utilized to reduce the intrusive nature of non-historic buildings that are retained.

- Intrusive non-historic buildings would be removed after their useful life.

- New building developments would be limited to meet critical space needs and, when possible, would be sited in locations where buildings that have since been removed existed during the period of significance.

- New or altered facilities would be as non-intrusive as possible while allowing for accessibility and safety, and would not be permissible if historic character, such as spatial organization, land patterns, features and materials, would be destroyed.

- New design would need to be differentiated from existing historic resources. New additions and alterations would need to be a product of their time but compatible with the historic resources in materials, size, scale and proportion, and massing. A clear differentiation between historic and contemporary features would need to be maintained.

- Changes that create a false sense of history, such as features that are designed to appear historic, would not be allowed.

- Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.

- Historic structures and features would be documented using appropriate and accepted procedures prior to changes.

- The failure of the Loop Road may require changes in circulation and access within the Cedar Pass Developed Area.

Residential Area

Fire Cache Area

Visitor/Administrative Area

Service Road Corridor

Wastewater
Lagoon Area

Maintenance Area

Open Space

Badlands Loop Road

Cedar Pass Lodge Area

Badlands Loop/
S.D. 377 Corridor

Campground Area

S.D. Highway 377

Base map prepared by John Millner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of
Environment and Natural Resources at
www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences
- Character Areas

0' 225' 450' 900'

Scale 1" = 450'

Cedar Pass Developed Area

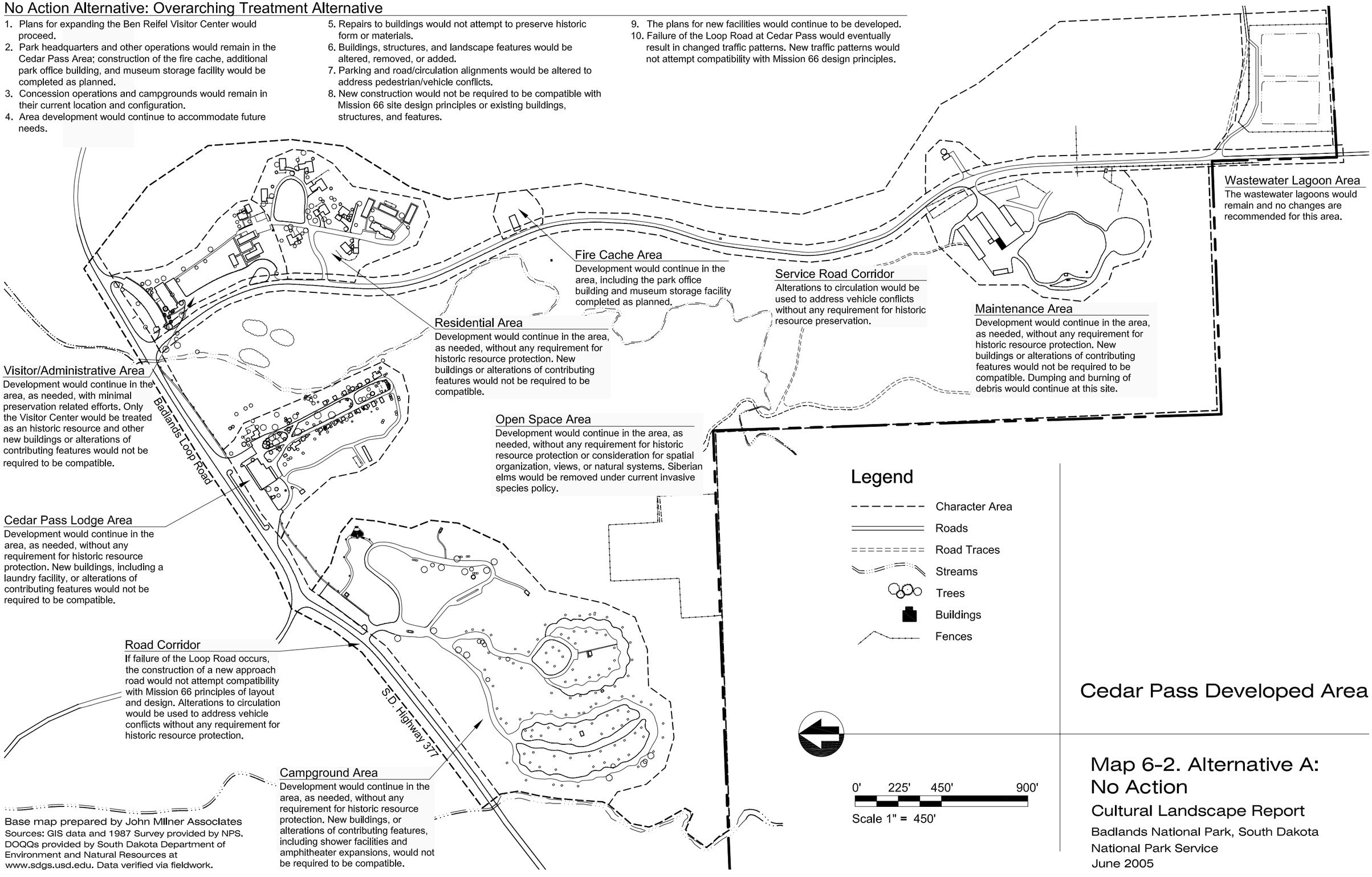
Map 6-1. Character Areas

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

No Action Alternative: Overarching Treatment Alternative

1. Plans for expanding the Ben Reifel Visitor Center would proceed.
2. Park headquarters and other operations would remain in the Cedar Pass Area; construction of the fire cache, additional park office building, and museum storage facility would be completed as planned.
3. Concession operations and campgrounds would remain in their current location and configuration.
4. Area development would continue to accommodate future needs.
5. Repairs to buildings would not attempt to preserve historic form or materials.
6. Buildings, structures, and landscape features would be altered, removed, or added.
7. Parking and road/circulation alignments would be altered to address pedestrian/vehicle conflicts.
8. New construction would not be required to be compatible with Mission 66 site design principles or existing buildings, structures, and features.
9. The plans for new facilities would continue to be developed.
10. Failure of the Loop Road at Cedar Pass would eventually result in changed traffic patterns. New traffic patterns would not attempt compatibility with Mission 66 design principles.



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'

Scale 1" = 450'

Cedar Pass Developed Area

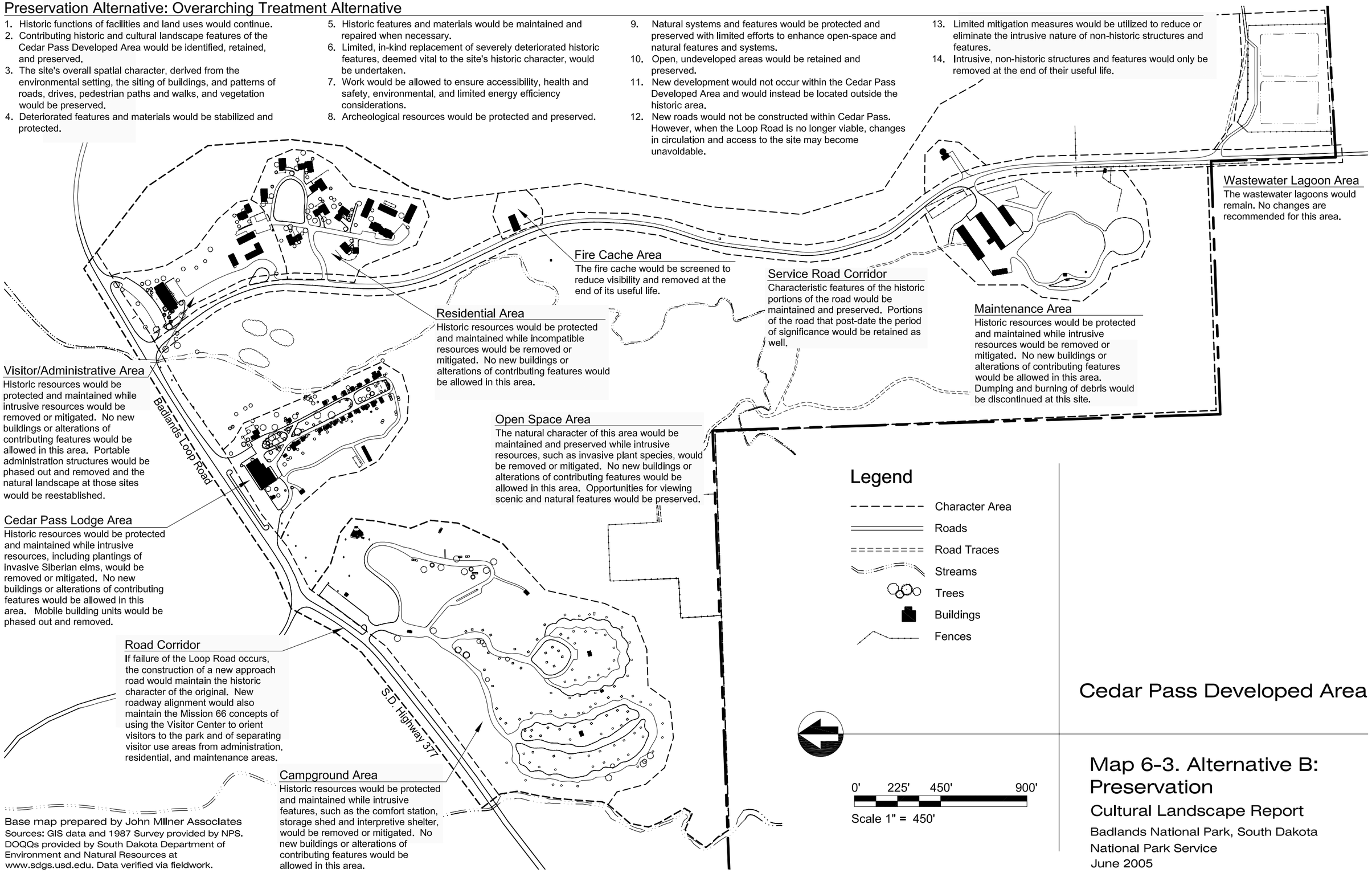
Map 6-2. Alternative A: No Action

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Preservation Alternative: Overarching Treatment Alternative

1. Historic functions of facilities and land uses would continue.
2. Contributing historic and cultural landscape features of the Cedar Pass Developed Area would be identified, retained, and preserved.
3. The site's overall spatial character, derived from the environmental setting, the siting of buildings, and patterns of roads, drives, pedestrian paths and walks, and vegetation would be preserved.
4. Deteriorated features and materials would be stabilized and protected.
5. Historic features and materials would be maintained and repaired when necessary.
6. Limited, in-kind replacement of severely deteriorated historic features, deemed vital to the site's historic character, would be undertaken.
7. Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
8. Archeological resources would be protected and preserved.
9. Natural systems and features would be protected and preserved with limited efforts to enhance open-space and natural features and systems.
10. Open, undeveloped areas would be retained and preserved.
11. New development would not occur within the Cedar Pass Developed Area and would instead be located outside the historic area.
12. New roads would not be constructed within Cedar Pass. However, when the Loop Road is no longer viable, changes in circulation and access to the site may become unavoidable.
13. Limited mitigation measures would be utilized to reduce or eliminate the intrusive nature of non-historic structures and features.
14. Intrusive, non-historic structures and features would only be removed at the end of their useful life.



Wastewater Lagoon Area
The wastewater lagoons would remain. No changes are recommended for this area.

Fire Cache Area
The fire cache would be screened to reduce visibility and removed at the end of its useful life.

Service Road Corridor
Characteristic features of the historic portions of the road would be maintained and preserved. Portions of the road that post-date the period of significance would be retained as well.

Residential Area
Historic resources would be protected and maintained while incompatible resources would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area.

Maintenance Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Dumping and burning of debris would be discontinued at this site.

Visitor/Administrative Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Portable administration structures would be phased out and removed and the natural landscape at those sites would be reestablished.

Open Space Area
The natural character of this area would be maintained and preserved while intrusive resources, such as invasive plant species, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Opportunities for viewing scenic and natural features would be preserved.

Cedar Pass Lodge Area
Historic resources would be protected and maintained while intrusive resources, including plantings of invasive Siberian elms, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Mobile building units would be phased out and removed.

Road Corridor
If failure of the Loop Road occurs, the construction of a new approach road would maintain the historic character of the original. New roadway alignment would also maintain the Mission 66 concepts of using the Visitor Center to orient visitors to the park and of separating visitor use areas from administration, residential, and maintenance areas.

Campground Area
Historic resources would be protected and maintained while intrusive features, such as the comfort station, storage shed and interpretive shelter, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area.

Legend
- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'

Scale 1" = 450'

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 6-3. Alternative B: Preservation

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Rehabilitation Alternative: Overarching Treatment Alternative

1. Contributing features of the Cedar Pass Developed Area would be identified, retained, and preserved.
2. Overall spatial character would be maintained by preserving essential features and character and utilizing Mission 66 design principles in placement of limited compatible new features.
3. Historic features and materials would be maintained and repaired when necessary.
4. In-kind replacement or use of compatible material for replacement of deteriorated historic building/structure features would be allowed.
5. Cultural landscape changes that have acquired historic significance in their own right would be retained and maintained.
6. Compatible landscape and site features that post-date the period of significance would be retained and used.
7. Missing historic features, which were critical to historic character, would be replaced if adequate documentation exists so the feature can be accurately reproduced. A compatible, new feature as a replacement would also be an option.
8. Archeological resources would be protected and preserved.
9. Natural systems and features would be protected and preserved.
10. Alterations to a cultural landscape that are necessary to assure its continued use would be allowed as long as they do not destroy historic character.
11. Removal of landscape and site features that post-date the period of significance that have incompatible characteristics and that detract from the overall historic character would be considered.
12. Mitigation measures would be utilized to reduce the intrusive nature of non-historic buildings that are retained.
13. Intrusive, non-historic buildings would be removed after their useful life.
14. New developments would be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.
15. New or altered facilities would be non-intrusive while allowing for accessibility and safety and would not be permissible if historic character would be destroyed.
14. New developments would be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.
15. New or altered facilities would be non-intrusive while allowing for accessibility and safety and would not be permissible if historic character would be destroyed.
16. New design would need to be differentiated from existing historic resources. A clear differentiation between historic and contemporary features would need to be maintained.
17. Changes to the landscape that create a false sense of history would not be allowed.
18. Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
19. Historic structures and features would be documented prior to changes.

Wastewater Lagoon Area
The wastewater lagoons would remain. No changes are recommended for this area.

Fire Cache Area
New compatible buildings and alterations of contributing features would be allowed in this area.

Service Road Corridor
Characteristic features of the historic portions of the road would be maintained and preserved. Portions of the road that post-date the period of significance would be retained as well.

Residential Area
Historic resources would be protected and maintained while incompatible resources would be removed or mitigated. New compatible residences would be constructed in locations historically planned for additions.

Maintenance Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. New compatible buildings and alterations of contributing features would be allowed in this area. Dumping and burning of debris would be discontinued at this site.

Visitor/Administrative Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. New, compatible, and non-intrusive buildings and features would be allowed in this area. A compatible addition to the Visitor Center would be allowed and portable administration structures would be replaced with historically compatible buildings.

Open Space Area
The natural character of this area would be maintained and preserved while intrusive resources, such as invasive plant species, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Opportunities for viewing scenic and natural features would be preserved.

Cedar Pass Lodge Area
Historic resources would be protected and maintained while intrusive resources, including invasive plantings of Siberian elms, would be removed or mitigated. Mobile building units would be phased out and removed, and new compatible residences would be constructed in locations historically planned for additions.

Road Corridor
If failure of the Loop Road occurs, the construction of a new approach road would maintain the historic character of the original. New roadway alignment would also maintain the Mission 66 concepts of using the Visitor Center to orient visitors to the park and of separating visitor use areas from administration, residential, and maintenance areas.

Campground Area
Historic resources would be protected and maintained while intrusive resources, such as the comfort station, storage shed, interpretive shelter, and invasive Siberian elms would be removed or mitigated. New compatible buildings and alterations of contributing features would be allowed in this area, including additions to the amphitheater and replacement of fixed picnic shelters.

Badlands Loop Road

S.D. Highway 377

Legend

- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'

Scale 1" = 450'

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Cedar Pass Developed Area

Map 6-4. Alternative C: Rehabilitation

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



Chapter Seven

Treatment Recommendations

CHAPTER SEVEN

TREATMENT RECOMMENDATIONS

INTRODUCTION

CHAPTER ORGANIZATION

This chapter focuses on the treatment recommendations for the Cedar Pass Developed Area and includes sections on the approach to treatment; guidelines for managing resources, and undertaking treatment; as well as specific recommendations for treatment of landscape features and systems organized by character area. Following the treatment recommendations are supporting and supplemental plan graphics. This chapter on treatment is followed by Chapter Eight: Implementation Recommendations. Chapter Eight provides descriptions of specific landscape treatment planning, design, and implementation projects including phasing recommendations and planning-level Class C cost estimates.

TREATMENT APPROACH

The Secretary of the Interior currently recognizes four appropriate treatment approaches for historic landscapes: preservation, rehabilitation, restoration, and reconstruction. These are defined and discussed in both The Secretary of the Interior's *Standards for the Treatment of Historic Properties* and NPS's *Director's Order No. 28 (DO-28): Cultural Resources Management Guideline*s.

The treatment plan provided in this chapter is intended to improve the ability of Badlands National Park managers to identify, preserve, and protect existing natural, cultural, and historic resources; improve the site's functionality to accommodate current and projected visitor and administrative needs; and to identify resource protection, management, and maintenance needs based on a synthetic understanding of the site, its historical development, and significance.

Based upon the park's need to improve the functionality of the Cedar Pass Developed Area for visitor and administration needs, the recommended primary approach to guide the treatment of the site is **rehabilitation**. This approach is consistent with the preferred alternative—Alternative C: Rehabilitation, established in the Environmental Assessment (EA)—and will allow the park to meet current and future needs as well as protect the area's resources. Preservation of the essential character-defining features of a cultural landscape is always a critical component of rehabilitation. As shown below, the action alternatives proposed by the CLR treatment plan primarily reflect variations within the overarching approach of rehabilitation.

In addition to the preservation of the overall historic landscape character and individual historic features, rehabilitation allows for the improvement of facilities to enhance the visitor experience,

and the careful implementation of necessary functional site improvements as identified in park planning documents. Rehabilitation also allows managers to pursue resource management initiatives intended to promote sustainability.

TREATMENT GUIDELINES

The guidelines listed below apply to the site as a whole and to specific treatments of landscape features or systems. They guide the treatment recommendations that follow as well as resource management and implementation of treatment actions.

GENERAL

— Protect, retain, and maintain all contributing features of the Cedar Pass Developed Area.

— Undertake all treatment projects under the direction of the appropriate specialists including historical landscape architects, historical architects, archeologists, natural resource management specialists, and qualified technicians and artisans.

— Undertake all work in compliance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties, Guidelines for the Treatment of Cultural Landscapes*, and Director's Order No. 28: *Cultural Resource Management Guidelines* and all applicable local, state, and federal codes, regulations, and policies.

— Avoid landscape changes that create a false sense of history. This includes the addition of features that when viewed or experienced by visitors give the impression that the feature is associated with the historic development of the area. Examples include typical features that might have been used elsewhere during the historic period or items used to represent historic features that are not themselves historic.

— Retain and maintain changes to the cultural landscape that have acquired historic significance in their own right.

— Retain landscape integrity by protecting individual elements as well as the character of the overall landscape.

— Analyze the potential impacts of change on the site's landscape prior to the implementation of any project.

— Undertake sufficient study and recordation of landscape features requiring modification, repair, or replacement before work is performed to protect research and interpretive values.

— Undertake measures to protect and preserve all topographic and landform features, especially those associated with the Badlands formation. Avoid land disturbance activities and operations that may impact these natural and cultural resources.

— Undertake vegetation management strategies based on NPS principles of sustainability, as described in the 1993 *Guiding Principles of Sustainable Design*, and park management objectives.

ADDITIONS TO THE LANDSCAPE

— Planning and design of new features and systems should be compatible with the Mission 66 planning and design concepts embodied in the physical character of the surviving landscape. The following Mission 66 planning and design approaches and concepts should guide planning, design, and implementation of new additions:

  – expand on interpretive opportunities by extending appropriate interpretative facilities and programs into the landscape through a range of experiential activities;

  – use curvilinear circulation forms to allow for multiple views and an unimpeded processional;

  – cluster relatively dense siting of new facilities and complexes within existing developed areas;

  – maintain the existing zoning of like uses;

  – create visual and physical separations of different uses by utilizing undisturbed topographic features and limited use of screen plantings;

  – avoid fragile natural resources when siting new additions;

  – incorporate existing features into new designs;

  – incorporate new features within existing development clusters; and

  – use modern materials and construction methods and minimize detailing and ornamentation in order to avoid distraction from the surrounding natural or historic resource. Look to the surviving Mission 66 buildings and landscape as the source of compatible forms, materials, colors, and detailing.

— Consider carefully, when adding new features, the potential impact of development on archeological resources, existing patterns of spatial organization, and the historic character of the site as a whole.

— New design within the historic landscape must be based on a thorough understanding of the integrity of the site to avoid diminishing it.

— Differentiate new work from existing historic resources. Design all new additions and alterations to be a product of their time, and compatible with the historic resources in

materials, size, scale and proportion, and massing while maintaining a clear differentiation between historic and contemporary features.

— Design and site new additions or alterations to the landscape in such a way as not to destroy historic materials, features, and spatial relationships that characterize the cultural landscape.

— To the greatest extent possible, incorporate only native species into new plantings. Specifically, consider installing native species of trees, shrubs, and grasses currently and historically found growing within the park. Prevent the introduction of any invasive alien plant species as part of new plantings or otherwise on the site.

— Design and site new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and integrity of the cultural landscape would be unimpaired.

— Minimize disturbance associated with the installation of new facilities and systems that cross or abut sensitive ecosystems to preserve existing landforms, and plant and animal life.

— Undertake design of new features, systems, and programs to be as accessible as possible.

— Establish a park design guide for specifying and/or fabricating site furnishings, including benches, trash receptacles, lighting fixtures, drinking fountains, sign systems, and other small-scale features.

LANDSCAPE MANAGEMENT

— If necessary, remove existing trees using a method that minimizes the potential impacts on known and potential archeological resources. Undertake tree removal monitored by a qualified archeologist.

— Avoid endangering known or potential archeological resources by limiting activities that may disturb the land until necessary archeological and additional cultural landscape investigations have been completed. If it is not known whether archeological resources are located within an area planned for land disturbing activity, such activity should be preceded by archeological evaluations and investigations.

— Remove invasive plant species identified during monitoring activities using ecologically-sound removal techniques. Ecologically-sound removal techniques are those that will not cause damage to other resources, or whose impact on other resources has been assessed to determine whether the treatment provides benefits outweighing the impact on other resources. Removal of invasive plant species in the vicinity of historic and archeological resources should be undertaken in such a way as to minimize ground disturbance and threats to remaining vegetation. Removal should be undertaken only after remaining resources and landscape features and systems have been protected. Biodegradable

systemic herbicides (i.e. glyphosate) that break down into harmless components upon contact with the soil when properly applied may constitute an ecologically-sound removal technique. Ecologically-sound techniques also include repairing damage to resources and mitigating the impact of removal, such as the potential for soil erosion on steep slopes and elsewhere, and legally disposing of removed invasive plant material in a landfill.

— Undertake installation of new plants as necessary in areas of known or potential sensitive historic or archeological resources using acceptable and least-damaging planting techniques accompanied by archeological monitoring. Recommended techniques include: the minimization of ground disturbance through the installation of small plants wherever possible; the installation of plants by hand; the selection of planting locations that are not in conflict with desirable plants to remain; and the protection of existing plants and resources to remain.

— Protect native vegetative communities by monitoring for invasive plant species. Remove invasive species identified during monitoring activities using ecologically-sound removal techniques. Refer to *A Strategic Plan for Managing Invasive Nonnative Plants on National Park System Lands* for guidance and information.

— Encourage stewardship of site resources by establishing interpretive programs that discuss the interrelated nature of cultural and natural history. It is preferable to develop interpretive plans prior to implementing landscape changes. Landscape changes should be generated by and/or be compatible with interpretive plans.

— Recognize the critical importance of natural resources to the cultural landscape and site history, and strive to maintain the ecological integrity of the undeveloped areas of the site.

— Avoid the use of chemical or physical treatments that cause damage to cultural resources and natural systems.

— Protect and preserve archeological resources in place. If such resources must be disturbed, undertake mitigation measures such as recovery, curation, and documentation.

— Control and monitor visitor access, use, and impacts to the park to prevent damage to its cultural and natural resources, particularly, but not limited to, sensitive ecological areas such as riparian corridors and known and potential archeological resources.

— Document, through drawings, photographs, and notes, all landscape changes, treatments and removed features. Maintain records of treatments and preserve documentation according to professional archival standards.

ACCESSIBILITY

— Approach overall planning, design, and interpretation with accessibility as a primary design factor. All features associated with accessibility should conform to the standards

cited in the Uniform Federal Accessibility Standards (UFAS) and Americans with Disabilities Act Accessibility Guidelines (ADAAG). In addition, the latest proposed draft accessibility guidelines for Outdoor Developed Areas prepared by the U.S. Access Board's Regulatory Negotiation Committee should be consulted for interim standards for the campground, picnic facilities, amphitheater, and access routes and trails connecting to and within these areas.

— As a part of the planning and design process, recognize the potential diversity of visitors including persons who may be emotionally-, physically-, and mentally-challenged; do not speak English; are arriving from foreign countries and remote urban and rural locations; or are very young or elderly.

— Design and construct all new facilities to be barrier free when practical.

— Integrate accessibility components fully into the design of new facilities and site improvements to allow for the use and access of all visitors.

— Design operational and administrative facilities to be accessible to the greatest extent feasible.

SUSTAINABILITY

— Institute cultural and natural resource treatment and maintenance methods that are environmentally and culturally sensitive and sustainable over the long term.

— Minimize areas of vegetative disturbance, soil compaction and excavation, and drainage pattern alteration.

— Undertake site design that incorporates holistic, ecologically-based strategies aimed at contributing to the repair and restoration of natural systems.

— Promote biodiversity.

— Avoid disturbing areas of sensitive habitat.

— Use mitigating devices, such as retaining walls, closed drainage systems, and large areas of cut and fill, sparingly. Implement the least-intrusive activities and those involving stabilization first, and proceed subsequently to the most invasive as necessary. Limit major new interventions to areas that have previously been severely disturbed.

— Emphasize landform-based solutions over hardscape solutions.

— Site new developments to take advantage of solar heating.

— Consider the direction of prevailing summer breezes and winter winds to help with cooling and ventilation in summer, and to shelter new facilities from harsh winter winds.

— Consider the site's ecology, including topography, soil types, vegetation, wildlife habitats, and ground water, in order to integrate any new buildings into the ecosystem.

— Use locally indigenous materials that are renewable, environmentally sensitive, and reflect the regional vocabulary. Material should also reflect the design aesthetic of the Mission 66 period.

— Take into consideration life-cycle costing of materials to assess long-term wearing capacity and maintenance costs. Consider materials that are non-toxic, durable, long-lived, and low maintenance.

— Explore the availability of recycled materials, and consider reusable materials.

— Use only stable, non-hazardous materials that do not emit toxins through off-gassing or soil leaching and avoid petroleum-based materials whenever possible.

— Consider monitoring the effects of developing and operating facilities on surrounding resources to ensure that the limits of acceptable change are not exceeded.

— Consider including information about the relationship of cultural resources to the environment and sustainability in interpretive materials.

PREFERRED TREATMENT ALTERNATIVE C: REHABILITATION

This alternative was determined through the EA process to be the preferred alternative (see the EA appended in this CLR) for adapting the historic landscape to limited new uses while protecting significant historic fabric and relationships. The general scope of Alternative C is the preservation and enhancement of the surviving historic resources through the extensive application of a high-level of preservation knowledge and technology while accommodating growth within designated areas for future development. Furthermore, this alternative is guided by The Secretary of the Interior's *Standards for the Treatment of Historic Properties* with *Guidelines for the Treatment of Cultural Landscapes*, which indicates that "in Rehabilitation, a cultural landscape's character-defining features and materials are protected and maintained as they are in the Preservation treatment; however, a determination is made prior to work that a greater amount of existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement will be required. The Standards for Rehabilitation and Guidelines for Rehabilitation allow the replacement of extensively deteriorated, damaged, or missing features using either traditional or substitute materials."

The Secretary of the Interior's Standards for Rehabilitation are:

— A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

— The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

— Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

— Changes to a property that have acquired historic significance in their own right will be retained and preserved.

— Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

— Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

— Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

— Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

— New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

— New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment should be unimpaired.

Additionally:

— The design of new features and systems should be undertaken by designers with a high-level of training, education, and/or experience in preservation technology.

— The repair and maintenance of new features and systems should be undertaken by maintenance staff or contractors with a high-level of training, education, and/or experience in preservation technology.

— Construction involving the rehabilitation and renovation of existing facilities should be undertaken by general contractors and subcontractors with a high-level of training, education, and/or experience in preservation technology.

OVERARCHING RECOMMENDATIONS FOR THE REHABILITATION ALTERNATIVE: *(see Map 7-1)*

- All contributing features of the Cedar Pass Developed Area should be identified, retained, and preserved to the greatest extent feasible.
- The site's overall spatial character derived from the siting of buildings, the road and drive patterns, the pedestrian path and walks patterns, and vegetation patterns should be maintained by preserving essential features and character and utilizing Mission 66 design principles in the placement of limited compatible new features.
- Historic features and materials should be maintained and repairs performed when necessary.
- In-kind replacement or the use of compatible materials for replacement of deteriorated historic building/structure features should be allowed.
- Changes to the cultural landscape that have acquired historic significance in their own right should be retained and maintained.
- Compatible landscape and site features (buildings, roads, small-scale features, etc.) that post-date the period of significance should be retained and used.
- Missing historic features, which were critical to historic character, should be replaced if adequate historical, pictorial, and physical documentation exist so the feature can be accurately reproduced. Using a new compatible feature to replace a missing feature is an option.
- Archeological resources should be protected and preserved.
- Natural systems and features should be protected and preserved.
- Alterations to a cultural landscape that are deemed necessary to assure its continued use should be allowed as long as these alterations do not destroy historic character such as spatial organization, land patterns, features, and materials.
- The removal of incompatible landscape and site features (buildings, roads, small-scale features, etc.) that post-date the period of significance should be considered.
- Mitigation measures should be utilized to reduce the visual impact of intrusive non-historic buildings and consider removing these buildings at the end of their useful life.
- Intrusive, non-historic buildings that cannot be made to be compatible with the historic landscape should be removed after their useful life.
- New building developments should be limited to meet critical space needs and, when possible, should be sited where non-extant buildings were located during the period of significance.

— New or altered facilities should be non-intrusive and allow maximum access. New construction that would destroy historic character should not be permitted.

— New design should be differentiated from existing historic resources. New additions and alterations should be a product of their time but compatible with the historic resources in materials, size, scale and proportion, and massing. A clear differentiation between historic and modern features should be maintained

— New additions to the landscape that create a false sense of history or historic character should not be permitted.

— New addition and alterations should ensure accessibility, and protection of public and staff health and safety, and environmental protection and energy efficiency should be considered.

— Historic structures and features should be documented using appropriate and accepted procedures prior to changes.

— Archeological resources should be protected and preserved in place. If such resources are disturbed, mitigation measures should be undertaken.

RECOMMENDATIONS BY CHARACTER AREA FOR THE REHABILITATION ALTERNATIVE

Visitor/Administrative Area

This area includes the primary visitor contact point of the Visitor Center as well as the administrative offices for Badlands National Park. Historic resources in this area should be protected and maintained while intrusive resources should be removed or mitigated if possible. New, compatible, and non-intrusive buildings and features should be allowed in this area. A compatible addition to the Visitor Center should be allowed and the administration structures should be replaced with historically compatible buildings (*see Map 7-2*).

— The essential Park Service Modern architectural character of the Visitor Center and its environs should be maintained and protected.

— A compatible addition to the rear of the Visitor Center should be allowed to accommodate space needs.

— The contributing front parking lot and road configurations should be maintained and protected.

— The non-intrusive overflow parking and realigned service road should be retained.

— The historic foundation planting design around the Visitor Center should be reestablished using the original Mission 66 period planting plans. Problematic or inappropriate plants should be substituted with more suitable, yet similar plants that require less maintenance

and water. Plant selection should focus on achieving the overall character established in the historic planting plans—buildings surrounded by mown lawn with clusters of mixed shrubs and tree plantings. Substituting mown grass with a more sustainable alternative should be another option. Further research should be conducted to determine the feasibility of substituting mown turf with hardy low-growing native grasses that require less mowing and overall maintenance. Visitor safety and resource protection issues should also guide plant selection. For example, tall grasses that disguise the location of harmful wildlife or plant configurations and accelerate the spread of a wildland fire should be avoided. Wildland fire management documents should be referenced for more information on appropriate planting schemes.

— The CCC-era Natural Resource building and its environs should be maintained and protected.

— It is preferable to remove the collections storage building to enhance the integrity of the character area. However, in the near-term and prior to removal, the exterior character of the collections storage building (adjacent to the CCC-era Natural Resource building) and associated site elements should be altered to be more compatible with the character of the historic buildings and landscape.

— The current administration buildings should be replaced by a historically compatible building. The building or complex of buildings should primarily house administrative functions and may also include a fitness center. If the fitness center includes outdoor facilities, they should be screened with fencing.

— Pedestrian circulation between the Visitor Center and administration cluster should be maintained. A section between the parking lot and administration cluster could be realigned to follow the former historic service road alignment.

— The parking areas in front of the Resource Protection building should be reduced to the minimum required spaces and area. This could be achieved by verifying the required number of spaces and by aligning the parking spaces with the curved road versus aligning the spaces with the buildings. Shade and evergreen trees should be planted to provide shade and buffer this area from the residential area. In addition, relocated minimal parking could be sited on the west side of the existing drive after removal of the existing administration buildings.

— A hail protection structure that could accommodate twenty-four vehicles should be added to the parking lot behind the Visitor Center. Consider using the historic picnic shade and wind protection structure that served the campground as a source of design character. Another possible source of compatible design character is the exterior structures that connect the single-family residences with their garages.

— A picnic area should be added adjacent to the bus parking area to accommodate visitor and employee needs. New structures should be avoided and shade tree plantings utilized to provide shade. If wind and shade structures are necessary, adopt a contemporary version of the historic design of the campground picnic wind and shade structure.

Residential Area

This area includes eight single-family houses that are used by the park's permanent employees, and four seasonal staff apartment buildings. Historic resources should be protected and maintained while intrusive resources should be removed or mitigated. New compatible residences should be constructed in locations historically planned for additions (*see Map 7-2*).

— The contributing residences and apartment units, their essential Park Service Modern architectural character, and their environs should be maintained and protected.

— The overall spatial character derived from the siting of buildings, the road and drive patterns, the pedestrian circulation patterns, and screen fencing patterns should be maintained and protected.

— The contributing patterns of tree and shrub plantings and areas of lawn should be maintained and protected.

— Historic planting designs should be reestablished using Mission 66 planting plans. Problematic or inappropriate plants should be substituted with more suitable plants that are similar in form yet require less maintenance and water.

— If the need arises, new architecturally compatible residences should be added in building locations indicated on Mission 66 master plans. Three units of the three-bedroom single-family type could be added or a duplex housing type could be used in lieu of single-family units.

— The architectural character of residence #46 (B-46) and its garage (B-47) should be modified to be compatible with the Park Service Modern style.

— The compatible seasonal apartment building that post-dates the period of significance should be retained.

— Landscape features that are not compatible with the period of significance should be removed or mitigated.

— Four staff houses (Residence #29, #30, #31, and Seasonal Apartment #51) should be modified to provide universal access and meet ADA requirement standards.

— A new, architecturally-compatible picnic shelter should be added in the central open area to address the need for employee social areas. The architectural character of the new shelters should be derived from the adjacent residential architecture.

— High speed Internet access should be provided to all residences.

— Four RV sites for seasonal researchers should be added in the open space between the fire cache area and the residential area. Each site should include a concrete pad, associated drive and parking, utility hookup, shade structure, and connection to the existing sanitary

system. The shade structure form should be derived from the residential area. Trees should also be planted in this area in a pattern compatible with the residential area.

— A pedestrian/bike path should be added to connect the fire cache area with the residential area. Avoid disturbing formations and major land disturbance.

Cedar Pass Lodge Area

This area includes the facilities associated with the Lodge such as the Lodge building, cabins, manager's residence, laundry building, maintenance/storage shed, mobile units for employees, and ice vending structure. Developed before 1942, this area includes many of the oldest extant features in the study area and retains many of the essential tourism-related characteristics from the period of significance. Historic resources should be protected and maintained, while intrusive resources should be removed or mitigated. Mobile building units should be phased out and removed, and new compatible residences should be constructed in locations historically planned for additions (*see Map 7-3*).

— The Lodge, cabins, and historic support buildings and their essential overall character should be maintained and protected. The exteriors of all historic buildings should be rehabilitated.

— The contributing parking configuration and loop drive should be maintained and protected.

— The contributing pattern of trees, shrubs and lawn plantings of the Lodge area should be maintained and protected.

— Utilize further research to discover historic planting plans or the design intent for the Lodge area. If found, reestablish historic plantings. Problematic or inappropriate plants should be substituted with more suitable plants that are similar in form yet require less maintenance and water.

— Because of environmental imperative, the Siberian elms from the Lodge landscape should be removed and replaced with a compatible but non-invasive alternative deciduous tree, preferably a native, of a similar form and general character.

— The mobile units used by Lodge employees should be removed. A new, historically compatible employee dormitory should be constructed and a single-family residence with a detached garage for the Lodge manager or caretaker should be constructed using standard NPS design criteria.

— Intrusive, non-historic features should be removed or altered to be compatible with the character of the area that was established during the period of significance.

— Three new, historically compatible cabins should be constructed in the footprints of historic cabin locations. Cabins should maximize energy efficiency and be winterized for year-round use; units should have one or two bedrooms as appropriate for the infill.

— Only the exterior of the Lodge and ice building should be rehabilitated to enhance historic character and provide for a better visitor experience. The recommendations of a Historic Structures Report (HSR) should serve as guidelines for ways to change fenestration, exterior materials, details, and plantings.

— Visitor amenities/concession services should be expanded to include Internet connections at the Lodge. A bike rental/storage area should be located at the existing Lodge maintenance building that may include modifying the structure.

— A new, compatible visitor laundry and maintenance facility should be constructed behind the Lodge. The existing access drive should be repaired and upgraded to provide access to the area. A loop drive should terminate the access drive at the new dormitory. The remaining portion of the existing drive should be removed and the natural landform and vegetation should be reestablished.

— In order to address the need for additional visitor and employee recreational areas, a new, compatible dance hall/social center should be constructed adjacent to the Lodge cottage.

Campground Area

This area includes three campground loops, the amphitheater, an interpretive shelter, and a parking lot. This area was the last portion of the site to be developed during the period of significance and retains a high level of integrity. Historic resources should be protected and maintained while intrusive features should be removed or mitigated. New compatible buildings and alterations of contributing features should be allowed in this area, including the addition of a new special use area and replacement of fixed picnic shelters (*see Map 7-4*).

— The contributing structures and features of the campground, amphitheater, and associated buildings as well as their essential character should be maintained and protected.

— The campground drives, circulation features, and their essential character should be maintained and protected.

— The compatible entrance booth that post-dates the period of significance should be retained.

— The intrusive storage shed should be removed and replaced with a historically compatible storage structure. The shed should be moved to a more appropriate location based on Mission 66 design characteristics. The source for compatible design character should be the historic comfort stations.

— The fixed picnic shelters should be replaced with picnic shelters matching the historic design. Secure an existing historic picnic shelter for use in replicating the historic design. Measured drawings and documentation of materials and design details of the historic shelter should be prepared to support the effort.

— A new, compatible group shelter should be added in the group campground area and should be approximately twenty-four feet by sixteen feet with one to two sides for wind

protection and a locked room or area to supply a secured storage area. The source for compatible design character should be the historic comfort stations.

— The amphitheater should be enlarged following its current configuration and orientation. The design qualities established during Mission 66 should be used to guide the design of additions, but the additions should be differentiated from the historic features. The new screen design should be guided by the original Mission 66 screen that has been removed from the site. When designing the additional seating, minimize land disturbance so that the new construction, like the original facility, fits into the terrain. Avoid large areas of soil disturbance and surface grading to mitigate drainage problems. If subsoil conditions permit infiltration, consider mitigating drainage problems with a storm drain system of area drains and pipes that connect with a drywell and subsurface infiltration.

— New, historically compatible shower facilities and a visitor laundry facility should be added following the site layout principles and architectural character established by the Mission 66 campground plan. The source for compatible design character should be the historic comfort stations.

— If necessary, additional tree plantings in the campground should follow the example proposed by the 1956 planting plan for the group camping area. Additional research should also be employed to search for similar plans for the other two campground loops.

— The general layout of these earlier planting plans should be utilized but additional research should be employed to determine more appropriate trees for this area. Due to the harsh conditions, fast growing trees that are tolerant of soil compaction and drought should be given priority. Structural soils should also aid in soil stabilization around the trees that are prone to erosion due to intensive use by visitors seeking shade. If tree reestablishment within the campground fails, another option should be planting trees along the stream where survival rate is better. Alternative tree locations should give existing trees reprieve from excessive use. Also, further research should be conducted to discover other shade alternatives either in lieu of planting trees or while newly planted trees are being established. One alternative example should be rentable tent flies or canopies provided by the concessionaire for campers during their stay.

— Measures should be taken to educate visitors about “butte rash” (visitor impacts to butte formations), and butte formations should be further protected by limiting visitor access.

— A new, compatible Demonstration and Special Use area should be created to address the need for additional visitor recreational areas. This multi-use facility should accommodate special events, interpretive programs, and demonstrations. Two possible locations are identified near the group campground (*see Sheet 6-18).*

— A loop trail should be added to provide additional natural resource interpretive opportunities. The trailhead should be located at the southern tip of Campground A.

Maintenance Area

Since the end of the period of significance, many new buildings and structures have been added and older ones have been removed from this area. The site has also more than doubled in size with the addition of a waste yard, mixing circle, and a more recent water supply tank and structure. This area therefore retains a lower level of integrity relative to other areas in the site. Historic resources should be protected and maintained while intrusive resources should be removed or mitigated. New compatible buildings and alterations of contributing features should be allowed in this area. Dumping and burning of debris should be discontinued at this site (*see Map 7-5*).

— The contributing buildings and their essential character should be maintained and protected.

— The contributing parking lot and drive should be maintained and protected.

— If necessary, new historically compatible service structures should be located in this area. New structures should be sited to ensure protection of the potential archeological resources and be screened from views of visitor and residential areas.

— The non-intrusive overflow parking lot and realigned service road should be retained.

— The materials and debris in the waste yard that the park can no longer use should be removed and disposed of in a proper manner. The dumping of this type of material in the park should be discontinued. Storing of materials and equipment should continue. Improvements should be undertaken to store materials and equipment.

— The use of burning to dispose of materials should be discontinued.

— A new propane refueling station should be added adjacent to the service road to support alternative fueled vehicles. The existing entrance drive should be expanded in order to create a loop access drive around the refueling station.

— In order to address the need for additional employee recreational facilities, a new staff picnic area should be constructed north of the maintenance area. A service trail following the existing road corridor should provide access to the picnic area.

Fire Cache Area

This area encompasses the new fire cache building south of the residential area and the associated parking area and their environs. New compatible buildings and alterations of contributing features should be allowed in this area (*see Map 7-2*).

— The fire cache should be screened to reduce visibility. Consider the use of shade and/or evergreen trees to screen and buffer facilities. Avoid planting trees in rows and straight lines. Consider screen plantings along the northern and western edges of the site. At the southern edge, plantings could be located on the west side of the road.

Wastewater Lagoon Area

This area encompasses the new wastewater lagoons in the southernmost portion of the study area and the associated drive and their environs (*see Map 7-5*).

— This area could be considered as existing outside the historic district since it was not developed by 1966.

— The wastewater lagoons should remain as developed and no changes are recommended for this area. Impacts on the viewshed from visitor areas within the developed area should be considered and mitigated when designing new additions for this area.

Badlands Loop Road and SD 377 Corridor

This corridor includes a section of two roads that together form the northern boundary of the study area.

Slumping on Cedar Pass is projected to cause a complete failure of a portion of the Loop Road north of the study area. When this occurs, the Cedar Pass Developed Area will be directly impacted when one of its primary approach corridors is blocked. Depending on the new route, circulation patterns and the approach experience within the CLR study area could be altered (*see Map 7-6*).

— The characteristic features such as dimensions, layout, and spatial organization associated with these roads should be maintained and preserved.

— The Mission 66-era concept of providing visitor orientation in a Visitor Center and clearly separating visitor use areas from administration/residential/maintenance areas should be maintained and preserved, if possible, in the design of the new approach road.

Service Road Corridor

This area comprises the service road corridor through the study area. Originally constructed in the 1940s, a large section of the road was realigned ca. 1970. Characteristic features of the historic portions of the road should be maintained and preserved. Portions of the road that post-date the period of significance should be retained as well (*see Map 7-6*).

— The characteristic features such as dimensions, layout, and spatial organization associated with historic portions of this road should be maintained and preserved.

— The portions of the road that post-date the period of significance should be retained.

Open Space Area

This area includes the remaining open, interstitial space that surrounds the other character areas. The Badlands formations and the open native prairie meadows contained within this area form the setting for the site. This concept was an important part of Mission 66 planning and is evident in the site layout. The natural character of the open space area should be maintained and preserved while intrusive resources, such as invasive plant species, should be removed or mitigated. No new buildings or alterations of contributing features should be allowed in this area.

Opportunities for viewing scenic and natural features from the Cedar Pass Developed Area should be preserved (*see Map 7-6*).

— Because of environmental imperative, the Siberian elms that have seeded here from those parent trees at the Lodge should be removed and the areas should be restored to a healthy prairie ecosystem.

— Other invasive plant species present in the area should be controlled.

— Opportunities for viewing scenic and natural features from the Cedar Pass Developed Area and across the area should be preserved and protected.

— The overall pattern of development and open space should be preserved and maintained.

— A new trail, typical of back-country trail character, should be added to this area. The Angel Butte Trail should begin at the group campground and continue east through the open grassland. The trail should continue east beyond the study area boundary. A spur off the Angel Butte Trail should head south following an existing road. This service trail should provide access to the staff picnic area before terminating at the maintenance area.

— No additional development should be allowed in this area.

Rehabilitation Alternative: Overarching Treatment Alternative

1. Contributing features of the Cedar Pass Developed Area should be identified, retained, and preserved.
2. Overall spatial character should be maintained by preserving essential features and character and utilizing Mission 66 design principles in the placement of limited compatible new features.
3. Historic features and materials should be maintained and repaired when necessary.
4. In-kind replacement or use of compatible material for replacement of deteriorated historic building/structure features should be allowed.
5. Cultural landscape changes that have acquired historic significance in their own right should be retained and maintained.
6. Compatible landscape and site features that post-date the period of significance should be retained and used.
7. Missing historic features, which were critical to historic character, should be replaced if adequate documentation exists so the feature can be accurately reproduced. A compatible new feature as a replacement should also be an option.
8. Archeological resources should be protected and preserved.
9. Natural systems and features should be protected and preserved.
10. Alterations to a cultural landscape that are necessary to assure its continued use should be allowed as long as they do not destroy historic character.
11. Removal of landscape and site features that post-date the period of significance, have incompatible characteristics, and detract from the overall historic character should be considered.
12. Mitigation measures should be utilized to reduce the intrusive nature of non-historic buildings that are retained.
13. Intrusive, non-historic buildings should be removed at the end of their useful life.
14. New developments should be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.
15. New or altered facilities should be non-intrusive while allowing for accessibility and safety and should not be permissible if historic character should be destroyed.
14. New developments should be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.
15. New or altered facilities should be non-intrusive while allowing for accessibility and safety and should not be permissible if historic character should be destroyed.
16. New design should be differentiated from existing historic resources. A clear differentiation between historic and modern features should be maintained.
17. Changes to the landscape that create a false sense of history should not be allowed.
18. Changes to the landscape should be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
19. Historic structures and features should be documented prior to changes.

Wastewater Lagoon Area

The wastewater lagoons should remain as developed and no changes are recommended for this area.

Fire Cache Area

New compatible buildings should be allowed in this area.

Service Road Corridor

Characteristic features of the historic portions of the road should be maintained and preserved. Portions of the road that post-date the period of significance should be retained as well.

Residential Area

Historic resources should be protected and maintained while intrusive resources should be modified. New compatible residences should be constructed in locations historically planned for additions.

Maintenance Area

Historic resources should be protected and maintained while intrusive resources should be removed or mitigated. New compatible buildings and alterations of contributing features should be allowed in this area. Dumping and burning of debris should be discontinued at this site.

Visitor/Administrative Area

Historic resources should be protected and maintained while intrusive resources should be removed or mitigated. New, compatible, and non-intrusive buildings and features should be allowed in this area. A compatible addition to the Visitor Center should be allowed and portable administration structures should be replaced with historically compatible buildings.

Open Space Area

The natural character of this area should be maintained and preserved while intrusive resources, such as invasive plant species, should be removed or mitigated. No new buildings or alterations of contributing features should be allowed in this area. Opportunities for viewing scenic and natural features should be preserved.

Cedar Pass Lodge Area

Historic resources should be protected and maintained while intrusive resources, including invasive plantings of Siberian elms, should be removed or mitigated. Mobile building units should be phased out and removed, and new compatible residences should be constructed in locations historically planned for additions.

Road Corridor

If failure of the Loop Road occurs, the construction of a new approach road should maintain the historic character of the original. The new roadway alignment should also maintain the Mission 66 concepts of using the Visitor Center to orient visitors to the park and of separating visitor use areas from administration, residential, and maintenance areas.

Campground Area

Historic resources should be protected and maintained while intrusive resources--the comfort station, storage shed, interpretive shelter, and invasive Siberian elms--should be removed or mitigated. New compatible buildings and alterations of contributing features should be allowed in this area, including additions to the amphitheater and replacement of picnic shelters.

Badlands Loop Road

S.D. Highway 377

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Character Area
- Road Traces
- Streams
- Trees
- Contributing Resources
- Non-Contributing
- Undetermined
- Planned Development
- Mitigate or Remove
- Potential Development Sites

0' 225' 450' 900'

Scale 1" = 225'

Cedar Pass Developed Area

Map 7-1. Alternative C: Rehabilitation

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Residential Area

1. The contributing residences and apartment units, their essential Park Service Modern architectural character, and their environs should be maintained and protected.
2. The overall spatial character derived from the siting of buildings, the road and drive patterns, the pedestrian path and walks patterns, and screen fencing patterns should be maintained and protected.
3. The contributing patterns of tree and shrub plantings and areas of lawn should be maintained and protected.
4. Historic planting designs should be reestablished using Mission 66 planting plans.
5. New, compatible residences should be added in those locations planned for building additions on Mission 66 master plans if the need arises.
6. The architectural character of residence #46 and its garage should be modified to render it compatible with Park Service Modern style.
7. The compatible seasonal apartment building that post-dates the period of significance should be retained.
8. Landscape features that are not compatible with the period of significance should be removed or mitigated.

Fire Cache Area

1. The fire cache should be screened to reduce visibility and removed at the end of its useful life.

Visitor/Administrative Area

1. The essential Park Service Modern architectural character of the Visitor Center and its environs should be maintained and protected.
2. If necessary, a compatible addition to the rear of the Visitor Center should be allowed to address space needs.
3. The contributing front parking and road configurations should be maintained and protected.
4. The non-intrusive overflow parking and realigned service road should be retained.
5. The historic site plantings and hardscape around the Visitor Center should be reestablished using the historic Mission 66 period planting plans.
6. The CCC era Natural Resource office and its environs should be maintained and protected.
7. The adjacent collections storage building should be removed.
8. The current portable administration structures should be replaced by a historically compatible and unobtrusive building.
9. Pedestrian circulation between the Visitor Center and administration cluster should be realigned to follow the former historic service road alignment.
10. The parking areas in front of the Resource Protection building should be reduced to the minimum required spaces.

Future ADA modifications
Recommended location for staff picnic structure
Remove
Recommended RV sites for researchers
Pedestrian/bike trail
Potential building sites to accommodate space needs if required
Pedestrian circulation follows former road
Future administration addition
Visitor Center addition (under construction)
Remove portable administration structures
Residence #46 - modify intrusive features
Potential residential development sites
Service Road
Museum storage (under construction)
Visitor Center
Vehicle hail protection structures
Future path
Future bus parking
Future visitor picnic area

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Character Area
- Fences
- Streams
- Trees
- Contributing Resources
- Non-Contributing
- Undetermined
- Planned Development
- Mitigate or Remove
- Potential Development Sites

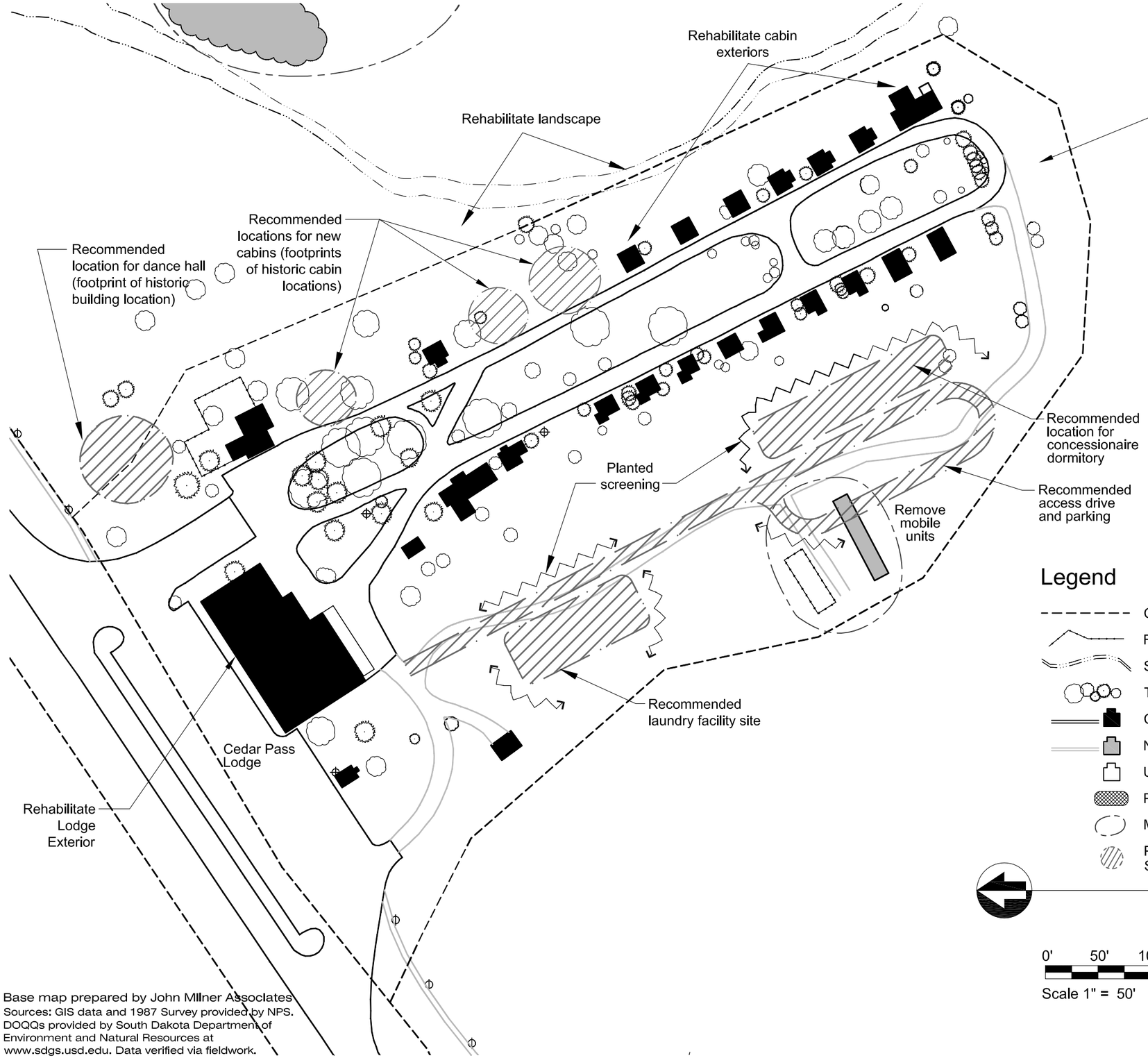
0' 75' 150' 300'
Scale 1" = 75'

Cedar Pass Developed Area

Map 7-2. Alternative C: Rehabilitation

Detail Visitor Center & Residential

Cultural Landscape Report
Badlands National Park, South Dakota
National Park Service
June 2005



Cedar Pass Lodge Area

1. The Lodge, cabins, and historic support buildings and their essential overall character should be maintained and protected.
2. The contributing parking configuration and loop drive should be maintained and protected.
3. The contributing pattern of trees, shrubs and lawn plantings of the Lodge area should be maintained and protected.
4. Further research should be utilized to try to discover historic planting plans or information on design intent for the Lodge area and if found, used to reestablish historic planting designs.
5. Because of environmental imperative the Siberian elms associated with the Lodge landscape should be removed and replaced with a compatible but non-invasive alternative deciduous tree, preferably a native, of a similar form and general character.
6. The mobile units used by Lodge employees should be removed and a new, historically compatible dormitory for employees constructed in the footprint of one or more of the missing Lodge buildings.
7. Intrusive, non-historic features should be removed or altered to be compatible with the character of the area that was established during the period of significance.
8. New, historically compatible structures should be constructed in the footprints of historic cabin locations should the need for more rental units arise.
9. The Lodge should be rehabilitated to be more compatible with the site's historic character and to meet needs.

Legend

- Character Area
- Fences
- Streams
- Trees
- Contributing Resources
- Non-Contributing
- Undetermined
- Planned Development
- Mitigate or Remove
- Potential Development Sites

0' 50' 100' 200'

Scale 1" = 50'

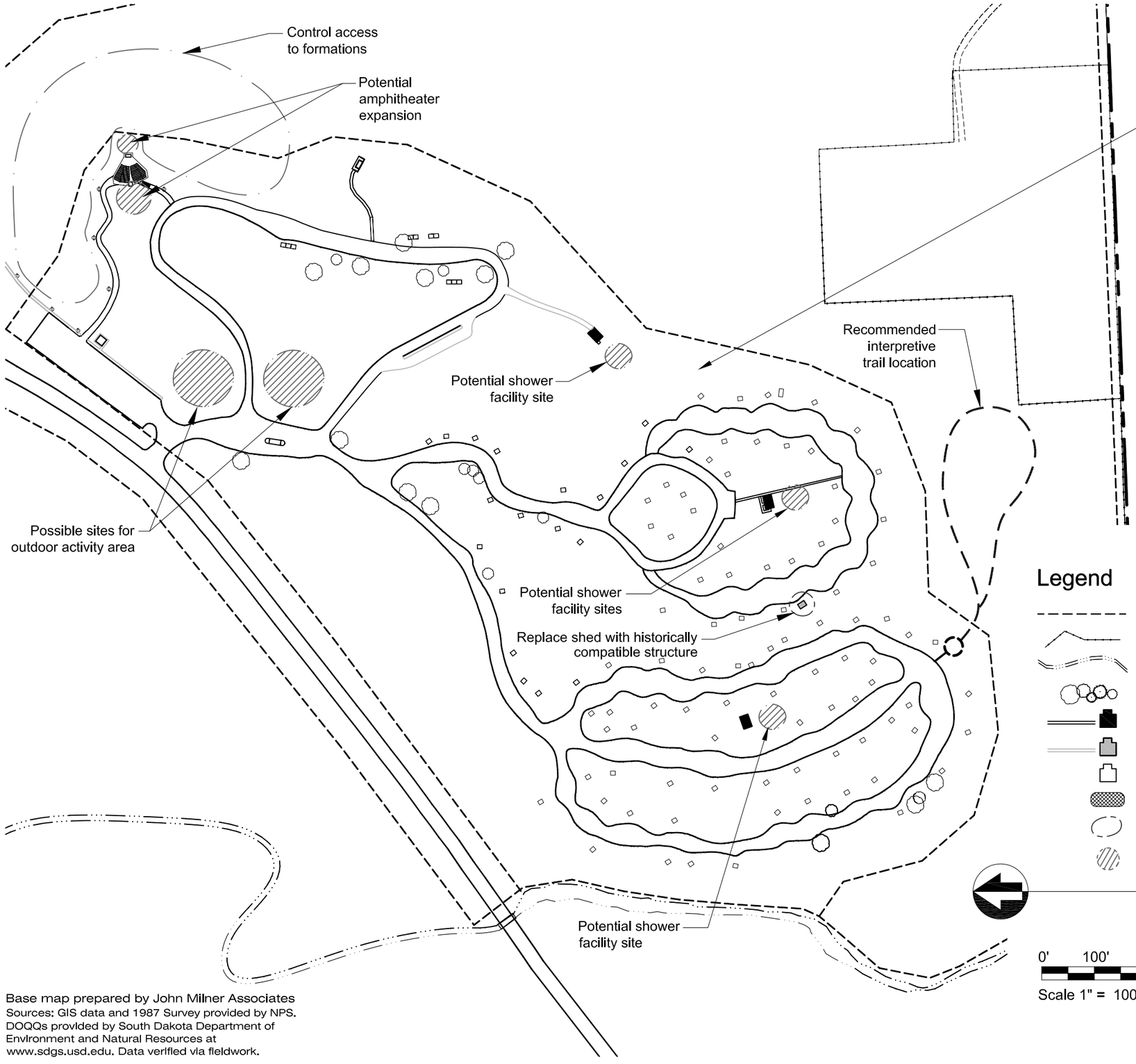
Cedar Pass Developed Area

Map 7-3. Alternative C: Rehabilitation

Detail Lodge & Cabins Area

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Campground Area

1. The contributing structures and features of the campground, amphitheater, and associated buildings as well as their essential character should be maintained and protected.
2. The campground drives, circulation features, and their essential character should be maintained and protected.
3. The entrance booth that post-dates the period of significance but is compatible should be retained.
4. The intrusive storage shed should be removed and replaced with a historically compatible storage structure. The shed should be relocated to a more appropriate location based on Mission 66 design characteristics.
5. The picnic shelters should be replaced, at the end of their useful life, with picnic shelters constructed using the original Mission 66 design.
6. The amphitheater should be enlarged following its current configuration and orientation. The design qualities established during Mission 66 should be used to guide the design of additions, but the additions should be easily differentiated from the historic features. Rehabilitation of the screen should be guided by the design of the missing Mission 66 screen.
7. New historically compatible shower facilities should be added following the layout principles and architectural character established by the Mission 66 campground plan.
8. If necessary, additional tree plantings in the campground should follow the example proposed by the 1956 planting plan for the group camping area. Additional research should also be employed to identify similar plans for the other two campground loops.

Cedar Pass Developed Area

Map 7-4. Alternative C: Rehabilitation

Detail Campground Area
Cultural Landscape Report

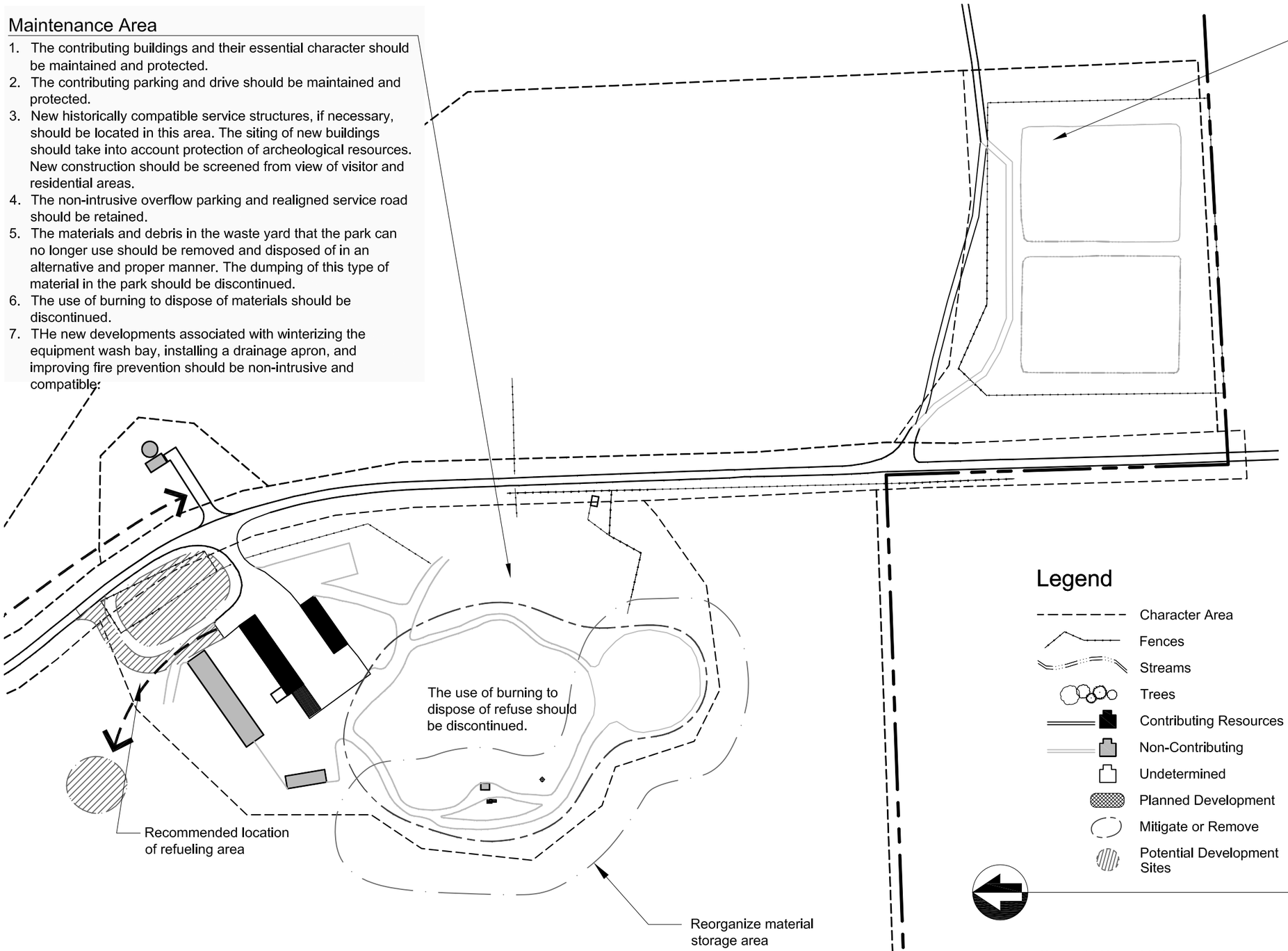
Badlands National Park, South Dakota
National Park Service
June 2005

Maintenance Area

1. The contributing buildings and their essential character should be maintained and protected.
2. The contributing parking and drive should be maintained and protected.
3. New historically compatible service structures, if necessary, should be located in this area. The siting of new buildings should take into account protection of archeological resources. New construction should be screened from view of visitor and residential areas.
4. The non-intrusive overflow parking and realigned service road should be retained.
5. The materials and debris in the waste yard that the park can no longer use should be removed and disposed of in an alternative and proper manner. The dumping of this type of material in the park should be discontinued.
6. The use of burning to dispose of materials should be discontinued.
7. THe new developments associated with winterizing the equipment wash bay, installing a drainage apron, and improving fire prevention should be non-intrusive and compatible.

Wastewater Lagoon Area

1. This area could be considered as existing outside the historic district since it was not developed by 1966.



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Character Area
- Fences
- Streams
- Trees
- Contributing Resources
- Non-Contributing
- Undetermined
- Planned Development
- Mitigate or Remove
- Potential Development Sites

0' 100' 200' 400'

Scale 1" = 100'

Cedar Pass Developed Area

Map 7-5. Alternative C: Rehabilitation

Detail Maintenance Area
Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005

Open Space Area

1. Because of environmental imperative, the Siberian elms that have seeded here from parent trees at the Lodge should be removed and the areas should be restored to a healthy prairie ecosystem.
2. Other invasive plant species present in the area should be controlled.
3. Opportunities for viewing scenic and natural features from the Cedar Pass Developed Area and across the area should be preserved and protected.
4. The overall pattern of development and open space should be preserved and maintained.
5. No additional development should be allowed in this area.

Pedestrian/bicycle path

Service Road Corridor

1. The characteristic features of the historic portions of this road such as dimensions, layout, and spatial organization should be maintained and preserved.
2. The portions of the road that post-date the period of significance should be retained.

Recommended location for staff picnic facility

Route of proposed Angel Butte trail

Open space

Badlands Loop Road

Road Corridor

1. The characteristic features of these roads, such as dimensions, layout, and spatial organization, should be maintained and preserved.
2. The Mission 66 concepts of using the Visitor Center to orient visitors to the park and clearly separating visitor use areas from administration/residential/maintenance areas should be maintained and preserved, if possible, in the design of the new approach road.

S.D. Highway 377

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Character Area
- Road Traces
- Streams
- Trees
- Contributing Resources
- Non-Contributing
- Undetermined
- Planned Development
- Mitigate or Remove
- Potential Development Sites

0' 225' 450' 900'

Scale 1" = 225'

Cedar Pass Developed Area

Map 7-6. Alternative C: Rehabilitation

Cultural Landscape Report

Badlands National Park, South Dakota
National Park Service
June 2005



Chapter Eight

Implementation Recommendations

CHAPTER EIGHT

IMPLEMENTATION RECOMMENDATIONS

INTRODUCTION

Previously in this report, Chapter 7 provided recommendations for treating the historic, cultural, and natural landscape resources of the Cedar Pass Developed Area within Badlands National Park. The treatment recommendations for the Cedar Pass Developed Area outlined in Chapter 7 describe the end result of the implementation of the treatment plan. This chapter provides a process for implementing selected projects, identified below, of the treatment plan.

The process is described through implementation recommendations for research, planning, and landscape projects, placed in an appropriate sequence of necessary research, planning, design, implementation, and management actions. Suggested phasing sequences are intended to be placed within a context of other park planning initiatives, and were developed during Value Analysis (VA). They are intended to guide and inform planners and managers during the decision-making process regarding resource management. Certain projects are identified as priorities for immediate implementation due to the current deteriorated condition of, or threat to, a resource. For example, the removal of invasive plant species is a high priority due to the threat they pose to surrounding native vegetation. Some projects require additional investigation or research prior to implementation, while others require further review within the framework of long-range planning efforts.

PHASING RECOMMENDATIONS

The phasing recommendations focus on three primary phases of implementation that span a fifteen-year period. Each phase relates to a five-year period. The projects that comprise the treatment plan are placed into the phasing structure. The project descriptions follow the phasing plan. A limited number of recommendations were not included in the phasing plan; these consist of issues that were introduced as considerations for long-range planning that are most likely beyond the fifteen year time-frame of the phasing plan. Depending on factors such as funding, the goals for park management and interpretation, and the completion of related planning documents, some projects may ultimately shift into subsequent phases.

PHASE ONE (YEARS 1-5)

During Phase One, the following projects should be implemented. Project descriptions have been prepared for those listing in bold text.

- **Prepare Historic Structure Reports for all historic buildings and structures**
- **Prepare a Historic Buildings and Structures Maintenance Plan**
- **Prepare a Historic Landscape Maintenance Plan for developed area vegetation**
- Complete/update the List of Classified Structures and Cultural Landscapes Inventory for the park
- **Complete a park-wide archeological survey to gather baseline prehistoric and historic archeological information**
- **Complete additional directed research regarding historic period plantings in all areas of the developed area**
- Complete the Visitor Center renovation and expansion project
- Develop bus parking on the west side of the service road near the Visitor Center including a pedestrian path connecting the bus parking with the Visitor center
- Develop the vehicle hail protection structures and associated sitework south of the Visitor Center
- Complete the museum storage facility at the fire cache site
- Undertake exterior rehabilitation of Cedar Pass Lodge to be compatible with the historic developed landscape
- Rehabilitate the Lodge maintenance building to serve as a bicycle rental facility
- Develop new historically-compatible Lodge maintenance and laundry facility including site development south of the Lodge
- Rehabilitate and expand the campground amphitheater
- Develop historically-compatible visitor shower/laundry facilities in the campground near the existing comfort stations
- Develop a new historically-compatible campground host storage facility
- Develop an interpretive loop trail at the campground

- Develop an alternative fuel refueling facility at the maintenance area
- Develop the wash rack and maintenance office facility in the maintenance area
- Reorganize the materials storage area ("bone yard") within the maintenance area
- Develop a staff picnic facility just north of the maintenance area
- **Rehabilitate the Visitor Center plantings based on additional research to enhance landscape integrity**
- **Rehabilitate the residential plantings based on additional research to enhance landscape integrity**
- **Rehabilitate the Cedar Pass Lodge plantings based on additional research to enhance landscape integrity, including removal and replacement of Siberian elms**
- Develop a pedestrian path along the former alignment of the service road to connect the residential area with the visitor/administration area
- **Install plantings to screen the fire cache and future facilities**
- **Continue programs for controlling and eradicating invasive plant species**

PHASE TWO (YEARS 6-10)

During Phase Two, the following projects should be implemented. Project descriptions have been prepared for those listing in bold text.

- Construct staff housing (single-family or duplex units) in the residential area in locations identified for future housing in historic period master plans
- Complete ADA accessibility modifications of three existing single-family residences and one or more units in the seasonal staff apartment buildings
- Develop four RV sites between the residential area and the fire cache area to support researchers
- Continue the program of exterior renovations of residences
- Develop a walking and bicycle trail linking the visitor/administrative area, the residential area, the future researcher RV area, the fire cache area, and the Maintenance area to promote safety, reduction of vehicle use, and staff recreation
- Construct three new historically-compatible cabins in the Cedar Pass Lodge area in the locations of former cabins

- Develop the seasonal concessionaire staff dormitory and associated site development just to the south of the cabins in the Cedar Pass Lodge area

- **Develop measures to control unauthorized access to the formations at the campground area to slow degradation of the geologic formations**

- Construct the Angel Butte Trail starting at the campground area including the spur trail linking the campground area with the maintenance area

- Continue programs for controlling and eradicating invasive plant species

PHASE THREE (YEARS 11-15)

During Phase Three, the following projects should be implemented. Project descriptions have been prepared for those listing in bold text.

- Construct an administration addition on the south end of the Visitor Center

- Develop an administration building or complex south of the Visitor Center

- Develop a staff picnic shelter within the central open space of the residential area

- Develop a facility within the Cedar Pass Lodge area to serve as a dance hall/special events venue

- Develop an outdoor special events/demonstration facility within the campground area

- Continue programs for controlling and eradicating invasive plant species

- **Replace existing shade/picnic structures with structures based on the historic period design**

- **Begin a program for experimenting with establishing shade trees in the campground area**

PROJECT DESCRIPTIONS

INTRODUCTION

The recommendations indicated and listed in previous sections within this chapter relate to a series of historic landscape-related projects that should be considered for implementation at the park. These projects—including the tasks, additional research and physical investigations, and expertise necessary to complete each project—are briefly described below. The itemization of tasks for each project does not include project management, compliance-related reviews, and other management elements typically undertaken by National Park Service (NPS) personnel as part of the planning, design, and construction phases of a project.

Project budget data had been developed, including an opinion of probable construction costs, for each of the projects involving construction. All cost data presented in this report is intended to be used for general planning purposes only. Construction cost data is based on average costs typical in 2005 and does not account for inflation regarding implementation beyond 2005. The cost data has been developed using NPS Class C planning-level cost-estimating data. Professional fees and other fees for services are based on current and past experience estimating order of magnitude fees for services. Typically, fees and costs are based on the assumption that consultants and/or private contractors would perform all work. The annual costs associated with maintenance and landscape management are beyond the scope of this project and have not been addressed in this document. It is important to note that all project budget data is intended to support planning efforts and initiatives and should not be used to establish final project budgets, and that readily-available cost data for some of the project elements is very limited or non-existent. JMA, endeavoring to support subsequent planning efforts, has included very rough estimates for some project elements. In some cases, additional studies are required to determine the full extent of projects and their costs. In others, it is not possible to determine order of magnitude or conceptual-level project budget costs. For example, when very little is known about the scope of the project due to the fact that significant additional research or planning and feasibility studies are first required to develop sufficient levels of information to support cost estimating, project cost data was not included.

RESEARCH, PLANNING, AND IMPLEMENTATION PROJECT DESCRIPTIONS

The following section includes descriptions of recommended research, planning and/or implementation projects.

Historic Structures Reports for All Historic Buildings and Structures

Project Description

Historic Structures Reports (HSRs) should be prepared for all of the historic buildings and structures within the Cedar Pass Developed Area. HSRs provide a baseline for future planning, as well as repair, maintenance, and rehabilitation/restoration. The HSR work should include HABS-level documentation. This project could be completed as a single document, or as a series of documents covering groups of buildings and structures. HSRs could be undertaken for the buildings and structured grouped in the residential area, the Cedar Pass Lodge area, the campground area, and the maintenance area.

Additional Studies Needed

A reconnaissance-level investigation could be undertaken by regional and park cultural resource managers, supported by this report and a qualified historical architect, to determine which buildings and structures should be documented and when. This survey could identify use and condition issues that would support prioritizing buildings and structures.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Identify buildings and structures to be documented	Regional and park cultural resource managers and historical architects		Utilize information from the CLR to aid process.
2. Preparation of the HSR(s)	NPS staff and/or contractors; historical architects, architectural historians, building materials conservators, historical engineers; preservation tradespersons	Single-family residences—$75,000-$100,000 Apartments—$50,000-$85,000 Lodge and outbuildings—$85,000-$125,000 Lodge cabins—$75,000-$100,000 Campground structures—$50,000-$85,000 Maintenance structures—$75,000-$100,000	

Historic Buildings and Structures Maintenance Plan

Project Description

To ensure the preservation of historic buildings and structures, a Historic Buildings and Structures Maintenance Plan should be prepared for all of the historic buildings and structures within the Cedar Pass Developed Area. HSRs provide the immediate repair and design recommendations. However, they do not necessarily provide long-term maintenance guidance. The maintenance plan would provide the specialized technical prescriptions required to guide appropriate maintenance over time. The maintenance plan would identify the various types of required maintenance by systems and materials and the required means, methods, and expertise required to implement proper maintenance by park staff and contractors.

Additional Studies Needed

The completion of the HSRs would need to precede preparation of the maintenance plan.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Review of existing maintenance practices and capabilities	Badlands cultural resource managers and maintenance personnel		This findings data would be used by the plan preparers.
2. Preparation of the Maintenance Plan	NPS staff and/or contractors; historical architects, building materials conservators, historical engineers; preservation tradespersons	$85,000-$100,000	

Landscape Maintenance Plan for Developed Area Vegetation

Project Description

Given the various types of vegetation found within the developed area, and recommendations for removal and replacement of certain plants called for in this document, the preparation of a Vegetation Maintenance Plan is recommended. The Vegetation Maintenance Plan should holistically address vegetation maintenance concerns for the entire Cedar Pass Developed Area. In addition to appropriate methods for pruning, fertilizing, and general care of historic and existing vegetation, the plan should also suggest suitable methods for tree removal and appropriate replacement species, mowing schedules, and what types of new plantings would be compatible with the historic landscape. Periodic and seasonal maintenance schedules should be included describing when these actions should occur throughout the year.

Additional Studies Needed

Completion of the additional directed research required to better understand the historic period plantings would be useful to support plan preparation.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Review of existing landscape maintenance practices and capabilities	Badlands cultural and natural resource managers and maintenance personnel		The findings data would be used by the plan preparers.
2. Preparation of the plan	Historical landscape architect, arborists, horticulturists, grounds maintenance tradespersons	$50,000-$75,000	

Park-Wide Archeological Survey

Project Description

During the VA workshop undertaken as part of this Cultural Landscape Report (CLR), park staff indicated that a park-wide archeological survey of the developed area was needed to identify archeological resources in a comprehensive and systematic manner. Such surveys or inventories support planning and design by ensuring protection of archeological resources, and are best completed prior to beginning the planning and design process. The archeological baseline data can support efficient planning and design and the avoidance of having to re-design or relocate land-disturbing activities. Archeological survey work should be undertaken in accordance with DO-28. DO-28 indicates that an Archeological Overview and Assessment may be the appropriate level of work. The scope of this survey includes the description and assessment of known and potential archeological resources, assessment of past archeological studies, and determination of the need for and design of future studies.

Additional Studies Needed

A Historic Resources Study is in progress and should serve to support archeological survey or inventory work. In addition, this CLR should also support any archeological survey work in the Cedar Pass Developed Area.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Collect available data	Park cultural resource managers		
2. Undertake archeological survey work	NPS or contract archeologists	$100,000-$150,000	

Directed Research of Historic Period Plantings

Project Description

As a result of the research findings of the CLR effort, additional directed research is recommended regarding plantings established during the period of significance within the developed areas of Cedar Pass. This directed research effort should be completed prior to conducting any landscape maintenance planning and prior to the design of rehabilitated plantings within the developed areas of the Visitor Center/Administration Area, the Residential Area, and the Cedar Pass Lodge Area.

Additional Studies Needed

No additional studies are required.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Conduct research	NPS or contract landscape historian or historical landscape architect	(see below)	
2. Preparation of a report documenting findings of the directed research effort	NPS or contract landscape historian or historical landscape architect	$10,000-$20,000	

Rehabilitate the Visitor Center Plantings, Residential Area Plantings, and Cedar Pass Lodge Area Plantings

Project Description

This project involves the design of rehabilitated plantings within the Residential Area, the Visitor/Administration Area, and the Cedar Pass Lodge Area. Additional directed research may yield more detailed information on the historic period planting design for these areas. The research findings and the information in this CLR could support a re-design of the plantings to better reflect their historic character. The purpose of the project would not be a literal re-construction of the Mission 66 planting design, but would focus on reestablishing the essential planted aspects of the Mission 66-era developed area. Existing trees and shrubs that contribute to the historic character would be retained. Those that do not contribute to historic character would be removed or replaced. Invasive exotic plants would also be removed and replaced with non-invasive species.

Additional Studies Needed

The recommended plant-related directed research should be completed prior to design of new plantings.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Planting design	NPS or contract historical landscape architect	$25,000-$35,000	
2. Implementation of planting plans	Historical landscape architect, landscape contractor, or qualified park maintenance staff	Residential area—$50,000-$75,000 Visitor Center/admin. area—$25,000-$50,000 Cedar Pass Lodge area—$75,000-$100,000	
3. Monitor installation during ground-disturbing activities	NPS archeologist		
4. Post-construction evaluation	Park natural resource and maintenance staff, landscape architect		Monitor for invasive plant species and health of new plantings.
5. Maintenance	Park staff		Periodic maintenance.

Fire Cache Area Screen Plantings

Project Description

The two-story height and contemporary materials of the fire cache make it an incompatible feature within the landscape that can be viewed from historic areas within the Cedar Pass Developed Area. This project involves mitigating this view through screen plantings. The recommended method of screening involves the installation of native evergreen plantings at varying heights along the perimeter of the fire cache area.

Additional Studies Needed

A viewshed study should be undertaken to determine the visible areas of existing and proposed buildings and structures to ensure that screen plantings will be effective at the time the plantings are ten to fifteen years of age. The viewshed study could involve establishing lines of sight from the Cedar Pass Lodge and cabin areas and the Visitor Center environs. The lines of sight would then be documented using photography and site maps. A more sophisticated viewshed analysis could be undertaken using GIS software. This process requires digital elevation data of an appropriate scale to determine which visitor areas have visual access of the existing and future development in the fire cache area.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Viewshed study	NPS or contract landscape architect	Photography-based analysis—$3,000	A GIS-based study is relatively inexpensive. However, it requires a digital elevation model. A GIS-based viewshed or seen-area analysis study may be cost-prohibitive unless appropriate aerial photogrammetric mapping is available.
2. Planting design	NPS or contract landscape architect	$5,000-$8,000	
2. Installation of vegetation	Qualified park staff or landscape contractor	Assume 30-40 native evergreen trees, 10-15 ft. ht.—$15,000-$20,000	
3. Monitor ground-disturbing activities	NPS archeologist		
4. Periodic maintenance	Qualified park staff		

Invasive Plant Species Control Program

Project Description

Invasive plant species, such as Siberian elms, need to be controlled and/or eradicated to prevent them from threatening native plant communities and other sensitive natural areas and their ecosystems. The park should continue its programs of invasive exotic species control. The preparation of a Landscape Maintenance Plan for the developed areas of Cedar Pass should be coordinated with all efforts to control invasive exotic plants. In addition, all efforts undertaken in support of rehabilitating the plantings in the developed areas of Cedar Pass should be coordinated with efforts to control and eradicate invasive exotic plants. The scope of the Landscape Maintenance Plan should include identification of invasive exotic plants. This data could be used to support invasive exotic plant control measures. The control effort should include the development of specific, appropriate methods of control and removal based on knowledge of each plant species, the extent to which they exist in and harm native vegetation communities, and the success of current local or regional efforts to contain them. Prior to implementation of control methods, a monitoring system should be developed that will identify areas where control methods were not succeeding and where new invasive plant species occur. This on-going initiative should be coordinated with all other efforts toward enhancing the ecosystems of open space areas within the Cedar Pass Developed Area.

Additional Studies Needed

No additional studies are required.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Further development of existing control plan or preparation of a new plan	NPS botanist/ecologist, wildlife biologist, landscape architect		A historical landscape architect should be consulted during the plan preparation process.
2. Undertake eradication measures	Qualified landscape contractor, park natural resource staff, park maintenance staff	Tree and stump removal Assume 20 @ $1,000 each— $20,000 Light clearing/grubbing/ erosion control Assume 5 acres @ $10,000/acre— $50,000-$60,000	
3. Monitor removal work	NPS archeologist, natural resource staff, landscape architect		Archeologists should monitor soil-disturbing activities.
4. Implement disturbed land reclamation/re-vegetation as required	NPS natural resource staff, park natural resource staff, park maintenance staff		Individual tree or shrub replacement in developed areas should be undertaken as part of the planting rehabilitation projects.

Geologic Formation Access Control Program

Project Description

Park staff have indicated a need to develop a program for controlling unauthorized access to the geologic formations resulting in damage to the formations. Unauthorized access is due primarily to visitors accessing the formation near the campground amphitheater and another in the environs of the Visitor Center.

This project involves a program of visitor education, data collection, implementation of sign and barrier controls, and monitoring of conditions. The development of the program could be based on the NPS's Visitor Experience Resource Protection (VERP) guidelines and processes. The program will likely involve a combination of measures. It should strive to avoid physical barriers involving damage to the formations. Employing a combination of visitor education and sign systems should be pursued prior to erecting a barrier. If barriers are required, they should be the least visually intrusive and be sited to avoid formation damage. Designing barriers that rest on the surface may be preferable to ground installations.

This program should be viewed as dynamic and evolving over time. After less-intrusive and less-intensive measures are developed, tested, implemented, and evaluated, more intensive measures may be required, depending on the effectiveness of earlier measures.

Additional Studies Needed

No additional studies are required.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Undertake pre-design services; consider employing a VERP process	Regional land. arch., park natural/cultural resource staff, rangers and interpretive staff, park maintenance staff		
2. Prepare access control program plan	Regional land. arch., park natural/cultural resource staff, rangers and interpretive staff, park maintenance staff		
3. Implement visitor access control measures	Park natural and cultural resource staff, park rangers and interpretive staff, park maintenance staff	Pamphlet— $2,000 Interpretive waysides— $20,000 Informational signs (10)— $4,000 Physical barriers— $20-$40 per l.f.	
4. Monitoring	Park staff		

Replace Campground Picnic Structures

Project Description

This project involves the fabrication and construction of picnic shade structures based on the original Mission 66 design for such features. The project also involves repairing surviving historic Mission 66-era picnic shelters that are scattered throughout the campground area and other parts of the developed area. The existing non-historic shelters should be salvaged and used within non-historic areas of the park. The Mission 66 picnic shelters are a primary contributing feature that is essential to conveying design significance within the campground. This project involves removal of the existing, non-compatible structures and siting and construction of reconstructed shelters. Some of the original Mission 66 shelters are located near the maintenance facilities and should be salvaged, if possible. Salvage material from any demolished shelters should recycled as possible. Replacement of existing non-historic structures could be phased by group, or replacements could be made on an individual basis at the end of the useful life of each existing structure.

Additional Studies Needed

Historic period construction/fabrication drawings should serve as the primary documents for preparing fabrication and construction documents for the new structures. In addition, a surviving structure with a high degree of integrity should be identified for use as a model. Measured drawings should be made of the identified surviving structure and compared with the historic construction/fabrication drawings.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Additional research to secure historic construction drawings	NPS architectural historian		
2. Measured drawings of surviving historic structure	NPS or contract historical landscape architect	$3,000-$5,000	
3. Design and construction documents	NPS or contract historical landscape architect or architect	$10,000-20,000	Assumes that all structures would be fabricated at the same time.
4. Fabrication of structures	NPS or contract historical landscape architect or architect, contract fabrication firm	Each structure and associated sitework—$5,000 Replace 120 structures—$600,000-$800,000	Assumes that all structures would be installed at the same time.
5. Site construction and installation of structures	NPS or contract historical landscape architect, NPS maintenance crews or contractor	(see above)	
6.Monitoring of land disturbing activities	NPS archeologist		
7. Reuse of salvaged non-historic structures	NPS maintenance crews or contractor		

Campground Shade Trees Program

Project Description

Shade within the campground is currently provided by small slated picnic structures, a scattering of trees, and group picnic structures. Park staff have indicated that visitors continually note their affinity for shade trees within the campground. Park staff have also noted, however, that existing shade trees within the campground area suffer from soil compaction of their root zones, and have a high mortality rate. Deciduous trees that can provide shade as they mature are not naturally-occurring outside of riparian zones. Owing to climate and other site factors, establishing and maintaining shade trees not necessarily sustainable.

A shade tree plan and program should be developed to address this need. The plan should identify one or more native or non-native and non-invasive deciduous tree species that will survive in the local climate and in the local soil. This program should be viewed as experimental, and will require several years before useable shade is available. The program will require visitor education measures and will also require the installation of barrier of the root zone of trees until they are mature enough to handle limited soil compaction. Additionally, the installed trees will require higher levels of care and maintenance. It will likely be preferable to install saplings to ensure survival. Consideration could be given to maintaining a root zone mulch of graded locally-quarried stone to reduce soil compaction.

The park should avoid introducing large shade structures or numerous additional small structures and should continue to advise visitors of local climate conditions and the need to bring portable shade structures. In addition, consideration should be given to adding covered areas when constructing the planned laundry and shower facilities.

Additional Studies Needed

Additional research should be conducted on trees that will be sustainable within the existing cultural condition of the site and that will meet all design criteria including moderate to rapid growth rates, and ability to withstand compacted soils.

Project Implementation Process:

Task	Expertise Needed	Estimated Cost	Notes
1. Additional research	NPS landscape architect		
2. Planting design	NPS or contract historical landscape architect	$5,000	
3. Implementation of planting plan	Historical landscape architect, landscape contractor or qualified park maintenance staff	$30,000-$40,000	
4. Monitor ground-disturbing activities	NPS archeologist		
5. Post-construction evaluation and monitoring	Park natural resource and maintenance staff, landscape architect		Monitor health of new plantings.
6. Maintenance	Park staff		Periodic maintenance.



Bibliography

BIBLIOGRAPHY

NARRATIVE REFERENCES

Albers, Patricia. "The Home of the Bison: An Ethnographic and Ethnohistorical Study of Traditional Cultural Affiliations to Wind Cave National Park." Draft on file at the Library Collection, Wind Cave National Park.

Alfonsin, Anthony. *The Struggle for Modernism: Architecture, Landscape Architecture and City Planning at Harvard*. New York: W.W. Norton, 2002.

Allaback, Sarah. "The Mission 66 Visitor Center." In *Cultural Resource Management* 9 (1999): 19-21.

————————. *Mission 66 Visitor Centers: The History of a Building Type*. Washington, DC: US Department of the Interior, G.P.O., 2000.

Carey and Co. Inc. Architecture. "Determination of Eligibility Cedar Pass Visitor Center," Badlands National Park, Interior, South Dakota." San Francisco, prepared for National Park Service, March 2002.

Carr, Ethan. "Mission 66 and 'Rustication.'" In *Cultural Resource Management* 9 (1999): 16-19.

————————. *Wilderness by Design: Landscape Architecture and the National Park Service*. Lincoln: University of Nebraska Press, 1998.

Chatters, James C. "Environment." In *Handbook of North American Indians* 12 (1998): 43.

Chatters, James C. and David L. Pokotylo. "Prehistory: Introduction." In *Handbook of North American Indians* 12 (1998): 73.

Falk, Carl, et al. "A Preliminary Assessment of Archeological Resources in the Vicinity of the Proposed White River Development, Badlands National Monument, South Dakota." Lincoln, NE: Midwest Archeological Center, Occasional Studies in Anthropology, No. E, 1978.

Frison, George C. "Hunting and Gathering Tradition: Northwestern and Central Plains." In *Handbook of the North American Indian* 13 (Part 1 of 2, 2001): 46-48.

Gries, John Paul. *Roadside Geology of South Dakota.* 2nd ed. Missoula, MT: Mountain Press Publishing Company, 1998.

Grosvenor, Melville Bell. "Today and Tomorrow in Our National Parks." In *National Geographic* 130, No. 1 (July 1966).

Hall, Philip S. *Reflections of the Badlands*. Freeman, SD: Pine Hill Press, 1997.

Hartzog, George B. "Mission 66 and Parkscape." In *Historic Preservation* 18, No. 4 (1966): 140-143.

————————. "Parkscape U.S.A." *National Geographic* 130, No. 1 (July 1966): 48.

Hartzog, George P. and Stewart L. Udall. "Compilation of the Administrative Policies for the Historical Areas of the National Park System." Washington, DC: US Government Printing Office, 1968.

Hauk, Joy Keve. *Badlands: Its Life and Landscape*. 8th ed. Interior, SD: Natural History Association, 1993.

Hannus, Adrien L., et al. *The Archeology of Badlands National Park*. Sioux Falls, SD: Archeology Laboratory, Augustana College, Archeological Contract Series No. 175.

Jones, Bruce A. "Archeological Investigations at Cedar Pass Slide, Badlands National Park." Lincoln: Midwest Archeological Center, Technical Report No. 75, 2002.

Karmizski, Ken. Draft "National Register Multiple Property Documentation Historic Roads Resources," Washington, DC: National Park Service, 1993.

Long, Barbara B. "Wind Cave National Park: Historic Contexts and National Register Guidelines." Cresco, IA: Four Mile Research Company, 1992.

Madrid-French, Christine. "The Mission 66 Visitor Centers, 1956 Modern Architecture in the National Parks." MA Thesis, University of Virginia, 1998.

Mattison, Ray H. and Grom, Robert A. *A History of the Badlands National Monument*. Interior, SD: Badlands Natural History Association, 1968.

Meinecke, E.P. *Camp Planning and Camp Reconstruction*. Interior, SD: US Department of Agriculture, n.d.

————————. *A Campground Policy*. Ogden, UT: US Forest Service, US Department of Agriculture, 1932.

Miles, John C. *Guardians of the Parks*. Washington, DC: Taylor and Francis, 1995.

McClelland, Linda Flint. *Building the National Parks: Historic Landscape Design and Construction*. Baltimore: University of Johns Hopkins Press, 1998.

Pregill, Philip and Nancy Volkman. *Landscapes in History: Design and Planning in the Western Tradition*. New York: Van Nostrand Reinhold, 1993.

Shuler, Jay. *A Revelation Called The Badlands: Building a National Park 1909-1939*. Interior, SD: Badlands Natural History Association, 1989.

Swagerty, William R. "History of the United States Plains Until 1850." In *Handbook of the North American Indians* 13, Part 1 of 2 (2001): 256.

Treib, Marc, ed. *Modern Landscape Architecture*. Cambridge: The MIT Press, 1993.

————. *The Architecture of Landscape, 1940-1960*. Philadelphia: University of Pennsylvania Press, 2002.

Wedel, Waldo C. and George C. Frison, "Environment and Subsistence." In *Handbook of North American Indians* 13 (2001): 46, 48.

Western History Research. *Wind Cave National Park Land Study*. Volume II, n.d. Compiled Data. MS on file at the Library Collection, Wind Cave National Park.

Wirth, Conrad L. "The Mission Called 66." In *National Geographic* 130, No. 1 (July, 1966).

Wirth, Conrad L. *Parks, Politics, and the People*. Norman: University of Oklahoma Press, 1980.

Wrenn, Tony P. "Preservation, Conservation, and the National Registry." In *Historic Preservation* 18, No. 4 (1966): 164-169.

GOVERNMENT DOCUMENTS

Ames, David L. and Linda Flint McClelland. "National Register Bulletin: Historic Residential Suburbs, 2002." Washington, DC: Department of the Interior, 2002.

Baker, Howard W. "Report to the Deputy Chief Architect on Development of Proposed Badlands National Monument, November 13 and 14, 1935." San Francisco, CA: Office of Deputy Chief Architect, Branch of Plans and Design Western Division, December 30, 1935.

Cammerer, G.B. to Senator Norbeck. December 21, 1935, [Readjustment of low-grade land in Agricultural Demonstration Projects LA-SD-1] Badlands National Park Archives.

Case, Francis. "Items Around the Senate for Special Interest to the People of South Dakota." Reports from Washington, DC, March 29, 1954.

Conally, Ernest Allen. Associate Director to Honorable George McGovern, United States Senate, December 4, 1972.

Federal Emergency Administration Land Program Correspondence,1935: Certificate of Recommendation for Land Acquisition and Sub-marginal Status of Land and Documents pertaining to the Proposed Greater Extension of the Badlands National Monument, 1936.

Haberman, Thomas W., Therese Chevance, and Patricia Malone. "Cultural Resource Investigations Along the Proposed Route of Highway 44 between Scenic and Interior, Pennington Co., S.D. Vol. 1, Reach 1 Sites." Rapid City, SD: State Archeological Resource Center for South Dakota Department of Transportation, Contract Investigations, Series 119, 1984.

Johnson, Ann J. "The Johnny Site, 39JK4, Badlands National Park." 1989. MS on File, Badlands National Park.

————. "An Initial Middle Missouri Campsite in Badlands National Park." *South Dakota Archeology* 13 (1989), line 1-28.

————. "The Fog Creek Archeological Sites, Badlands National Park." 1994. On file at Badlands National Park.

Jones, Bruce A. "1993 Archeological Inventory and Evaluation Along Loop Road Segment 10-2." Badlands National Park, South Dakota. MS on file, Badlands National Park.

————. "1996 Archeological Inventory and Evaluation along the Loop Road." Badlands National Park, South Dakota, Technical Report No. 39, Lincoln, NE: Midwest Archeological Center, 1993.

————. "2002 Archeological Investigations on the Cedar Pass Slide." Lincoln, NE: Midwest Archeological Center, Technical Report No. 75, 2002.

Karsmizki, Ken. Draft "National Register Nomination Multiple Property Documentation Historic Roads Resources." Bozeman, MT: Western History Research, 1993.

Kirk Associates. "Cedar Pass Developed Area Value Draft Report. Gross Pointe Park, MI, and Bahr Vermeer Haecker Architects. Badlands National Park, South Dakota." Lincoln, NE: National Park Service, May 2004.

Knowles, Louis. Report in *Excerpts from Norbeck Collection of Papers, 1919* [Miscellaneous Papers, Badlands National Park, Library].

Kuehn, David. *Preliminary Geoarcheological Reconnaissance in Badlands National Park, South Dakota.* Lincoln, NE: Midwest Archeological Center, Technical Report No. 88, 2003.

Loh, Jim Von, et al. USGS-NPS Vegetation Mapping Program, Technical Memorandum No. 8260-00-02, Badlands National Park. Interior, SD: National Park Service, November 1999.

Maier, Herbert. "Re: Badlands National Monument Extension," Regional Director to Land Program Division. NPS, Washington, D.C., April 2, 1935. [Miscellaneous Papers, Badlands National Park, Library].

Memorandum: Acting Chief, Midwest Archeological Center to Director, Midwest Region, August 27,1970. "Re: Archeological Site 39JK2," Badlands National Monument, [MS on file Badlands Cultural Resource files, Badlands National Park].

Memorandum: Superintendent, Badlands National Park to Acting Manager, Midwest Archeological Center, July 21, 1999. "Re: Archeological Inventory of Two Proposed Construction Locations," Badlands National Park, South Dakota.

Memorandum: Secretary of the Interior to Park Service Director, Badlands National Monument, July 3, 1938.

Memorandum: Superintendent, Badlands National Monument to Regional Director, Region Two, March 22, 1955 [Ten-Year Program for Acquiring Private Land] Mission 66 file, NAR].

Memorandum: NPS Director Thomas J. Allen, Jr., to All Park Superintendents, September 11, 1939.

Millard, B.H. to Senator P. Norbeck. January 30, 1936 [Boundary Description of the Monument].

National Park Service. "Annual Report on Information and Interpretative Services, 1955-1970, Badlands National Monument."

————. "Annual Report on Information and Interpretive Services, January 1959, Badlands National Monument."

————. "Environmental Assessment: Site Development for new Fire Cache, Resource Management Storage Building, and Museum Storage Building at Cedar Pass Developed Area, Badlands National Park." 2002.

————. "General Management Plan/Environmental Impact Statement, Badlands National Park, South Dakota." February 2003.

————.Land and Recreation Planning Division Report, December 5, 1952, [Miscellaneous Papers, Badlands National Park, Library].

————. "Mission 66 Prospectus, Badlands National Monument." 1956. Badlands National Park Library.

————. PMIS System # 52569, Fill-in and Rehabilitate Old Lagoon Site, September 1999.

————. "Recommendations for Boundary Adjustments, Badlands National Monument, Region Two, Omaha Nebraska." Report Prepared by Land and Recreation Planning Division in Selected Documents Pertaining to Badlands National Monument, 1929-1949. Badlands National Park Library.

————. "A Report on Visitor Centers." National Park Service History Collection, Harpers Ferry Center. Washington, DC: Department of the Interior, ca. January 1960.

"Norbeck Collection of Papers," Badlands National Park Library, [F656.N6N111 No. 1].

Reynolds, James T. to SHPO Dr. Junius Fishburne, South Dakota State Historical Society, July 1, 1993. [Johnny Site (39JK4) DOE], Cultural Resource Files, Badlands National Park.

Sheire, James W. "The Badlands Historical Basic Data Base Study," Washington, DC: Division of History, Office of Archeology and Historic Preservation, November 1969, NPS.

South Dakota State Historic Preservation Office. "Site 39JK4 Determination of Eligibility." June 12, 1993.

Superintendent's Reports, Badlands National Monument—excerpts from 1940 to 1962.

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].

Taylor, Dee C. "Salvage Archeology in Badlands National Monument, South Dakota." Missoula, MT: Department of Sociology and Anthropology, Montana State University, 1961.

"What is Mission 66," in Badlands National Park Mission 66 folder, National Archives-Central Plains Region, Kansas City, MO.

Untitled document dated July 31, 1957, received at Mount Rushmore and available in Badlands National Park Library, miscellaneous documents.

Zeman, Amanda. "National Register of Historic Places Multiple Property Determination of Eligibility, Grand Canyon National Park Post-War Development, 1945-1956; Mission 66 Planning and Development at Grand Canyon National Park, 1956-1966; Parkscape U.S.A./Concessionnaire Development at Grand Canyon National Park."

MAPS, PLANS, AND DRAWINGS

US Department of the Interior. National Park Service. *Concession Building*. 3 Sheets. n.d. (Denver Service Center #BADL - 137 - 2047).

1936

US Department of the Interior. National Park Service. *Land ACQ & Ownership*. 7 Sheets. 1/01/1936. (Denver Service Center #BADL - 137 - 5354).

1938

US Department of the Interior. National Park Service. *Master Plan, 3rd Complete Edition, Title Page*. 7 Sheets. 1938. (NM-BL 3002-B).

————————. National Park Service. *Preliminary Study for General Development, Proposed Headquarters, Part of the Master Plan for Badlands National Monument.* 2 Sheets. 1938. (NM-BL 2500, 2500-A).

————————. National Park Service. *Cedar Pass Lodge Area, Part of the Master Plan for Badlands National Monument*. 1 Sheet. 1938. (NM-BL 3004-A).

1940

US Department of the Interior. National Park Service. *Water System*. 3 Sheets. 8/01/1940. (Denver Service Center #BADL - 137 - 5329).

1941

US Department of the Interior. National Park Service. *Land Status Map, Part of the Master Plan, Badlands National Monument.* 2 Sheets. 1941. (NM-BL 2036, 2036-B).

————————. National Park Service. *Custodians Residence*. 3 Sheets. 1/16/1941-6/14/1946. (NM-BL 2023-C).

1942

US Department of the Interior. National Park Service. *Master Plan, Badlands National Monument*. 6 Sheets. 1942. (NM-BL 2034- A).

1949

US Department of the Interior. National Park Service. *Cedar Pass Area Topography*. 12 Sheets. 3/01/1949. (Denver Service Center #BADL - 137 - 5324).

1950

US Department of the Interior. National Park Service. *Master Plan, for Badlands National Monument*. 5 Sheets. 1950. (NM-BL 3105).

————————. National Park Service. *Cedar Pass Area, Part of the Master Plan for Badlands National Monument.* 1 Sheet. 3/13/1950. (NM-BL 2029-B).

1951

US Department of the Interior. National Park Service. *Utility Layout, Cedar Pass Area, Part of the Master plan for Badlands National Monument*. 1 Sheet. 2/01/1951. (NM-BL-5334).

————————. National Park Service. *Utility Layout Pinnacles Checking Station, Part of the Master Plan for Badlands National Park.* 1 Sheet. 7/13/1951. (NM-BL 5337-B).

1952

US Department of the Interior. National Park Service. *Service Road, Administration Area - Cedar Pass.* 7 Sheets. May 1952. (NM-BL 5336-B).

1953

US Department of the Interior. National Park Service. *Landscape Plan Bldg. 12, 27, 28*. 1 Sheet. 12/01/1953. (Denver Service Center #BADL - 137 - 2114).

————————. National Park Service. *Utility Area Topography*. 4 Sheets. 2/01/1953. (Denver Service Center #BADL - 137 - 2105).

1955

US Department of the Interior. National Park Service. *Parking and Road Alignment – Cedar Pass*. 1 Sheet. 3/01/1955. (Denver Service Center #BADL - 137 - 3104).

1956

US Department of the Interior. National Park Service. *Cedar Pass Development*. 1 Sheet. 7/20/1956 (NM-BL 2029 – G).

1957

US Department of the Interior. National Park Service. *Base Map, Part of the Master Plan for Badlands National Monument.* 1 Sheet. June 1957. (NM-BL 5302-C).

————————. National Park Service. *General Development, Part of the Master Plan for Badlands National Monument*. 1 Sheet. 1/18/1957. (NM-BL 2034-E).

————————. National Park Service. *Historic & Archeological Base Map*. 1 Sheet. 10/01/1957. (Denver Service Center #BADL - 137 - 3134).

————————. National Park Service. *Interpretation*. 1 Sheet. October 1957. (NM-BL 3133).

————————. National Park Service. *Minor Developed Areas, Part of the Master Plan for Badlands National Monument.* 1 Sheet. March 1957. (NM-BL 3122-A)

————————. National Park Service. *Physical Improvements, Mission 66, Part of the Master Plan for Badlands National Monument*. 1 Sheet. June 1957. (NM- BL 3117).

1958

US Department of the Interior. National Park Service. *Driveways and Parking Area, Headquarters Badlands National Monument*. 1 Sheet. December 1958. (NM-BL 3147).

————————. National Park Service. *Index*. 1 Sheet. January 1958. (NM-BL 3106).

————————. National Park Service. *Sage Creek Region*. 1 Sheet. 11/17/1958. (NM-BL 3146).

————————. National Park Service. *Utility Buildings, Cedar Pass*. 11 Sheets. 5/15/1958. (NM-BL 3119-C).

1958

US Department of the Interior. National Park Service. *Houses 30-33 & Apartments 51 & 52*. 2 Sheets. 5/01/1958. (Denver Service Center #BADL - 137 - 3128).

————————. National Park Service. *Visitor Center Location*. 1 Sheet. 3/01/1958. (Denver Service Center #BADL - 137 - 3135).

1959

US Department of the Interior. National Park Service. *Picnic Tables*. 1 Sheet. 11/23/1959. (WODC-STD 1063-A).

————————. National Park Service. *Planting Plan*. 6 Sheets. 1/23/1959. (NM-BL 3148-A).

————————. National Park Service. *Roads and Trails*. 2 Sheets. 1/13/1959. (NM- BL 2045-B).

————————. National Park Service. *Sage Creek Basin Development*. 1 Sheet. 4/20/1959. (NM-BL 3144).

1960

US Department of the Interior. National Park Service. *4 Unit Seasonal Apt. Building*. 2 Sheets. 8/01/1960. (Denver Service Center #BADL - 137 - 3204).

1962

US Department of the Interior. National Park Service. *Cedar Pass Area Topography*. 17 Sheets. 7/01/1963. (Denver Service Center #BADL - 137 - 3230).

————————. National Park Service. *Cedar Pass Campground and Utilities, Part of the Master Plan*. 1 Sheet. 1962. (NM-BL 3216-A).

————————. National Park Service. *Cedar Pass Development*. 1 Sheet. 9/01/1962. (Denver Service Center #BADL - 137 - 2029).

————————. National Park Service. *Picnic Table Shelter*. 1 Sheet. 5/01/1962. (Denver Service Center #BADL - 137 - 3142).

1963

US Department of the Interior. National Park Service. *Comfort Stations*. 5 Sheets. 5/27/63. (NM-BL 3217).

————————. National Park Service. *Cedar Pass Campground & Utilities*. 1 Sheet. 7/01/1963. (Denver Service Center #BADL - 137 - 3216).

————————. National Park Service. *General Utilities, Part of the Master Plan, Badlands National Monument.* 1 Sheet. 3/15/1963. (NM-BL 3220-B).

————————. National Park Service. *Pinnacles Entrance with Utilities*. 1 Sheet. 5/3/1963. (NM-BL 3224).

1964

US Department of the Interior. National Park Service. *Roads and Parking, Cedar Pass Campground*, 7 sheets. 2/19/1964. (NM-BL 3223-B).

1965

US Department of the Interior. National Park Service. *Campground Signs*. 1 Sheet 4/5/1965. (NM-BL 3241).

1966

US Department of the Interior. National Park Service. *Cedar Pass Pinnacles*. 10 Sheets. 11/01/1966. (Denver Service Center #BADL - 137 - 41900).

————————. National Park Service. *Ranger Station Site Development*. 1 Sheet. 6/01/1966. (Denver Service Center #BADL - 137 - 3210).

1969

US Department of the Interior. National Park Service. *Visitor Center*. 1 Sheet. 6/01/1969. (Denver Service Center #BADL - 137 - 3118).

————————. National Park Service. *Cedar Pass*. 2 Sheets. 2/16/1969 (NM-BL 3243).

————————. National Park Service. *Cedar Pass Developed Area Plan*. 2 Sheets. 6/19/69. (NM-BL 3243-A).

1973

US Department of the Interior. National Park Service. *Landownership*. 1 Sheet. 2/1/1973. (Denver Service Center #BADL - 137 - 20005).

1974

US Department of the Interior. National Park Service. *Cedar Pass Topography*. 2 Sheets. 10/01/1974. (Denver Service Center #BADL - 137 - 41013).

1975

US Department of the Interior. National Park Service. *Alternative B – Cedar Pass*. 1 Sheet. 7/01/1975. (Denver Service Center #BADL - 137 - 40005).

————————. National Park Service. *Archeological Resources Cedar Pass*. 1 Sheet. 7/01/1975. (Denver Service Center #BADL - 137 - 40002).

1976

US Department of the Interior. National Park Service. *Regional Map*. 1 Sheet. 7/01/1976. (Denver Service Center #BADL - 137 - 80015).

1977

US Department of the Interior. National Park Service. *Location Map*. 1 Sheet. April 1977. (NM-BL 137 40,000-A).

1978

US Department of the Interior. National Park Service. *Site Analysis Visitor Center*. 1 Sheet. 6/01/1978. (Denver Service Center #BADL - 137 - 40010).

1984

US Department of the Interior. National Park Service. *Trail Lighting – Cedar Pass*. 3 Sheets. 7/01/1984. (Denver Service Center #BADL - 137 - 80040).

1985

US Department of the Interior. National Park Service. *Residence – Cedar Pass*. 2 Sheets. 5/01/1985. (Denver Service Center #BADL - 137 - 80045).

1987
Landmark Mapping Limited. Lakewood CO. Topographic Survey. Badlands National Park. 2 Sheets. 6/12/1987. (137-80062).

1992
US Department of the Interior. National Park Service. *Cedar Pass Lodge Rehabilitation*. 38 Sheets. 11/16/1992. (Denver Service Center #BADL - 137 - 41021).

1995
US Department of the Interior. National Park Service. *Cedar Pass Water Utility*. 4 Sheets. 5/01/1995. (Denver Service Center #BADL - 137 - 80081).

PHOTOGRAPHS

Badlands National Park Natural Resources Library:

1908
US Department of the Interior. National Park Service. *Park Road*. 1908. (CAT BADL - 4611 b).

1909/10
US Department of the Interior. National Park Service. *Nearby Towns*. 1909/10. (CAT BADL - 3471 c).

1912
US Department of the Interior. National Park Service. *Cedar Pass District*. 1912. (CAT BADL - 4732 b).

1917
US Department of the Interior. National Park Service. *Cedar Pass District*. 1917. (CAT BADL - 4739 b).

1929
US Department of the Interior. National Park Service. *Concession Buildings*. 1929. (CAT BADL - 3480 b).

1931
US Department of the Interior. National Park Service. *Park Road*. 1931. (CAT BADL - 2990).

————————. National Park Service. *Park Road*. 1931. (CAT BADL - 2989).

1935
US Department of the Interior. National Park. *Surrounding Ranches*. (CAT BADL - 3484 b).

————————. National Park Service. *Concession Buildings*. 1935. CAT BADL - 2643 b).

1938
US Department of the Interior. National Park. *Maintenance Buildings*. (CAT BADL - 2710 b).

1939
US Department of the Interior. National Park Service. *Park Road*. 1939. (CAT BADL - 3093 b).

————————. National Park Service. *Concession Buildings*. 1939. (CAT BADL - 2635 b).

1940
US Department of the Interior. National Park Service. *Concession Buildings*. (CAT BADL - 2645 b).

————————. National Park Service. *Concession Buildings*. 1940. (CAT BADL - 2646 b).

————————. National Park Service. *Parking Areas & Overlooks*. 1940. (CAT BADL - 2822 b).

1950
US Department of the Interior. National Park Service. Park Road. 1950. (CAT BADL - 3097 b).

————————. National Park Service. *Residences*. 1950. (CAT BADL - 2910 b).

————————. National Park Service. *Visitor Center and Administrative Buildings*. Ca.1950 (CAT BADL - 4135 b).

————————. National Park Service. *Residences*. ca.1950. (CAT BADL - 2911 b).

1951
US Department of the Interior. National Park Service. *Park Road*. 1951. (CAT BADL - 3100 b).

1954
US Department of the Interior. National Park Service. *Park Road*. 1954. (CAT BADL - 3108 b).

1956
United States Department of the Interior. National Park Service. *Cedar Pass District*. (CAT BADL - 3490 b).

————————. National Park Service. *Cedar Pass District*. (CAT BADL - 4406 b).

————————. National Park Service. *Park Road*. 1956. (CAT BADL - 2916 b).

————————. National Park Service. *Park Road*. 1956. (CAT BADL - 3134 b).

————————. National Park Service. *Park Road*. 1956. (CAT BADL - 3136 b).

————————. National Park Service. *Residences*. 1956. (CAT BADL - 2914 b).

1957

US Department of the Interior. National Park Service. *Visitor Center and Administrative Buildings*. 1957. (CAT BADL - 2719).

————————. National Park Service. *Residences.* 1957. (CAT BADL - 2919 b).

————————. National Park Service. *Residences.* 1957. (CAT BADL - 2920 b).

1958

US Department of the Interior. National Park Service. *Amphitheatre Programs*. 1958. (CAT BADL - 2501 b).

————————. National Park Service. *Visitor Center & Administrative Buildings* . 1957. (CAT BADL - 4164 b).

1959

US Department of the Interior. National Park Service. *Residences.*1959. (CAT BADL - 2927 b).

————————. National Park Service. *Secondary Structures.* 1959. (CAT BADL - 2489c).

————————. National Park Service. *Secondary Structures.* 1959. (CAT BADL - 2490c).

————————. National Park Service. *Secondary Structures.* 1959. (CAT BADL - 2499c).

————————. National Park Service. *Residences.* 1959. (CAT BADL - 2928 b).

————————. National Park Service. *Residences.* 1959. (CAT BADL - 2934 b).

————————. National Park Service. *Residences.* 1959. (CAT BADL - 2935 b).

————————. National Park Service. *Visitor Center & Administrative Buildings*. 1959. (CAT BADL - 4170 b).

————————. National Park Service. *Visitor Center & Administrative Buildings*. 1959. (CAT BADL - 4173 b).

————. National Park Service. *Visitor Center & Administrative Buildings*. 1959. (CAT BADL - 4175 b).

1960

US Department of the Interior. National Park Service. *Residences.*1960. (CAT BADL - 2936 b).

————————. National Park Service. *Residences.*1960. (CAT BADL - 2937 b).

————————. National Park Service. *Residences.*1960. (CAT BADL - 2947 b).

————————. National Park Service. *Signs – Informational.*1960. (CAT BADL - 3229 b).

————————. National Park Service. *Signs – Informational.*1960. (CAT BADL - 3230 b).

————————. National Park Service. *Visitor Center & Administrative Buildings*. 1960. (CAT BADL - 4182b).

1961

US Department of the Interior. National Park Service. *Signs – Informational.*1961. (CAT BADL - 3240 b).

1962

US Department of the Interior. National Park Service. *Secondary Structures.*1962. (CAT BADL - 2481 b).

————————. National Park Service. *Trails*. 1962. (CAT BADL - 4039 b).

————————. National Park Service. *Trails*. 1962. (CAT BADL - 4042 b).

1964

US Department of the Interior. National Park Service. *Residences*. (CAT BADL - 2959 b).

————————. National Park Service. *Visitor Center & Administrative Buildings*. 1964. (CAT BADL - 4207 b).

1965

US Department of the Interior. National Park Service. *Concession Buildings*. (CAT BADL - 2629 b).

————————. National Park Service. *Park Road*. 1965. (CAT BADL -3186 b).

————————. National Park Service. *Park Road*. 1965. (CAT BADL -3187 b).

————————. National Park Service. *Park Road*. 1965. (CAT BADL -3194 b).

1968

US Department of the Interior. National Park Service. *Concession Buildings*. 1968. (CAT BADL - 2653 b).

———. National Park Service. *Concession Buildings*. 1968. (CAT BADL - 2600 b).

1969

US Department of the Interior. National Park Service. *Concession Buildings*. (CAT BADL - 2603 b).

ONLINE RESOURCES

American Indian Relief Council. *Reservation Profiles Pine Ridge Reservation*. http://www.airc.org/reservations/pineridge.html (accessed July 25, 2003).

Badlands National Park. http://www.nps.gov/badl/exp/home.htm (accessed August 5, 2003).

Badlands National Park, *Park Facts*. http://www.nps.gov/badl/pphtml/facts.html (accessed July 8, 2003).

Badlands National Park History. *Expansion of the National Park Service in the 1930s*. http://www.cr.nps.gov/history/online_books/unrau-williss/adhi3.htm (accessed August 5, 2003).

Badlands National Park History and Culture *Fossils*. http://www.nps.gov/badl/exp/humans.htm#fossilhunters

Badlands National Park History and Culture, *Human History*. http://www.nps.gov/badl/exp/humans.htm

Bureau of Land Management Montana State Office, Billings, MT. http://www.library.sos.state.il.us/library/isl/ref/glo/glolocguide.html

Genealogy of the Dakotas. http://www.time-passages.com/land-patent-research.html

Green Papers. *Official Name and Status History of the Various States*. http://www.thegreenpapers.com/slg/statehood.phtml (accessed August 5, 2003).

History of Henry Ford and his inventions. http://inventors.about.com/library/inventors/blford.htm (accessed August 2003).

Kansas State Land Survey. http://www.ksls.com/public/publicsurvey.htm (accessed August 5, 2003).

Oregon State University. *Canada Thistle*. http://mint.ippc.orst.edu/canthistle.htm (accessed July 8, 2003).

Oral history of the Badlands. http://www.soysite.com/newsletter/Sep99.html

Pine Ridge Reservation. *Demographics, Geography, and Reality*. http://www.pineridgerez.net/overview.php (accessed July 25, 2003).

Sherman's of Yaxley Newsletter. *A Family's Description of Homesteading*. http://www.soysite.com/newsletter/Sep99.html (accessed August 5, 2003).

South Dakota State Historical Society. http://www.sdhistory.org/ (accessed August 5, 2003).

South Dakota Department of Transportation. http://www.sddot.com/ (accessed August 5, 2003).

US Department of Transportation, Federal Highway Administration, "Building the Foundation." http://www.tfhrc.gov/pubrds/summer96/p96su2.htm



Appendix A

Appendix A
Building/Structure Number Index

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B-02	Cedar Pass Lodge	100	27657
B-03	Lodge Cottage	102	27745
B-04	Lodge Laundry Building	108	27688
B-05	Lodge Maintenance Building	109	27689
B-06	Cabin #1-1A-2-2A	110	27658
B-07	Cabin #3	111	27660
B-08	Cabin #4	112	27661
B-09	Cabin #5	113	27662
B-10	Cabin #6	114	27663
B-11	Cabin #7	115	27664
B-12	Cabin #8	116	27665
B-13	Cabin #9	117	27668
B-14	Cabin #10	118	27669
B-15	Cabin #11	119	27685
B-16	Cabin #12	120	27686
B-17	Cabin #14-15-16-16A	121	27687
B-18	Cabin #18	122	27735
B-19	Cabin #19	123	27736
B-20	Cabin #20	124	27738
B-21	Cabin #21	125	27740
B-22	Cabin #22	126	27741
B-23	Cabin #23	127	27742
B-24	Cabin #33	128	27743
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B-31	Collection Storage Building	173	27634
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B-39	Garage #31A	31A	40316
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B-42	Residence #33	33	27641

Appendix A
Building/Structure Number Index

CLR ID#	Building/Structure Name	Park ID	LCS ID #
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B-55	Maintenance Storage Building	150	27750
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Appendix B



Environmental Assessment

Cedar Pass Developed Area
Cultural Landscape

November 2004

National Park Service
U.S. Department of the Interior
Badlands National Park, South Dakota

ENVIRONMENTAL ASSESSMENT

CEDAR PASS DEVELOPED AREA
CULTURAL LANDSCAPE

November 2004

National Park Service
U.S. Department of the Interior

Badlands National Park
South Dakota

SUMMARY

The Cedar Pass Developed Area cultural landscape, located within Badlands National Park, is considered eligible for the National Register of Historic Places. This draft environmental assessment presents and analyzes three alternatives proposed in the Cedar Pass Developed Area Cultural Landscape Report for the management of the landscape over the next 15-20 years.

The majority of development within Badlands National Park associated with park administration, park operations, and visitor amenities is clustered in the Cedar Pass Developed Area. In 1995, Badlands National Park began planning for the rehabilitation of the Ben Reifel Visitor Center and the construction of several new buildings, all located within the Cedar Pass Developed Area. As a result of these planned improvements, the visitors center's determination of eligibility for the National Register of Historic Places, and the recognized need for future improvements within the Cedar Pass Developed Area, the National Park Service believed additional study was needed to guide future treatment and use of the area. A cultural landscape report was prepared to aid in decision making for the future management and use of the Cedar Pass Developed Area.

The Cultural Landscape Report proposes three options for future management and use of the Cedar Pass Developed Area. Alternative A, the no-action alternative, would result in the continuation of the current management strategies without management guidance specific to the cultural landscape. Alternatives B and C both include historic landscape management options for the Cedar Pass Developed Area designed to guide how the future needs of the park would be met. Cultural landscape concerns include cultural resources, vegetation, wildlife, special status species, paleontology, visitor experience and park operations.

Under alternative A, the no-action alternative, the Cedar Pass Developed Area would be managed as it currently is (in 2004), without management guidance related to the cultural landscape. The cultural landscape would be managed as a historic landscape, in compliance with the National Historic Preservation Act and Director's Order 28.To meet park needs, continuing development and alterations within the landscape would be expected. Though the district would be managed for historic resource values, a minimum application of available preservation knowledge and technology would be utilized. New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. It is not expected that historic preservation specialists would be used to complete work within the area. No policies, strategies, or implementation initiatives would be available to lend a comprehensive and sustained program of the historic landscape and building preservation as outlined in the cultural landscape report. Potential impacts under this alternative include minor to major adverse impacts to the cultural landscape; minor adverse and beneficial effects to archeological resources; minor to moderate adverse impacts and moderate benefits to native vegetation; minor to moderate adverse impacts to wildlife; minor to moderate adverse impacts to paleontological resources; minor to moderate adverse impacts and benefits to visitor experience; and minor adverse impacts and minor to moderate benefits to park operations.

Under alternative B, referred to as the preservation alternative, management guidance would be focused on preserving the Cedar Pass Developed Area cultural landscape. Historic resources would be protected and maintained with only minor changes to meet identified facility and

operational needs within the Cedar Pass Developed Area. Intrusive landscape features may be mitigated or removed after their useful lives. Open space and natural systems would be protected. New development would occur off site within the Pinnacles area, about 20 miles northwest of the Cedar Pass Developed Area. Potential impacts under this alternative include minor benefits to the cultural landscape; minor adverse impacts and minor benefits to archeological resources; minor to moderate adverse impacts and benefits to native vegetation; minor benefits and minor to possibly major adverse impacts to wildlife; minor to moderate adverse impacts and minor benefits to paleontological resources; minor to moderate adverse and beneficial impacts to visitor experience; and minor adverse impacts and benefits to park operations. Under this alternative, there is also the potential to adversely affect the black-tailed prairie dog (federal candidate species) and create minor to major adverse impacts to the swift fox (state threatened species) population.

Alterative C, referred to as the rehabilitation alternative, proposes adaptation of the historic landscape for limited new uses, while protecting, to the greatest extent possible, the significant historic fabric and landscape relationships. New development would be limited to critical park needs, would occur within defined and distinct areas (development sites), and would be compatible or nonintrusive with the historic landscape. Open space and natural systems would generally be protected though minor development that does not jeopardize the historic character of the landscape is possible. Some existing noncontributing structures that are compatible with the cultural landscape would be retained/used. Intrusive landscape features would be mitigated or removed. Potential impacts under this alternative include minor adverse impacts and minor to moderate benefits to the cultural landscape; minor adverse and beneficial effects to archeological resources; minor to moderate adverse impacts and benefits to native vegetation; minor to possibly major adverse impacts and minor benefits to wildlife; minor to moderate adverse impacts and minor benefits to paleontological resources; minor to moderate benefits to visitor experience; and minor to moderate benefits and adverse impacts to park operations.

Alternative C is presented as both the environmentally preferred and the preferred alternative.

Notes to Reviewers and Respondents:
This environmental assessment has been prepared as an appendix to the Cedar Pass Developed Area Cultural Landscape Report. It has been prepared in accordance with the National Environmental Policy Act and the National Historic Preservation Act to evaluate the impacts of the project on the human environment and provide an opportunity for the public to review and comment on the project. This environmental assessment serves as notification to the public of proposed actions and seeks the views of the public and all consulting parties on the effects on the environment. The public comment period for this document will remain open for 30 days. Comments should be received by January 30, 2005 and may be addressed to:

Superintendent William Supernaugh, Badlands National Park, P.O. Box 6, Interior, SD 57750
Comments may also be sent via email to william_supernaugh@nps.gov

Revisions post-dating the public review were made to this document. These revisions were made in response to internal NPS review comments (Appendix E) and comments received during the public comment period. Nearly all were editorial in nature; none were considered substantive,

with one exception. This exception is related to a comment concerning impacts to paleontological resources resulting from the possible future alignment of the Loop Road, which runs north/northwest of the Cedar Pass Developed Area. The comment addresses the serious impacts that could occur to paleontological resources if the road is routed away from the Cedar Pass Slide Area. This comment has been considered but beyond the scope of this document and will be shared with the team currently preparing the park's GMP/EIS.

A letter dated March 4, 2005, notes that based on the information provided in this environmental assessment, the South Dakota State Historic Preservation Officer has determined that the alternatives as described will have no adverse effect on historic properties (Appendix F).

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Chapter One

Purpose and Need

CHAPTER 1
PURPOSE AND NEED

This environmental assessment (EA) presents a range of alternatives for the future treatment and management of the Cedar Pass Developed Area cultural landscape, which is considered eligible for inclusion in the National Register of Historic Places (NRHP) (appendix A). The EA analyzes impacts to the environment of the no-action alternative (current management, alternative A), the preservation alternative (alternative B), and the rehabilitation alternative (alternative C). The alternative selected as a result of this analysis will be used to guide the future management of development and improvements at the Cedar Pass Developed Area in Badlands National Park (the park) in a manner that is compatible with cultural landscape values consistent with the cultural landscape.

The cultural landscape report (CLR) is programmatic in nature and provides only a management direction for the future provision of services, facilities, and operations within the Cedar Pass Developed Area. Likewise, this EA is programmatic and does not include analysis of specific development proposals. It is expected that proposed future actions would require additional site-specific analysis prior to implementation.

As defined in this EA, the Cedar Pass Developed Area includes approximately 290 acres along the southern park boundary in the northeastern portion of the park (figures 1-1, 1-2 located at the end of the chapter). This 290-acre area is consistent with the CLR study area for which this EA has been prepared. In addition, under alternative B (the preservation alternative), it is proposed that some unidentified services/facilities be sited at the Pinnacles area. This area is located about 20 miles to the northwest of the Cedar Pass Developed Area and currently includes several park functions/operations (figure 1-2).

The majority of the historic development associated with park administration, park operations, and visitor amenities are generally clustered in the Cedar Pass Developed Area. In 1995, the park began planning for the rehabilitation of the Ben Reifel Visitor Center and the construction of several new buildings, all located within the Cedar Pass Developed Area. As a result of these planned improvements, the determination of eligibility for the NRHP of the visitor center (in association with the National Park Service Mission 66 Program [NPS n.d.]), and the recognized need for future improvements within the Cedar Pass Developed Area, the National Park Service (NPS) believed additional study was needed to guide future treatment and use of the area. These additional efforts to guide management of the area are designed so a significant cultural landscape at Cedar Pass Developed Area would not be inadvertently compromised. The CLR has been prepared to aid in the decision making for the future management of the area.

A ***cultural landscape*** is defined as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (NPS 1994). Cultural landscapes can range from large tracts of land to small homesteads and

> reveal aspects of our country's origins and development through their form and features and the ways they were used. Cultural landscapes also reveal much about our evolving relationship with the natural world (NPS 1994).

The Cedar Pass Developed Area cultural landscape functions as the primary visitor contact and park administrative center for the park. The cultural landscape is considered rare among park units today in its association with and high degree of integrity related to the NPS Mission 66 Program (NPS n.d.).

The Mission 66 Program was designed to fund park projects from 1956-1966, the intent of which was to ensure that basic facilities were provided at all parks. The importance of visitor "enjoyment without impairment" and resource protection were emphasized. The Mission 66 Program was intended to replace inadequate facilities with improvements adequate for expected demands, and designed and located to reduce the public's impact on valuable and fragile park features (see chapter 3 of this document and John Milner Associates 2004:2-50 for further information on the Mission 66 Program).

For a property to be considered eligible for the NRHP, it must be at least 50 years of age and associated with one or more specified areas of significance. These include the property's associations with significant historic events and/or persons, the integrity of distinctive characteristics, and/or the likelihood of its yielding important prehistoric/historic information in the future. A property achieving significance within the past 50 years may also be considered eligible if it is of exceptional importance. The park must consider the effects of any proposed actions on NRHP-eligible resources and take actions to minimize those that would adversely affect them in accordance with NHPA (1966, as amended).

The period of significance of the Cedar Pass Developed Area cultural landscape is associated with several time periods. These include Early Tourism (1928-1938), Civilian Conservation Corps (CCC) Development and New Deal Master Planning (1938-1941), and the Mission 66 period (1956-1966). Despite the fact that Mission 66-era development is less than fifty years of age, it has been found to meet the NRHP eligibility requirements (criterion G) "as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota" (John Milner Associates 2004:4-5; appendix A).

A CLR functions as the NPS' primary guide for treatment and use of cultural landscapes.

> A CLR is generally intended to provide a synthetic and cohesive view of a site's historic and existing features through comprehensive documentation, analysis and evaluation. Using this knowledge as a basis for decision-making, a CLR often subsequently provides carefully considered cultural resource treatment recommendations (John Milner Associates 2004:1-4).

The Cedar Pass Developed Area cultural landscape is comprised of a variety of elements that contribute to its significance, including natural systems, spatial organization, land use, circulation, topography, vegetation, buildings and structures, small-scale features, views and

vistas, and archeological resources (John Milner Associates 2004; see chapter 3 of this document for more detail).

The CLR (John Milner Associates 2004) has defined ten character areas within the Cedar Pass Developed Area landscape based on similarities of land uses, historic resource character and types, and patterns of spatial organization. These areas include: visitor/administrative; residential; Cedar Pass Lodge; campground; maintenance; fire cache; wastewater lagoon; Badlands Loop Road and S.D. 377 Corridor; service road corridor; and open space (figure 1-3).

The CLR being analyzed in this EA has been prepared to document and record the history and current conditions of the Cedar Pass Developed Area (cultural landscape). Research and results derived from the CLR would be used to guide future development, improvements, and maintenance of the Cedar Pass Developed Area.

PURPOSE AND NEED FOR ACTION

The NPS is considering using the CLR recommendations as a long-range management plan for the Cedar Pass Developed Area cultural landscape. This EA analyzes the impacts of proposed alternatives (including no action, or current management).

Need

> *Need is a discussion of existing conditions that need to be changed, problems that need to be remedied, decisions that need to be made, and policies or mandates that need to be implemented (NPS 2004a: 16).*

The CLR is needed to provide general guidance for future management of the NRHP-eligible Cedar Pass Developed Area. It is anticipated that future development and improvements within the park will be necessary in order to provide a variety of park services and functions (for example, visitor services and facilities, park administration office space, or park operations). Many of these services and facilities would be appropriately located in the Cedar Pass Developed Area as this is the part of the park where administrative, maintenance, and other day-to-day functions are located.

No management plan currently exists for the Cedar Pass Developed Area. The cultural landscape is considered eligible for the NRHP as a result of its association with early tourism, CCC development, and the NPS Mission 66 initiative (appendix A). The Cedar Pass Developed Area is integral to the park's history and development. Therefore, coordinating future development at Cedar Pass Developed Area with guidance supplied in the CLR is essential in preventing unnecessary adverse impacts to the unique cultural landscape.

Purpose

> *Purpose is a statement of goals and objectives that the NPS intends to fulfill by taking action (NPS 2004a:16).*

The purpose of the CLR is to document and record the history and current conditions of the Cedar Pass Developed Area, and guide its future treatment and use (Milner 2004:1-1).

Objectives

> *Objectives are specific statement of purposes: i.e., they state what must be achieved for the plan to be successful (NPS 2004b: 15)*

The following objectives have been identified for the CLR:

- to adequately document the historical development of the Cedar Pass Developed Area cultural landscape
- to provide a baseline for the Cedar Pass Developed Area cultural landscape for future research and planning efforts
- to provide a predictable and useable guide for future management and use of the Cedar Pass Developed Area cultural landscape, while protecting and preserving its historic nature
- to manage for resource values while accommodating anticipated uses
- to streamline planning and compliance processes for proposed development within the Cedar Pass Developed Area
- to contribute tangible planning guidelines for the Cedar Pass Developed Area cultural landscape in other park planning efforts (for example, general management plans or resource management plans)
- to enhance visitor experience through the understanding of the history of the park's development

All action alternatives analyzed should meet the stated objectives of the CLR to be considered reasonable alternatives.

BACKGROUND

Badlands National Park is located in the southwestern corner of South Dakota, includes approximately 242,756 acres, and extends across portions of Shannon, Pennington, and Jackson Counties. The Cedar Pass Developed Area is located along the southern boundary in the northeast corner of the park, approximately two miles northeast of the town of Interior.

In 1929, Congress authorized the creation of Badlands National Monument while, at the same time, requiring that the state of South Dakota acquire certain lands and construct a scenic road for public access. By 1939, these conditions were met and the monument was established. In 1968, expanded monument boundaries were authorized through acquisition of lands of outstanding scenic and scientific character, capping the total acreage at 244,000. Under this provision, approximately 133,000 acres of tribal reservation (Oglala Sioux) lands were included

in the monument. In 1978, the monument was redesignated as Badlands National Park. The park is managed 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 paleontological 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 (NPS, in preparation: 8)

Cedar Pass Developed Area and Pinnacles Area Settings

The Cedar Pass Developed Area consists of approximately 290 acres containing the majority of services and facilities related to park functions (figure 1-3). These include the Ben Reifel Visitor Center, the park administration complex, Cedar Pass Lodge, a campground/amphitheater, park employee housing including apartments and single-family residences, maintenance facilities, and a portion of the Badlands Loop Road (John Milner Associates 2004:1-2). The Cedar Pass Developed Area is located approximately two miles northeast of the town of Interior and five miles southwest of the northeast entrance to the park.

Under alternative B, the Pinnacles area is proposed for additional development. This area is located approximately 20 miles northwest of the Cedar Pass Developed Area, along Loop Road (figure 1-2). It houses a ranger station for law enforcement staff, two entrance booths, a radio repeater tower, and several outbuildings associated with park operations.

PARK PLANS AND PROJECTS RELATED TO THE CEDAR PASS DEVELOPED AREA

The park and Cedar Pass Developed Area are currently managed under the master plan for the Cedar Pass Developed Area (NPS 1982) and the park General Management Plan (NPS 1985). Having been prepared approximately 20 years ago, they do not represent a comprehensive plan for managing the park (NPS, in preparation: iii). Consequently, the park is currently in the process of updating its general management plan and environmental impact statement, which is expected to be available to the public in 2005.

Projects recently completed or currently in progress within the Cedar Pass Developed Area include an addition to the Ben Reifel Visitor Center and construction of a new fire cache, resource management storage building, and museum storage building (NPS 2002). In addition, the former wastewater lagoons have recently been filled in and regraded to original topographic contours (Mills, pers. comm. 2004).

Future potential actions within the Cedar Pass Developed Area include additional modifications/additions to the visitor center; parking and circulation modifications; construction of new laundry, shower, housing, and multi-use facilities; construction of a hail shelter; addition of a group shelter and picnic areas for residential and visitor use; expansion of the amphitheater; installation of utilities; addition of pedestrian/bike path and trails; installation of a new propane refueling station; removal of Siberian elms and other modifications to landscape plantings; possible construction of a new approach road to the area should the Loop Road fail; and the removal, alteration, or addition of other unspecified facilities. The teams preparing both this CLR and the general management plan are in communication to ensure consistency between the documents.

IMPACT TOPICS

Impact topics are potential environmental problems or opportunities that might occur if an alternative is implemented. While no programmatic impacts from the CLR guidance are expected, these issues could potentially be affected by future development. The issues presented below were identified through conversations with NPS specialists from the park and the Midwest Regional Office, the South Dakota State Historic Preservation Officer (SHPO), and the public during two scoping meetings held in November of 2002 (see chapter 5 and appendix B for details about public scoping). Discussions regarding issues and concerns resulted in identifying specific impact topics—those resources that could be affected by the future implementation of an alternative. Impact topics include:

Cultural Resources

Archeological Resources—Future development activities hold the potential to disturb and damage prehistoric and historic archeological resources at both the Cedar Pass Developed Area and Pinnacles area. This is particularly true for subsurface resources encountered through grading, excavation, and other ground disturbing activities related to development. No comprehensive archeological resource inventories have been conducted for the 290-acre Cedar Pass Developed Area or the Pinnacles area and no known prehistoric archeological resources exist within either area. However, historic archeological resources associated with park development are known to exist at Cedar Pass Developed Area and it is likely that such resources could be affected during future development.

Cultural Landscapes (includes Historic Structures)—The Cedar Pass Developed Area cultural landscape is considered eligible for the NRHP (John Milner Associates 2004; appendix A). As all historic structures and buildings are located within the cultural landscape's boundaries, they are evaluated in this EA as a part of the Cedar Pass Developed Area cultural landscape. The strategy employed for managing future actions within the cultural landscape could result in incremental loss of or enhancement to the resource's integrity.

Vegetation

Vegetation within the Cedar Pass Developed Area is primarily a mixture of natural grasslands and landscaped areas associated with the cultural landscape. The Pinnacles area is characterized by grasslands. Vegetation within both of these areas may potentially be affected (removed, restored) by future development (for example, new construction or demolition).

Wildlife

Park shrublands and grasslands support a diverse wildlife population. Future development has the potential to impact wildlife and wildlife habitat as a result of disturbance and removal of habitat.

Special Status Species, Threatened and Endangered Species

The black-tailed prairie dog (federal candidate species), the black-footed ferret (federal and state endangered species), and the swift fox (state threatened species) are known to use or are indirectly related to the general Pinnacles entrance area, identified in alternative B as an area for future development. Future development impacts related to alternative B on those species are possible.

Paleontological Resources

General paleontological mapping has occurred throughout the park, though none is specific to the Cedar Pass Developed Area or Pinnacles area. It is known that fossil-rich bedrock (Scenic Member of the Brule Formation) underlies all of the Cedar Pass Developed Area with bedrock exposure ranging from ground surface to about one foot below the surface (Benton, pers. comm. 2004). Fossil-rich bedrock (Brule and Sharps formations) underlies the Pinnacles area as well. Future development (such as construction or demolition) could potentially impact subsurface paleontological resources in these areas.

Visitor Experience

One of the purposes for creating the park was “for the benefit and enjoyment of the people” (45 Stat. 1553). The manner in which future development occurs within the Cedar Pass Developed Area has the potential to affect preservation of scenic views and the cultural landscape in general, flexibility in provision of services and facilities, and the provision of additional interpretive materials, all of which could impact the visitor experience.

Park Operations

The manner in which future efforts to protect the cultural landscape are implemented could mean buildings required for administration or housing would be in a different location than the Cedar Pass Developed Area. The potential constraints on future

development, such as requiring that new buildings be compatible with the cultural landscape, could also affect cost, maintenance and repair, and logistics of park operations.

ISSUES CONSIDERED BUT DISMISSSED FROM FURTHER ANALYSIS

The National Environmental Policy Act (NEPA) requires that agencies consider several different possible issues to determine whether a detailed analysis of impact topics is required. The following is a discussion of impact topics the NPS considered initially, but did not analyze further, either because the topics were irrelevant to the alternatives, would have negligible impacts, or required no more detailed work to understand impacts than what is provided below.

Water Resources (water quality/quantity, wetlands, floodplains)—Two intermittent, unnamed streams crosscut the Cedar Pass Developed Area; neither is expected to be impacted by any alternative. Emergent wetland vegetation was noted in association with the former wastewater lagoons of the Cedar Pass Developed Area. This area has been filled and regraded to natural contours (Mills, pers. comm. 2004) and the vegetation no longer exists. No floodplain areas are expected to be affected by any of the proposed alternatives.

Prime and Unique Farmlands—No prime or unique farmlands exist within the Cedar Pass Developed Area. The area has historically been viewed as relatively poor for agricultural activities. No prime or unique farmlands are expected to be impacted by the any of the proposed alternatives.

Air Quality—Badlands National Park is a class I air quality area. While no impacts to air quality are expected from the adoption of the CLR, temporary effects of future construction and development within the study area could result in increased vehicle exhaust and emissions; however these would rapidly dissipate and are believed to have the potential to cause only a temporary, negligible degradation of local air quality.

Soundscapes—Temporary construction/development noise could result in dissonant, human-caused impacts to the soundscape of the park under some alternatives. However, such temporary activity would be restricted to the Cedar Pass Developed Area and Pinnacles area and is believed to have the potential to result in only negligible effects to the soundscape.

Rare/Unusual Vegetation—No impacts to rare/unusual vegetation is expected to result from the proposed alternatives.

Unique Ecosystems—No impacts to unique ecosystems are expected to result from the proposed alternatives.

Environmental Justice— All federal agencies are required to incorporate environmental justice into their missions by identifying/addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations (Executive Order 12898). Future implementation of any the proposed alternatives

would not include any actions that would lead to disproportionately high and adverse human health or environmental effects to minorities and low-income populations and communities.

Unique/Important Fish or Fish Habitat—No unique fish or fish habitat exist within the Cedar Pass Developed Area or Pinnacles area. Two unnamed, intermittent streams exist at the Cedar Pass Developed Areas, neither of which is believed to provide fish habitat.

Introduction/Promotion of Nonnative Species—Replacement and/or maintenance of nonnative vegetation species that are historically associated with the Cedar Pass Developed Area cultural landscape will occur with future development regardless of the alternative. However, the action alternatives call for the substitution of some nonnative species with native, possibly xeric plants. These actions would not have an impact on native plant communities because the plantings would occur in developed areas where native plants are far less abundant.

Energy Resources—No actions proposed would impact energy resources within the park.

Socioeconomics—The action alternatives would not be expected to result in more than negligible impacts to socioeconomics of the area when compared to the no-action alternative. The rehabilitation alternative (alternative C) may result in more security for concessionaire facilities.

Other Agency or Tribal Land Use—Existing and proposed lands uses within the park are in conformance with local land use plans. No conflict is expected with existing state or Tribal planning efforts. No other agency or tribal land uses would be affected by this proposal.

Urban Quality/Gateway Communities—No impacts to urban quality/gateway communities are expected as a result of this proposal.

Energy, Natural or Depletable Resource Requirements and Conservation Potential—None of the analyzed alternatives would result in the extraction of resources from Badlands National Park. Under all alternatives, conservation principles would be applied to ensure the park's natural resources are maintained.

Sacred Sites and Indian Trusts—No known sacred sites (Executive Order 13007) or Indian trust resources (ECM95-2) are involved in the plan or any of the proposed alternatives.

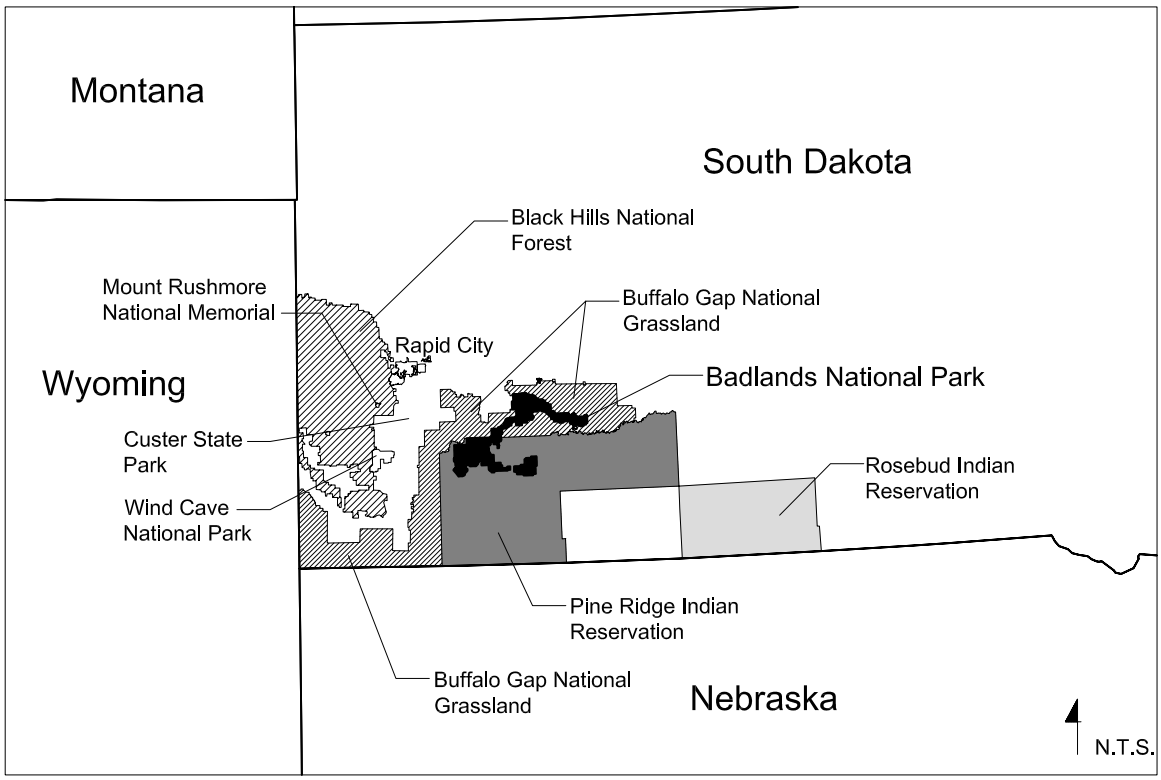


Figure 1-1: Badlands National Park Location Map

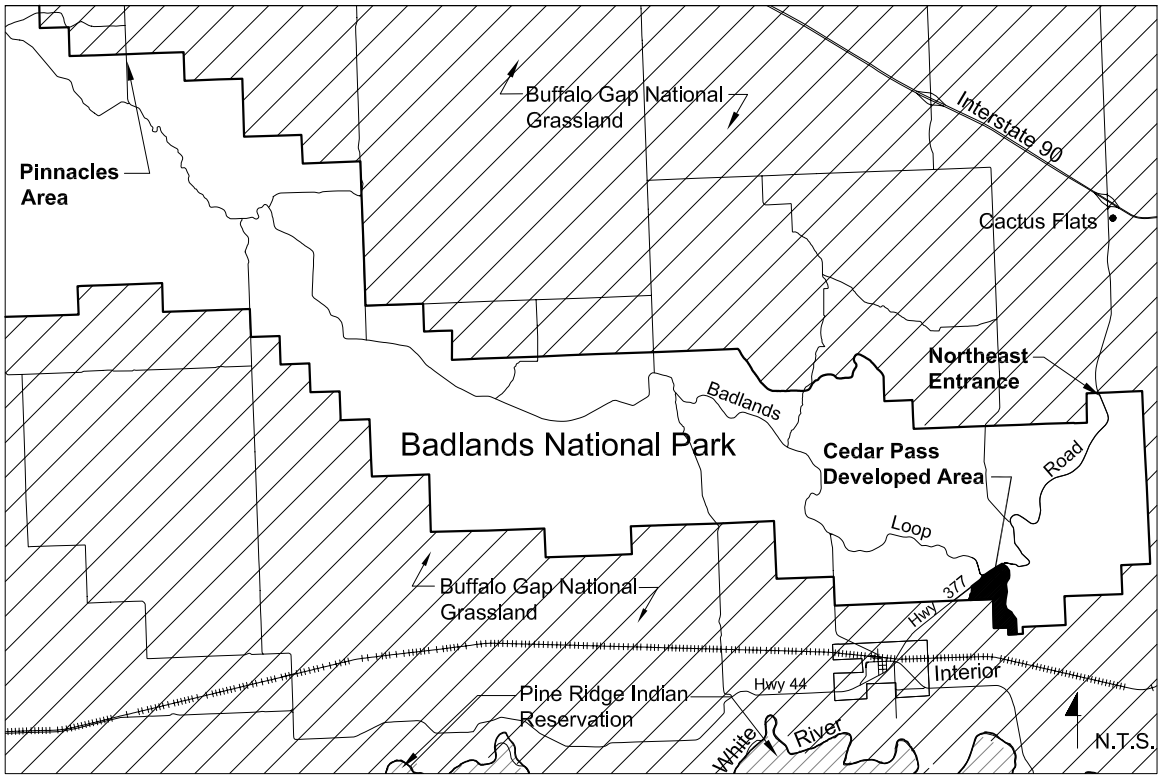
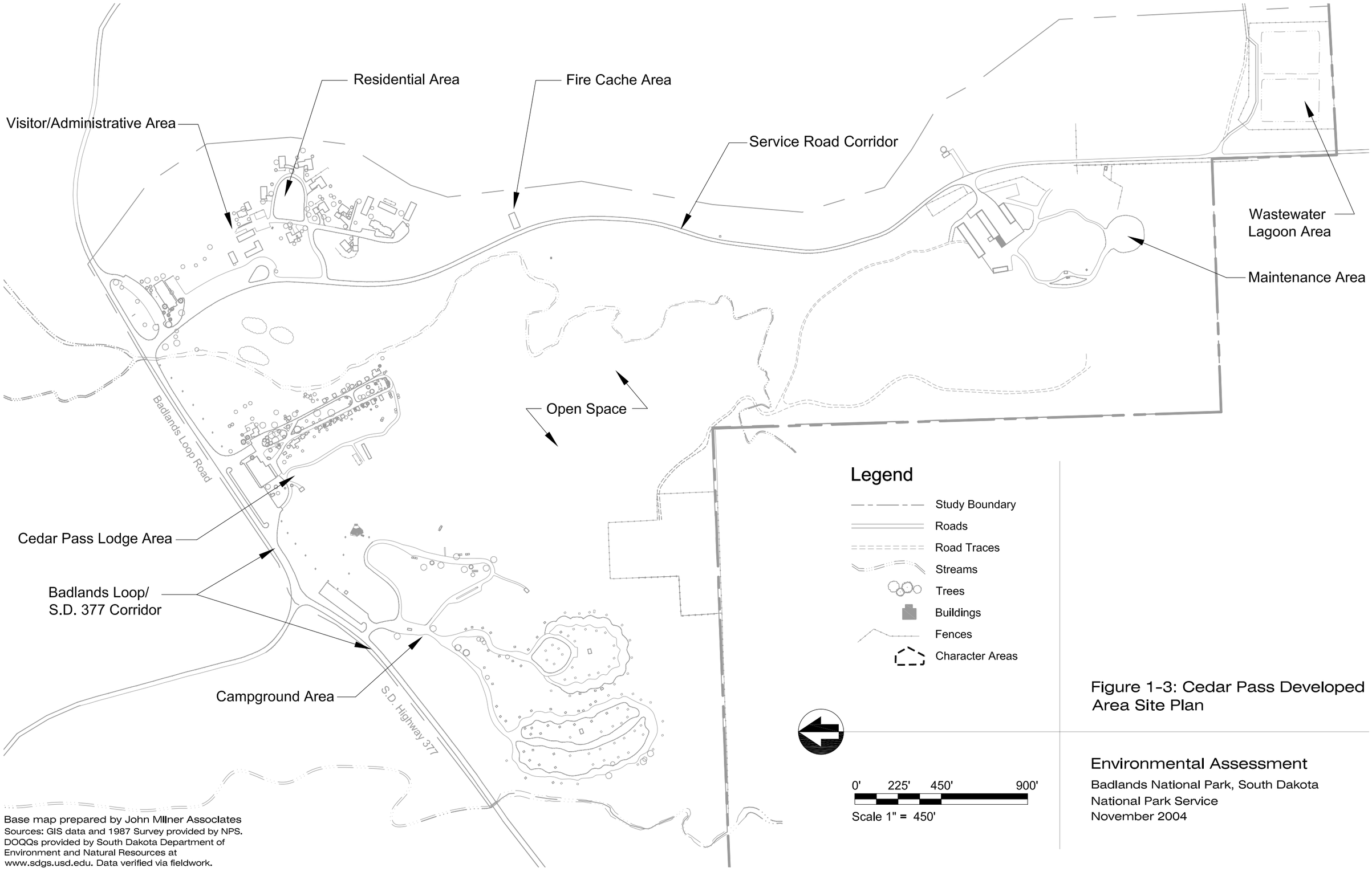


Figure 1-2: Badlands National Park, North Unit, with Cedar Pass Developed Area, Pinnacles Area and Northeast Entrance Indicated



Base map prepared by John Millner Associates
Sources: GIS data and 1987 Survey provided by NPS.
DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Figure 1-3: Cedar Pass Developed Area Site Plan

Environmental Assessment
Badlands National Park, South Dakota
National Park Service
November 2004



Chapter Two

Alternatives

CHAPTER 2
ALTERNATIVES

The Cedar Pass Developed Area is currently managed under the park's general management plan (NPS 1985) and the Master Plan and Development Concept Plan for Cedar Pass (NPS 1982). A draft of an updated general management plan for the park designed to revise these out-dated management documents is currently under review (NPS, in preparation).

With the recent rehabilitation of the NRHP-eligible Ben Reifel Visitor Center, the construction of several new buildings within the Cedar Pass Developed Area (study area), and the fact that the cultural landscape is considered eligible for the NRHP (appendix A), the park recognizes the need for additional study to guide future management of the area. As a result, the draft Cedar Pass Developed Area, Badlands National Park, Cultural Landscape Report (CLR) has been prepared (John Milner Associates 2004). The CLR documents the history and elements of the cultural landscape and proposes management alternatives to aid in decision-making for future use of the area in ways that do not degrade the landscape. The cultural landscape is considered eligible for the NRHP with a period of significance ranging from 1928-1966 (John Milner Associates 2004, chapter 4; appendix A).

Three alternatives are analyzed and compared in this EA—the no-action alternative and two action alternatives. The no-action alternative sets a baseline of existing conditions that will continue into the future against which to compare impacts of action alternatives (NPS 2004a:21). Its analysis is required under the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14(d)). The no-action alternative analyzed in this EA examines impacts of continuing with existing management of the Cedar Pass Developed Area cultural landscape without historic preservation guidance provided by the CLR.

The two action alternatives analyzed include the use of the historic preservation concepts provided in the CLR in managing and planning for future uses in the area. These include a "preservation" alternative (alternative B) and a "rehabilitation" alternative (alternative C).

The following alternative descriptions, summarized in table 2-1, are consistent with those presented in the CLR for which this EA has been prepared. Alternatives for treatment (action alternatives) of the cultural landscape presented herein should not be confused with the type and scope of those found in a general management plan. These treatment alternatives "should be viewed as conceptual 'overlay' alternatives that are compatible with and supportive of the general management plan" (John Milner Associates 2004:6-1). This means that while the alternatives provide direction for development, they do not analyze the effects of development itself. Each talks generally about development and its impacts but because of its programmatic nature, analysis is not intended to be used for site-specific development. Table 2-2 summarizes the environmental consequences of each alternative.

Under all alternatives, the Cedar Pass Developed Area cultural landscape is treated as an NRHP-eligible historic landscape for which compliance with Section 106 of the National Historic

Preservation Act is required. Section 106 requires all federal agencies to consider effects of their actions on cultural resources determined eligible for the NRHP (see the “Cultural Resources” section in chapter 4 for additional information on regulations).

Table 2-1: Alternatives Elements Summary

Element	Alternative A, No Action	Alternative B, Preservation	Alternative C, Rehabilitation
General Concept			
Management of Cedar Pass Developed Area cultural landscape	Current (2004) management strategy continues without the benefit and guidance of park and developed area-specific policies and strategies. Cultural landscape managed for historic resource values (historic landscape) with minimal application of historic preservation knowledge and technology.	NRHP-eligible cultural landscape managed through preservation approach, guided by the CLR. All contributing landscape features identified, retain, and preserved. Protection/preservation of historic landscape accomplished through use of moderate levels of preservation knowledge/technology. Historic functions of facilities and historic land use preserved within Cedar Pass Developed Area.	NRHP-eligible cultural landscape managed through rehabilitation approach, guided by the CLR. All contributing landscape features identified, retained, and preserved or rehabilitated. Preservation/ rehabilitation of historic landscape accomplished through use of high levels of preservation knowledge/ technology.
Location of Facilities and Services (park administration/ operations, visitor services).	Appropriate existing and future functions/facilities related to park administration/ operations and visitor services remain at Cedar Pass Developed Area.	Some future park administrative/ operations functions and visitor services may be relocated to Pinnacles area.	Same as alternative A

Element	Alternative A, No Action	Alternative B, Preservation	Alternative C, Rehabilitation
General Concept (continued)			
Future development and landscape modification	Absent a guidance document (CLR), development more likely to occur throughout the cultural landscape in a manner insensitive to the NRHP-eligible landscape. Future development needs would continue to be accommodated within the Cedar Pass Developed Area. Landscape modifications may not be compatible with Mission 66 design principles/concepts. In accord with Section 106 (NHPA), historic landscape features would be added, removed and altered, as needed.	No new development within the Cedar Pass Developed Area. Essential features of the Mission 66 design principles (overall spatial character derived from environmental setting, siting of buildings, circulation patterns, and vegetation patterns) would be preserved using staff/consultants with moderate levels of historic preservation expertise. Intrusive resources would be mitigated or removed after their useful life; no new roads allowed. Future park needs met by development off site (Pinnacles area).	New development at the Cedar Pass Developed Area limited to critical space needs allowed in identified development sites. Landscape alterations necessary to ensure the cultural landscape's continued use allowed as long as they maintain historic character. Future development undertaken by staff/consultants with high levels of historic preservation expertise. The site's overall spatial character derived from the environmental setting, siting of buildings, circulation patterns, and vegetation patterns would be maintained by preserving essential features and utilizing Mission 66 design principles in the placement of compatible new features. New, compatible development would be clearly differentiated from historic features.

Element	Alternative A, No Action	Alternative B, Preservation	Alternative C, Rehabilitation
General Concept (continued)			
Maintenance/repair of cultural landscape	Maintenance/repair continues in current manner. These activities are more likely to be undertaken by staff/contractors untrained in historic preservation techniques.	Maintenance/repairs undertaken by staff/contractors with moderate levels of historic preservation knowledge/methods. Deteriorated features/materials stabilized and protected; historic features and materials maintained and repairs performed when necessary; limited, in-kind replacement of severely deteriorated historic features vital to the site's historic character undertaken.	Maintenance/repairs undertaken by staff/contractors with high levels of historic preservation knowledge/ methods. Historic features and materials maintained and repairs performed when necessary. In-kind replacement or use of compatible material for replacement of deteriorated historic building/structures features.
Natural Resources	Absent CLR guidance, new development and landscape modifications within the Cedar Pass Developed Area are more likely to occur in open space areas where natural resources could be affected.	Under CLR guidance for preservation of the Cedar Pass Developed Area (no new development), open space areas and associated natural resources protected. Future off-site development poses greater risks to natural resources, including special status species, at the Pinnacles area.	Under CLR guidance, for rehabilitation of the Cedar Pass Developed Area, open space areas and associated natural resources generally protected.

Element	Alternative A, No Action	Alternative B, Preservation	Alternative C, Rehabilitation
General Concept (continued)			
Cultural Resources	Cedar Pass Developed Area cultural landscape managed as a historic resource. Absent CLR guidance regarding future management of the landscape, new development and landscape modifications are more likely to have the potential for adverse affects to the cultural landscape and archeological resources. Archeological resources would be protected/preserved to the greatest extent feasible. Protection for cultural resources derives primarily from Section 106 (NHPA) compliance.	Cedar Pass Developed Area cultural landscape managed as a historic resource. Under CLR guidance for preservation of the historic landscape (no new development), contributing historic and cultural landscape features would be identified, retained and preserved. Archeological resources would be protected/preserved to the greatest extent feasible. Future development at the Pinnacles area poses increased risks to cultural resources, particularly archeological resources.	Cedar Pass Developed Area cultural landscape managed as a historic resource. Under CLR guidance for rehabilitation of the historic landscape, contributing historic and cultural landscape features of the Cedar Pass Developed Area would be identified, retained, preserved, and/or rehabilitated. Archeological resources would be protected/preserved to the greatest extent feasible.

Table 2-2: Cedar Pass Developed Area Cultural Landscape Report, Environmental Consequences by Alternative

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
CULTURAL RESOURCES			
Cultural Landscapes			
Realignment of Loop Road	Unknown effects (lack of management plan, potentially adverse effects to cultural landscape, unknown until route selected)	Unknown effects (moderate levels of historic preservation expertise used in design; effects to be determined when route selected)	Unknown effects (high levels of historic preservation expertise used in design; effects to be determined when route selected).
Use/preservation of open space/natural systems	Negligible to major adverse impacts (effects to spatial organization and views; potential incremental loss of landscape integrity)	Minor benefit (preservation of open space areas and spatial organization/views)	Minor benefit (preservation of open space areas and spatial organization/views). Minor adverse impacts (minor development in open space areas [trails/paths])
New development, Cedar Pass Developed Area	Negligible to major adverse impacts (potential incremental loss of landscape integrity)	Minor benefit (no new development)	Negligible to minor adverse impacts (alteration of landscape features; integrity of cultural landscape remains intact)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
CULTURAL RESOURCES			
Cultural Landscapes (continued)			
Vegetation Management (for example, Siberian elm removal/replacement; maintenance/reestablishment of historic plantings)	Negligible effect	Negligible to minor benefit (maintenance of historic vegetation patterns)	Minor to moderate benefits (reestablishment of historic Mission 66 planting designs; maintenance of historic vegetation patterns)
Removal/mitigation of intrusive landscape features (such as structures)	N/A (none proposed)	Negligible to minor benefits (limited removal of incompatible landscape features)	Minor benefits (removal of incompatible landscape features)
Rehabilitation of existing cultural landscape features (building modifications/ rehabilitation)	N/A (no rehabilitation proposed)	N/A (no rehabilitation proposed)	Minor to moderate benefit (rehabilitation of cultural landscape features; use of high level of historic preservation expertise)
Archeological Resources			
Realignment of Loop Road	Minor adverse impacts (ground disturbance)	Same as alternative A	Same as alternative A

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
CULTURAL RESOURCES			
Archeological Resources (continued)			
Protection of archeological resources	Minor benefit (protection of resources);	Same as alternative A	Same as alternative A
Use/preservation of open space/natural systems	Minor adverse impacts (ground disturbance within open space areas)	Minor benefit (no ground disturbance in open space areas)	Negligible to minor benefits (general preservation of open space areas, minimal ground disturbance) Minor adverse impact (proposed minor development [trails/paths] in open space areas)
New development	Cedar Pass Developed Area: Minor adverse impacts (ground disturbance)	Cedar Pass Developed Area: Minor benefit (no new development/ground disturbance) Pinnacles area: Minor adverse impacts (ground disturbance)	Cedar Pass Developed Area: Minor adverse impact (ground disturbance)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
CULTURAL RESOURCES			
Archeological Resources (continued)			
Vegetation Management (Siberian elm removal/replacement; maintenance of historic plantings)	Negligible effects (no ground disturbance)	Negligible effects (minimal ground disturbance)	Negligible to minor adverse impacts (increased ground disturbance resulting from reestablishment of historic planting designs)
Removal/mitigation of intrusive landscape features (such as structures)	N/A (no removal/mitigation proposed)	Negligible to minor adverse impacts (ground disturbance)	Same as alternative B

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VEGETATION			
Loop Road realignment	Adverse impacts of unknown magnitude possible (loss of vegetation/ground disturbance)	Same as alternative A	Same as alternative A

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VEGETATION (continued)			
New development	Cedar Pass—within undeveloped areas: Moderate adverse impacts (permanent loss of vegetation within construction site) Minor adverse impacts (short-term effects to vegetation adjacent construction sites) Minor adverse, indirect impacts (potential spread of invasive species). Cedar Pass—within built up/developed areas: negligible effects from new construction; minor benefits from building removal (restoration of native vegetation)	Cedar Pass Developed Area: Moderate benefits (no new development proposed) Pinnacles area: Same impacts described under alternative A within the Cedar Pass Developed Area.	Cedar Pass Developed Area: same as alternative A (potential for less disturbance of undeveloped areas)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VEGETATION (continued)			
Open space/natural systems use/preservation	Moderate adverse impact (loss/fragmentation of native vegetation possible)	Moderate benefit (preservation of open space—no development)	Minor to moderate benefit (general preservation of open space) Minor adverse impact (loss of vegetation related to minor development)
Removal of intrusive landscape structures/features	N/A	Minor benefit (restoration of native vegetation)	Same as alternative B

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VEGETATION (continued)			
Vegetation Management, Cedar Pass Developed Area (reestablishment of historic plantings, tree planting)	N/A	N/A	Historic vegetation (reestablishment): Negligible to minor benefit (reestablishment of historic patterns in developed areas; restoration of native grasses in some developed areas) Tree planting: Negligible effects in developed areas (trampling); minor to moderate, site-specific adverse impacts in areas of native vegetation (trampling, decrease in native grass cover)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VEGETATION (continued)			
Removal of invasive Siberian elms	Lodge Area: Short-term--Minor adverse impact (herbicide use) Long-term--moderate benefit (promotion of healthy prairie ecosystem)	Lodge and open space areas: Same as alternative A (w/slight, but not notably, increased, benefits due to total removal of elms within Cedar Pass Developed Area)	Lodge and open space Areas: Same as alternative B

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
WILDLIFE			
Loop Road realignment	Minor adverse impacts (construction impacts)	Same as alternative A	Same as alternative A
Use/preservation of open space/natural systems	Minor adverse impacts (construction activity, habitat loss/fragmentation)	Minor benefit (open space preservation)	Negligible to minor benefit (general open space preservation) Negligible to minor adverse impacts (construction activity, habitat loss/fragmentation)
New development	Cedar Pass Developed Area: Minor adverse impact (construction activity; habitat loss/fragmentation)	Cedar Pass Developed Area: Minor benefit (no new development) Pinnacles area: Short-term--Minor adverse impacts (construction disturbances) Long-term--Minor to moderate adverse impacts (habitat loss/fragmentation)	Cedar Pass Developed Area: Negligible to minor adverse impacts (short term: increased human activity, noise, traffic)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
WILDLIFE (continued)			
Removal/mitigation of intrusive landscape features	N/A	Negligible to minor adverse impacts (short-term: construction activity/disturbances) Negligible effects (long-term: restoration of native vegetation)	Same as alternative B (with similar but slightly higher level of effort/potential effects)
Vegetation Management (removal of Siberian elms and associated vegetation restoration)	Moderate adverse impacts (human activity, habitat loss)	Moderate to possibly major adverse impacts (human activity, habitat loss, nature/size of replacement trees)	Same as alternative B

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
SPECIAL STATUS SPECIES—THREATENED AND ENDANGERED SPECIES			
Black-footed Ferret (federal and state endangered [under the Endangered Species Act, considered "threatened" on NPS lands])	Cedar Pass Developed Area: N/A, species not present Pinnacles area: N/A, no development proposed	Cedar Pass Developed Area: same as alternative A Pinnacles area: Federal impacts: may affect/not likely to adversely affect	Cedar Pass Developed Area: Same as alternative A Pinnacles area: Same as alternative A
Swift fox (state threatened)	Cedar Pass Developed Area: N/A, species not present Pinnacles area: N/A, no development proposed	Cedar Pass Developed Area: same as alternative A Pinnacles area: minor to major adverse impacts (construction activity, habitat loss/fragmentation, increased human activity)	Cedar Pass Developed Area: Same as alternative A Pinnacles area: same as alternative A

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
PALEONTOLOGY			
Loop Road realignment	< major adverse impacts (ground disturbance)	Same as alternative A	Same as alternative A
Use/preservation of open space/natural systems	Negligible to minor adverse impacts (ground disturbance)	Minor benefit (open space preservation, no alterations proposed; no ground disturbance)	Negligible to minor benefit (general preservation of open space areas) Negligible to minor adverse impacts (minor construction/ground disturbance)
New development	Cedar Pass Developed Area: Minor adverse impacts (ground disturbance)	Cedar Pass Developed Area: Negligible to minor benefits (no new development/ground disturbance) Pinnacles area: minor adverse impacts (ground disturbance	Cedar Pass Developed Area: Minor adverse impacts (ground disturbance)
Mitigation/removal of intrusive landscape features	N/A (none proposed)	Negligible to minor adverse impacts (minor ground disturbance)	Same as alternative B

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
PALEONTOLOGY			
Vegetation Management	Siberian elm removal: Negligible (no ground disturbance)	Siberian elm removal/ replacement; historic foundation plants maintained: Negligible to minor adverse impacts (ground disturbance)	Siberian elm removal/ replacement; foundation plants maintained: Same as alternative B Reestablishment of historic planting design: Negligible to minor adverse impacts (ground disturbance)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VISITOR EXPERIENCE			
Loop Road realignment	Unknown effects (realignment route unknown)	Same as alternative A	Same as alternative A
Preservation of scenic views	Minor to moderate adverse impacts (loss of views; potential development in space areas)	Minor benefit (preservation of open space areas; no development	Same as alternative B
Historic preservation treatment method for NRHP-eligible cultural landscape	Minor adverse impacts (no management plan for the cultural landscape; potential incremental loss of historic character)	Minor to moderate benefit (preservation of Mission 66 design, Park Service Modern architecture)	Minor to moderate benefit (preservation/ rehabilitation of Mission 66 design, Park Service Modern architecture)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
VISITOR EXPERIENCE (continued)			
Provision of future visitor services/facilities	Cedar Pass Developed Area: Minor to moderate benefits (flexibility to provide additional visitor services/facilities) Pinnacles area: N/A	Cedar Pass Developed Area: Minor to moderate adverse impacts (limited ability to provide for additional or improved visitor services/facilities) Pinnacles area: Unknown type/intensity (likely long-term and local to regional in scope)	Cedar Pass Developed Area: Minor to moderate benefit (flexibility to provide additional visitor services/facilities) Pinnacles area: N/A
Additional interpretive materials	N/A	N/A	Minor benefit (additional interpretive materials)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
PARK OPERATIONS			
Work within landscape to ensure accessibility, health and safety and energy efficiency	Negligible to minor benefit (staff efficiency; visitor/staff safety; energy/financial savings)	Same as alternative A	Same as alternative A
New development/improvements related to park operations	Long-term: Minor to moderate benefit (park operations remain concentrated at Cedar Pass Developed Area with flexibility to respond to future needs) Short-term (construction effects): Minor adverse impacts (disruption of park operations at Cedar Pass Developed Area)	Long-term: Unknown, possibly adverse impacts (possible disconnection of park operations related to off-site development at Pinnacles area) Short-term (construction effects): negligible to minor adverse impacts (disruptions of park operations at Pinnacles area)	Long-term: Minor to moderate benefit (park operations remain concentrated at the Cedar Pass Developed Area with flexibility to respond to future needs) Short-term (construction effects): minor adverse impact (disruptions of park operations at Cedar Pass Developed Area)
Use of historic preservation expertise in planning/ design/construction of modifications to the cultural landscape	Negligible to minor adverse impacts (minimal use of historic preservation expertise; possible slight increase in time/financial commitment)	Minor adverse impacts (use of moderate levels of historic preservation expertise; slightly increased financial/time commitments)	Minor to moderate adverse impact (use of high levels of historic preservation expertise; increased financial/time commitments)

ACTIVITY	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION (Preferred Alternative)
PARK OPERATIONS (continued)			
Routine maintenance/repair of historic landscape	Negligible to minor adverse impacts (limited training in historic preservation techniques)	Minor adverse impacts (use of workers with moderate levels of training in historic preservation techniques [could involve staff training]; increased time/financial commitments)	Minor adverse impact (use of workers with high levels of historic preservation techniques [could involve staff training]; increased time/financial commitments)
Retention/use of compatible landscape structures post-dating period of significance	N/A	Negligible to minor benefit (financial savings, existing park operations not disrupted)	Minor to moderate benefit (financial savings, park operations remain concentrated at Cedar Pass Developed Area, park operations not disrupted).
Vegetation management (historic vegetation, Cedar Pass Developed Area)	N/A (none proposed)	Negligible effects (maintenance)	Short-term: Minor adverse impact (research, reestablishment) Long-term: Minor benefit (reduced maintenance time)

ALTERNATIVE A—NO ACTION

The no-action alternative provides a baseline for evaluating changes and impacts of the two action alternatives. Though the district would be managed for historic resource values, a minimum application of available preservation knowledge and technology is expected under this alternative. The NPS would continue to manage and use the Cedar Pass Developed Area cultural landscape in the current (2004) manner, without the coherent and cohesive historic preservation guidance provided in the draft CLR (John Milner Associates 2004). Development and alteration would be evaluated as to its effect on the historic landscape under Section 106 of the NHPA.

Types of guidance that would be lacking as a result include detailed historical research yielding information regarding original design and construction of facilities, a high level of historical research regarding building exterior and interiors, evaluation of historic integrity, and conservation assessments. New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. Designers of new facilities, general contractors constructing them, and laborers/contractors involved in maintenance operations would not be required to have training, education, and/or experience in preservation technology. In sum, no park or developed area policies, strategies, and implementation initiatives would be available to lend a comprehensive and sustained program of guidance for preservation of the historic landscape and its buildings as outlined in the CLR (figure 2-1 located at end of chapter).

The no-action alternative includes the following overarching guidelines/actions:

- The plans for expanding the Ben Reifel Visitor Center would proceed.
- Park headquarters and other park operations would remain in the Cedar Pass Developed Area, with the construction of the fire cache, an additional park office building, and the museum storage facility completed as planned.
- Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
- The concession operations and campgrounds would remain at the Cedar Pass Developed Area in their current location and configuration.
- Development would continue in the area to accommodate future needs as they arise.
- Repairs to buildings would not attempt to preserve historic form or materials.
- As needed, buildings, structures and other landscape features would be altered, removed, or added. Effects of these actions would be evaluated through the Section 106 compliance process.
- Alterations to parking and road/circulation alignments would be used to address pedestrian/vehicle conflicts. Effects of these actions would be evaluated through the Section 106 compliance process. However, design of new circulation would not benefit from an understanding of historic development patterns and the sensitivity of historic resources.

- New buildings, structures, or landscape features may or may not be compatible with the Mission 66 site design principles or existing buildings, structures, and features. Effects of these actions would be evaluated through the Section 106 compliance process.
- The plans for a new laundry building, expanded amphitheater, and new shower facilities would continue to be developed. Effects of these actions would be evaluated through the Section 106 compliance process.
- Failure of the Loop Road at Cedar Pass (in the wall above the Cedar Pass Developed Area) would eventually result in changed traffic patterns. New traffic patterns may or may not attempt compatibility with Mission 66 principles of layout and design. Effects of these actions would be evaluated through the Section 106 compliance process.
- Archeological resources would be protected and preserved in place, if possible. Otherwise, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.

ALTERNATIVE B—PRESERVATION

Background

Preservation is one of four treatment alternatives (preservation, rehabilitation [see alternative C], restoration, reconstruction) defined by the Department of the Interior as a potential approach for managing historic landscapes.

> Preservation maintains the existing integrity and character of a cultural landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a cultural landscape by protecting its conditions. In light of the dynamic qualities of a landscape, maintenance is essential for the long-term preservation of individual features and integrity of the entire landscape. Stabilization involves re-establishing the stability of an unsafe, damaged, or deteriorated cultural landscape, while maintaining its existing character (NPS 1998, chapter 7.D).
>
> In preservation, the options for replacement are limited. The expressed goal of The Standards for Preservation and Guidelines for Preserving Cultural Landscapes is retention of the landscape's existing form, features and materials, provided that such actions will not result in a degraded landscape condition or threaten historic resources (NPS 1996:20).

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes addresses preservation further:

- A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

- The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
- Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken (NPS 1996:19).

Additionally:

- The design of new features and systems would be undertaken by designers with a moderate level of training, education, and/or experienced in preservation technology.
- The repair and maintenance of new features and systems would be undertaken by maintenance staff or contractors with a moderate level of training, education, and/or experienced in preservation technology.
- Construction involving the rehabilitation and renovation of existing facilities would be undertaken by general contractors and subcontractors with a moderate level of training, education, and/or experienced in preservation technology.

Alternative B (Preservation) Description

The general scope of alternative B is the protection and preservation of the surviving historic resources through the application of a moderate level of preservation knowledge and technology, while accommodating growth within other areas of the park. Its focus is on the historic features/elements of the cultural landscape at Cedar Pass Developed Area and their integrity based on the significance evaluation presented in the CLR (John Milner Associates 2004). Any modifications to the landscape would be directly related to the need to meet identified facility and operational needs. No new development is planned for the Cedar Pass Developed Area; new construction would take place off site, within the Pinnacles area (approximately 20 miles to the northwest of the Cedar Pass Developed Area). Historic resources at the Cedar Pass Developed

Area would be protected and maintained while intrusive resources could be mitigated or removed after their useful life. The proactive management of both cultural and natural resources integral to the landscape would be minimal. Existing roads, buildings and other landscape features would be repaired with the historic nature of the resource in mind. The preservation alternative includes the following (figure 1-2 shows the vicinity; figure 2-2 presents the proposed alternative B).

- The historic functions of facilities and historic land use would continue.
- All contributing historic and cultural landscape features of the Cedar Pass Developed Area would be identified, retained, and preserved.
- The site's overall spatial character derived from the environmental setting, the siting of buildings, the road and drive patterns, the pedestrian path and walks patterns, and vegetation patterns would be preserved.
- As a preliminary measure, deteriorated features and materials would be stabilized and protected.
- Historic features and materials would be maintained and repairs performed when necessary.
- Limited, in-kind replacement of severely deteriorated historic features, which are vital to the site's historic character, would be undertaken.
- Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
- Archeological resources would be protected and preserved in place to the greatest extent feasible. If disturbance were necessary, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.
- Natural systems and features (drainages, vegetation, Badlands formations, wildlife) would be protected but with limited efforts to enhance them.
- The open, undeveloped areas would remain undeveloped and in their natural state.
- New development would not occur within the Cedar Pass Developed Area and would instead be located outside the historic area in the Pinnacles area. Development planned at this time for the next 10-15 years would require approximately 5-10 acres and could include housing, administrative/operational support facilities, and associated utilities and parking. In general, development would be situated proximate to existing facilities at the Pinnacles area and away from the Loop Road.
- New roads would not be constructed within the Cedar Pass Developed Area. However, when the Loop Road is no longer viable due to natural erosional processes, some changes in circulation and access to the site may become unavoidable.
- Limited and minimal mitigation measures would be utilized to reduce or eliminate the intrusive nature of nonhistoric structures and features that intrude on historic character.

- Intrusive, nonhistoric structures and features would only be removed after their useful life.

ALTERNATIVE C—REHABILITATION (Preferred Alternative)

Background

The rehabilitation alternative is one of four treatment alternatives (preservation [see alternative B], rehabilitation, restoration, reconstruction) defined by the Department of the Interior as a potential approach for managing historic landscapes.

> Rehabilitation improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance (NPS 1998, chapter 7.D).
>
> In rehabilitation, the cultural landscape's character- defining features and materials are protected and maintained as they are in the treatment preservation; however, a determination is made prior to work that a greater amount of existing historic fabric has become damaged or deteriorate over time and, as a result, more repair and replacement will be required. The Standards for Rehabilitation and Guidelines for Rehabilitation allow the replacement of extensively deteriorated, damaged, or missing features using either traditional or substitute materials (NPS 1996:50).

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes addresses rehabilitation further:

- A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
- Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
- New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
- New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired (NPS 1996:49).

Additionally:

- The design of new features and systems would be undertaken by designers with a high level of training, education, and/or experienced in preservation technology.
- The repair and maintenance of new features and systems would be undertaken by maintenance staff or contractors with a high level of training, education, and/or experienced in preservation technology.
- Construction involving the rehabilitation and renovation of existing facilities would be undertaken by general contractors and subcontractors with a high level of training, education, and/or experienced in preservation technology.

Alternative C (Rehabilitation) Description

The rehabilitation alternative allows for the adapting of the historic landscape to limited new uses while protecting, to the greatest extent possible, its significant historic fabric and relationships. It promotes preservation treatment of the historic landscape while allowing adaptive uses, including news uses. The focus is on the enhancement of the surviving historic resources through the extensive application of a high level of preservation knowledge and technology for the design/construction of new features and repair/maintenance of existing features, while accommodating growth within the Cedar Pass Developed Area. This high level of historic preservation expertise could include detailed historical research regarding building exteriors/interiors, evaluation of historic integrity, and conservation assessments. New development would be limited to critical park needs, would occur within defined and distinct areas (development sites) as defined in the CLR, and would be compatible with, or nonintrusive to, the cultural landscape (figure 2-3). Where possible, new structures would be located where buildings had been removed. Any new major roads or circulation alterations would be associated with new development. Existing noncontributing structures compatible with the cultural landscape would be retained/used. The rehabilitation alternative includes the following (figure 2-3).

- All contributing features of the Cedar Pass Developed Area would be identified, retained, and preserved, to the greatest extent feasible.
- The site's overall spatial character derived from the siting of buildings, the road and drive patterns, the pedestrian path and walks patterns, and vegetation patterns would be maintained by preserving essential features and character and utilizing Mission 66 design principles in the placement of limited compatible new features.
- The historic foundation planting design around the visitor center would be reestablished using the original Mission 66 period planting plans. Problematic or inappropriate plants would be substituted with more suitable but similar plants, preferably plants with low water and maintenance requirements.
- Historic features and materials would be maintained and repairs performed when necessary. In-kind replacement or the use of compatible material for replacement of deteriorated historic building/structure features would be allowed.
- Changes to the cultural landscape that have acquired historic significance in their own right would be retained and maintained.
- Compatible landscape and site features (such as buildings, roads, or small-scale features) that post-date the period of significance would be retained and used.
- Missing historic features that were critical to historic character would be replaced if adequate historical, pictorial, and physical documentation exists so the feature can be accurately reproduced. A compatible new feature as a replacement would also be an option.
- Archeological resources would be protected and preserved in place to the greatest extent feasible. If disturbance were necessary, mitigation measures to minimize adverse impacts would be undertaken. Effects of these actions would be evaluated through the Section 106 compliance process.
- Natural systems and features (drainages, vegetation, Badlands formations, wildlife) would be protected and preserved.
- Alterations to a cultural landscape that are deemed necessary to assure its continued use would be allowed as long as these alterations do not destroy historic character such as spatial organization, land patterns, features and materials.
- The removal of landscape and site features (such buildings, roads, or small-scale features) that post-date the period of significance that have incompatible characteristics with the surviving historic features and detract from the overall historic character would be considered.
- Mitigation measures would be utilized to reduce the intrusive nature of nonhistoric buildings that are retained.
- Intrusive nonhistoric buildings would be removed after their useful life.
- New building developments would be limited to meet critical space needs and, when possible, would be sited in locations where buildings that have since been removed existed during period of significance.

- New or altered facilities would be as nonintrusive as possible while allowing for accessibility and safety and would not be permissible if historic character such as spatial organization, land patterns, features and materials would be destroyed.
- New design would need to be differentiated from existing historic resources. New additions and alterations would need to be a product of their time but compatible with the historic resources in materials, size, scale and proportion, and massing. A clear differentiation between historic and modern features would need to be maintained.
- Changes that create a false sense of history, such as features that are designed to appear historic, would not be allowed.
- Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
- Historic structures and features would be documented using appropriate and accepted procedures prior to changes.
- The failure of the Loop Road may require changes in circulation and access within the Cedar Pass Developed Area.

MITIGATION MEASURES

The implementation of mitigation measures can often minimize potential adverse impacts to natural and cultural resources from construction activities and park operations. The measures described below are crafted to be consistent with those provided in the draft General Management Plan and Environmental Impact Statement for Badlands National Park (NPS, in preparation) and apply to all alternatives.

Cultural Resources

The park will continue its compliance related to cultural resource protection under its *Cultural Resource Management Guideline* (Director's Order 28 [NPS 1998]), the *NPS Management Policies* (NPS 2001), and the 1995 Service-wide Programmatic Agreement with the Advisory Council on Historic Preservation (ACHP) and the National Conference of State Historic Preservation Officers (SHPO). These documents charge NPS managers with avoiding or minimizing, to the greatest degree practicable, adversely impacting park resources and values.

Cultural Landscapes (Including Historic Structures)

Future proposals affecting historic structures and the NRHP-eligible Cedar Pass Developed Area cultural landscape will be conducted in compliance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (NPS 1996) and *Cultural Resource Management Guideline* (NPS 1998). If adverse effects on historic structures or contributing cultural landscape elements are unavoidable, appropriate documentation would be completed in accordance with the appropriate standards and guidelines. Where appropriate, other mitigation measures would be developed in consultation with the South Dakota SHPO, the ACHP, and other appropriate parties.

Archeological Resources

All future proposed ground disturbance (for example, construction or vegetation management) would be preceded by an assessment for the presence of archeological resources. Information related to potential locations of historic archeological sites included in John Milner Associates (2004) will be reviewed at the project planning phase to determine likelihood of encountering resources, as well as to guide project design and location (appendix C [CONFIDENTIAL—not for public distribution]). If archeological resources are evident at ground surface, project redesign and/or other appropriate mitigative measures would be developed in consultation with the SHPO and Tribe (where applicable), prior to construction. If there is reason to believe that subsurface archeological resources are present in the project area, ground disturbance would be monitored by a cultural resource specialist. If archeological resources are encountered during construction activities, ground-disturbing work would stop immediately and allow for professional evaluation and compliance activities by a cultural resource professional, in cooperation with the SHPO and Tribes (if appropriate). Should human remains, funerary, or sacred objects be encountered, work would immediately cease and the park staff would notify and consult with appropriate American Indian Tribes as required under the Native American Graves Protection and Repatriation Act of 1990 (NPS, in preparation: 51-52).

Vegetation

Projects would be designed to minimize impacts on vegetation. If adequate data do not exist for areas where projects could potentially impact vegetation, surveys would be conducted prior to implementation to determine presence of special status plant species and assess impacts to the resource. Revegetation plans would be developed for areas affected by major construction activities. Whenever appropriate and possible, revegetation with native plant species would be required, as would the salvage of plants and topsoil. Revegetation plans would specify such features as seed and plant sources, seed mixes, soil preparation, fertilizers, and mulching. To the extent possible, salvaged vegetation would be used rather than new planting or seeding. The use of nonnative species would be considered only where deemed necessary to maintain a cultural landscape or to prevent severe resource damage. Restoration activities would be instituted immediately after construction is completed. Post-construction monitoring of the sites would ensure that revegetation was successful. Plantings would be maintained and unsuccessful plant materials would be replaced (NPS, in preparation: 50).

Management of invasive species would be conducted in compliance with the *Integrated Weed Management Plan, Badlands National Park* (NPS 2003a).

Wildlife

Proposed projects would be designed to avoid adverse impacts to known important wildlife habitat (wildlife corridors, breeding/nesting/foraging/roosting areas). Appropriate studies would be conducted prior to project implementation to discover if potential impacts to wildlife would occur and, if so, the appropriate mitigation. Design and construction of new structures would attempt to minimize human disturbance and building footprints/impervious surfaces; avoid

adverse effects on behavior, distribution and movements of wildlife (noise, lighting); and avoid/minimize habitat loss/fragmentation. Where possible, areas of disturbance resulting from development or other disruptive actions (such as structure removal) would be restored to native vegetation.

Special Status Species

Future development would be designed to avoid adverse impacts to special status species and their habitat (wildlife corridors, nesting areas, feeding areas; minimization of habitat loss, noise, excessive lighting). Appropriate studies would be conducted prior to project implementation to discover if special status species (federal or state) exist/utilize the proposed project site/area. Consultation with the appropriate state (State of South Dakota Game, Fish and Parks [SDGFP]) and federal (U.S. Fish and Wildlife Service) resource agencies would be conducted to ensure compliance with the Endangered Species Act and other state wildlife regulations. Design and construction of new structures would attempt to limited human disturbance in the area, minimize building footprints, avoid adverse effects on behavior, distribution and movements of wildlife (noise, lighting), and avoid/minimize habitat loss/fragmentation.

Paleontological Resources

Future development projects would be preceded by surveys to assess the potential to affect paleontological resources. Because much of Badlands National Park is underlain with fossil-rich deposits, ground-disturbing activities would be monitored by a paleontological resource professional to avoid adverse affects to the resource. If subsurface paleontological resources are discovered during monitoring, project redesign and/or other mitigative measures (data recovery) would be implemented prior to further disturbance (NPS, in preparation: 51)

Visitor Experience

The overall planning and design of structures and features would consider the integration of accessibility factors. All features associated with accessibility would conform to the standards cited in the Uniform Federal Accessibility Standards and Americans with Disabilities Act Accessibility Guidelines. The accessibility guidelines for Outdoor Developed Areas prepared by the U.S. Access Board's Regulatory Negotiation Committee would also be consulted.

Where practical, new facilities would be barrier free. Planning and design for new facilities will recognize potential diversity of visitors. Operational and administrative facilities would be designed to be accessible to the greatest extent possible.

Park Operations

Accessibility issues described under "Visitor Experience" would also apply for park operations. To the greatest extent possible, operational and administrative facilities would be designed to be accessible.

HOW ALTERNATIVES MEET OBJECTIVES

All action alternatives analyzed must meet all objectives to a large degree. They must also address the stated purpose of taking action and resolve the need for action. Therefore, the action alternatives and their effects were individually assessed to evaluate how well each would meet the objectives of the CLR:

- To adequately document the historical development of the Cedar Pass Developed Area cultural landscape.
- To provide a baseline database for the Cedar Pass Developed Area cultural landscape for future research and planning efforts.
- To provide a predictable and useable guide for future management and use of the Cedar Pass Developed Area cultural landscape, while protecting and preserving its historic nature.
- To manage for resource values while accommodating existing planned uses.
- To streamline planning and approval processes for proposed development within the Cedar Pass Developed Area cultural landscape.
- To contribute tangible planning guidelines for the Cedar Pass Developed Area cultural landscape in other park planning efforts (such as general management plans or resource management plans).
- To enhance visitor experience through the understanding of the history of the park's development.

Table 2-3 summarizes the evaluation of how each alternative meets the above objectives. The no-action alternative falls short of meeting all objectives owing to the fact that it lacks management guidance for future development within the NRHP-eligible Cedar Pass Developed Area. Specific historic landscape management guidance provided in the action alternatives (B and C) helps to meet objectives, to varying degrees, related to future planning and development and resource protection. Alternative C contributes to the greatest degree to the comprehensive documentation of the landscape, as well as the accommodation of future needs within the Cedar Pass Developed Area. Alternative B contributes to the management of resources values while accommodating existing planned use within the Cedar Pass Development Area; however, resource values within the Pinnacles area are at the greatest risk under this alternative. Both action alternatives more clearly meet objectives related to enhanced visitor opportunities associated with history of the park's development than does the no-action alternative.

Table 2-3: Summary of How Alternatives Meet the Objectives

OBJECTIVES	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION
To adequately document the historical development of the Cedar Pass Developed Area cultural landscape	1	2	3
To provide a baseline database of the Cedar Pass Developed Area cultural landscape for future research and planning efforts.	1	2	3
To provide a predictable and useable guide for future management and use of the Cedar Pass Developed Area cultural landscape, while protecting and preserving its historic nature.	1	2	3
To manage for resource values while accommodating existing planned uses.	1	2	3
To streamline planning and approval processes for proposed development within the Cedar Pass Developed Area cultural landscape.	1	3	3
To contribute tangible planning guidelines for the Cedar Pass Developed Area cultural landscape in other park planning efforts.	1	3	3
To enhance visitor experience through the understanding of the	1	3	3

OBJECTIVES	ALTERNATIVE A, NO ACTION	ALTERNATIVE B, PRESERVATION	ALTERNATIVE C, REHABILITATION
history of the park's development.			
TOTALS	7	17	21

1 = partially meets goal
2 = meets basic level of goal
3 = provides highest levels of goal achievement

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In the Council on Environmental Quality's (CEQ) implementing regulations, agencies are required to evaluate how each of the analyzed alternatives meet certain policy statements set for in Section 101 and 102(1) of 40 CFR 1502.2d. The environmentally preferred alternative is defined as the alternative(s) that best meets the criteria or objectives set out in Section 101(b) of the National Environmental Policy Act (NEPA). In its regulations (Forty Most Asked Questions Concerning CEQ's NEPA regulations), the CEQ interprets this as meaning

> …the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

Using both the CEQ's interpretations of the Section 101 criteria and the alternatives impact information provided in this document, it was determined that alternative C (rehabilitation), also the preferred alternative, is the environmentally preferred alternative.

Alternative C would provide the widest range of beneficial uses of the environment without degradation, provide an environment that supports diversity and variety of choice, and assure culturally pleasing surroundings. It would also allow for appropriate, on-site provision of adequate office and work space for park staff, while alternative B could result in some services and facilities being forced off site (Pinnacles area) with potential loss of productivity and other undesired consequences. Alternative C also provides a slightly greater contribution to the enhancement of the quality of renewable resources and recycling of depletable resources.

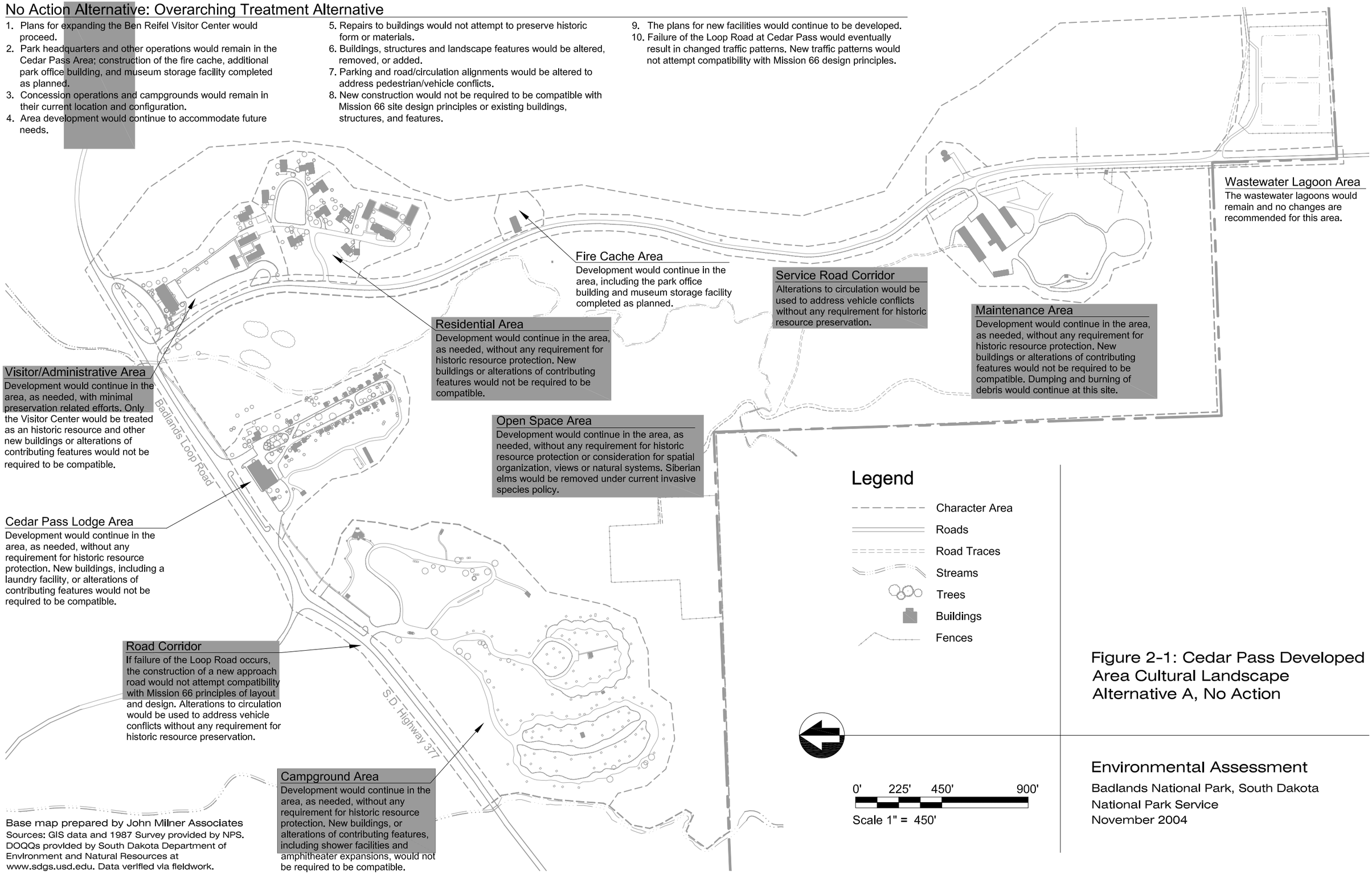
ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Several options were considered but eliminated for areas of future off-site development/use under alternative B. One included the possibility of future park development needs being met at a site in the town of Interior, South Dakota, approximately two miles southwest of the Cedar Pass Developed Area. The site currently contains a motel. However, it is believed to be too small to accommodate the projected needs of 5-10 acres and was dismissed from further consideration.

Providing additional operational facilities for future park need in existing offices in the town of Wall, South Dakota, was also considered for alternative B. Wall is located about 28 miles to the northwest of the Cedar Pass Developed Area. There was discussion of sharing facilities with other federal agencies. Because of the uncertainty about the future feasibility of this option, as well as the fact that it is located 28 miles away from the current focus of park operations, it was dismissed from further consideration.

No Action Alternative: Overarching Treatment Alternative

1. Plans for expanding the Ben Reifel Visitor Center would proceed.
2. Park headquarters and other operations would remain in the Cedar Pass Area; construction of the fire cache, additional park office building, and museum storage facility completed as planned.
3. Concession operations and campgrounds would remain in their current location and configuration.
4. Area development would continue to accommodate future needs.
5. Repairs to buildings would not attempt to preserve historic form or materials.
6. Buildings, structures and landscape features would be altered, removed, or added.
7. Parking and road/circulation alignments would be altered to address pedestrian/vehicle conflicts.
8. New construction would not be required to be compatible with Mission 66 site design principles or existing buildings, structures, and features.
9. The plans for new facilities would continue to be developed.
10. Failure of the Loop Road at Cedar Pass would eventually result in changed traffic patterns. New traffic patterns would not attempt compatibility with Mission 66 design principles.



Wastewater Lagoon Area
The wastewater lagoons would remain and no changes are recommended for this area.

Fire Cache Area
Development would continue in the area, including the park office building and museum storage facility completed as planned.

Service Road Corridor
Alterations to circulation would be used to address vehicle conflicts without any requirement for historic resource preservation.

Residential Area
Development would continue in the area, as needed, without any requirement for historic resource protection. New buildings or alterations of contributing features would not be required to be compatible.

Maintenance Area
Development would continue in the area, as needed, without any requirement for historic resource protection. New buildings or alterations of contributing features would not be required to be compatible. Dumping and burning of debris would continue at this site.

Visitor/Administrative Area
Development would continue in the area, as needed, with minimal preservation related efforts. Only the Visitor Center would be treated as an historic resource and other new buildings or alterations of contributing features would not be required to be compatible.

Open Space Area
Development would continue in the area, as needed, without any requirement for historic resource protection or consideration for spatial organization, views or natural systems. Siberian elms would be removed under current invasive species policy.

Cedar Pass Lodge Area
Development would continue in the area, as needed, without any requirement for historic resource protection. New buildings, including a laundry facility, or alterations of contributing features would not be required to be compatible.

Road Corridor
If failure of the Loop Road occurs, the construction of a new approach road would not attempt compatibility with Mission 66 principles of layout and design. Alterations to circulation would be used to address vehicle conflicts without any requirement for historic resource preservation.

Campground Area
Development would continue in the area, as needed, without any requirement for historic resource protection. New buildings, or alterations of contributing features, including shower facilities and amphitheater expansions, would not be required to be compatible.

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend
- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'
Scale 1" = 450'

Figure 2-1: Cedar Pass Developed Area Cultural Landscape Alternative A, No Action

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Preservation Alternative: Overarching Treatment Alternative

1. Historic functions of facilities and land use would continue.
2. Contributing historic and cultural landscape features of the Cedar Pass Developed Area would be identified, retained, and preserved.
3. The site's overall spatial character derived from the environmental setting, the siting of buildings, and patterns of roads, drives, pedestrian paths and walks, and vegetation would be preserved.
4. Deteriorated features and materials would be stabilized and protected.
5. Historic features and materials would be maintained and repaired when necessary.
6. Limited, in-kind replacement of severely deteriorated historic features, deemed vital to the site's historic character, would be undertaken.
7. Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
8. Archeological resources would be protected and preserved.
9. Natural systems and features would be protected and preserved with limited efforts to enhance open-space and natural features and systems.
10. Open, undeveloped areas would be retained and preserved.
11. New development would not occur within the Cedar Pass Developed Area and would instead be located outside the historic area.
12. New roads would not be constructed within Cedar Pass. However, when the Loop Road is no longer viable, changes in circulation and access to the site may become unavoidable.
13. Limited mitigation measures would be utilized to reduce or eliminate the intrusive nature of non-historic structures and features.
14. Intrusive, non-historic structures and features would only be removed at the end of their useful life.

Wastewater Lagoon Area
The wastewater lagoons would remain and no changes are recommended for this area.

Fire Cache Area
The fire cache would be screened to reduce visibility and removed at the end of its useful life.

Service Road Corridor
Characteristic features of the historic portions of the road would be maintained and preserved. Portions of the road that post-date the period of significance would be retained as well.

Residential Area
Historic resources would be protected and maintained while intrusive resources, including architectural features of residence #46, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area.

Maintenance Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Dumping and burning of debris would be discontinued at this site.

Visitor/Administrative Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Portable administration structures would be phased out and removed and the natural landscape at those sites would be reestablished.

Open Space Area
The natural character of this area would be maintained and preserved while intrusive resources, such as invasive plant species, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Opportunities for viewing scenic and natural features would be preserved.

Cedar Pass Lodge Area
Historic resources would be protected and maintained while intrusive resources, including plantings of invasive Siberian elms, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Mobile building units would be phased out and removed.

Road Corridor
If failure of the Loop Road occurs, the construction of a new approach road would maintain the historic character of the original. New roadway alignment would also maintain the Mission 66 concepts of using the Visitor Center to orient visitors to the park and of separating visitor use areas from administration, residential, and maintenance areas.

Campground Area
Historic resources would be protected and maintained while intrusive features, the comfort station, storage shed and interpretive shelter, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area.

Badlands Loop Road

S.D. Highway 377

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend
- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'

Scale 1" = 450'

Figure 2-2: Cedar Pass Developed Area Cultural Landscape Alternative B, Preservation

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Rehabilitation Alternative: Overarching Treatment Alternative

1. Contributing features of the Cedar Pass Developed Area would be identified, retained, and preserved.
2. Overall spatial character would be maintained by preserving essential features and character and utilizing Mission 66 design principles in placement of limited compatible new features.
3. Historic features and materials would be maintained and repaired when necessary.
4. In-kind replacement or use of compatible material for replacement of deteriorated historic building/structure features would be allowed.
5. Cultural landscape changes that have acquired historic significance in their own right would be retained and maintained.
6. Compatible landscape and site features that post-date the period of significance would be retained and used.
7. Missing historic features, which were critical to historic character, would be replaced if adequate documentation exists so the feature can be accurately reproduced. A compatible, new feature as a replacement would also be an option.
8. Archeological resources would be protected and preserved.
9. Natural systems and features would be protected and preserved.
10. Alterations to a cultural landscape that are necessary to assure its continued use would be allowed as long as they do not destroy historic character.
11. Removal of landscape and site features that post-date the period of significance that have incompatible characteristics and that detract from the overall historic character would be considered.
12. Mitigation measures would be utilized to reduce the intrusive nature of non-historic buildings that are retained.
13. Intrusive, non-historic buildings would be removed after their useful life.
14. New developments would be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.
15. New or altered facilities would be non-intrusive while allowing for accessibility and safety and would not be permissible if historic character would be destroyed.
16. New design would need to be differentiated from existing historic resources. A clear differentiation between historic and modern features would need to be maintained.
17. Changes to the landscape that create a false sense of history would not be allowed.
18. Work would be allowed to ensure accessibility, health and safety, environmental, and limited energy efficiency considerations.
19. Historic structures and features would be documented prior to changes.

14. New developments would be limited to meet critical space needs and sited in locations where buildings that have since been removed existed during period of significance.

15. New or altered facilities would be non-intrusive while allowing for accessibility and safety and would not be permissible if historic character would be destroyed.

Wastewater Lagoon Area
The wastewater lagoons would remain and no changes are recommended for this area.

Fire Cache Area
New compatible buildings and alterations of contributing features would be allowed in this area.

Service Road Corridor
Characteristic features of the historic portions of the road would be maintained and preserved. Portions of the road that post-date the period of significance would be retained as well.

Residential Area
Historic resources would be protected and maintained while intrusive resources, including architectural features of residence #46, would be removed or mitigated. New compatible residences would be constructed in locations historically planned for additions.

Maintenance Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. New compatible buildings and alterations of contributing features would be allowed in this area. Dumping and burning of debris would be discontinued at this site.

Open Space Area
The natural character of this area would be maintained and preserved while intrusive resources, such as invasive plant species, would be removed or mitigated. No new buildings or alterations of contributing features would be allowed in this area. Opportunities for viewing scenic and natural features would be preserved.

Visitor/Administrative Area
Historic resources would be protected and maintained while intrusive resources would be removed or mitigated. New, compatible, and non-intrusive buildings and features would be allowed in this area. A compatible addition to the Visitor Center would be allowed and portable administration structures would be replaced with historically compatible buildings.

Cedar Pass Lodge Area
Historic resources would be protected and maintained while intrusive resources, including invasive plantings of Siberian elms, would be removed or mitigated. Mobile building units would be phased out and removed, and new compatible residences would be constructed in locations historically planned for additions.

Road Corridor
If failure of the Loop Road occurs, the construction of a new approach road would maintain the historic character of the original. New roadway alignment would also maintain the Mission 66 concepts of using the Visitor Center to orient visitors to the park and of separating visitor use areas from administration, residential, and maintenance areas.

Campground Area
Historic resources would be protected and maintained while intrusive resources, the comfort station, storage shed, interpretive shelter, and invasive Siberian elms would be removed or mitigated. New compatible buildings and alterations of contributing features would be allowed in this area, including additions to the amphitheater and replacement of fixed picnic shelters.

Badlands Loop Road

S.D. Highway 377

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend
- Character Area
- Roads
- Road Traces
- Streams
- Trees
- Buildings
- Fences

0' 225' 450' 900'
Scale 1" = 450'

Figure 2-3: Cedar Pass Developed Area Cultural Landscape Alternative C, Rehabilitation

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Chapter Three

Affected Environment

CHAPTER 3
AFFECTED ENVIRONMENT

The affected environment described in this EA involves the Cedar Pass Developed Area and, secondarily, the Pinnacles area. While the Cedar Pass Developed Area is the focus of the Cultural Landscape Report (CLR), the Pinnacles area has been proposed for off-site development that would not take place at the Cedar Pass Developed Area under alternative B (preservation alternative). For this reason, the Pinnacles area is included in the "Affected Environment" and "Environmental Consequences" chapters of this EA.

Badlands National Park is located in southwestern South Dakota within the geologic region referred to as the Badlands, a highly eroded plateau region of South Dakota and northern Nebraska (see figure 1-1). The Cedar Pass Developed Area (study area), sits within the northeastern portion of the north unit of Badlands National Park, comprising approximately 290 acres of the park's nearly 250,000 acres. The Pinnacles area is located approximately 20 miles to the northwest of the Cedar Pass Developed Area, along the northern boundary of the park (figure 1-2).

As defined in the project scope of work, the Cedar Pass Developed Area encompasses the Ben Reifel Visitor Center, the park administration complex, Cedar Pass Lodge, a campground/ amphitheater area, park employee housing including apartments and single family residences, maintenance facilities, and the beginning of the Badland Loop Road. The Pinnacles area contains a ranger station, self-serve entrance booths, and several outbuildings associated with park functions. This section addresses both the essential characteristics of the larger park landscape and information about the specific study areas.

The natural systems of the Badlands area have significantly influenced the human use of the area through time. The regional climate is characterized as semi-arid, with short, hot, dry summers, and long, cold, dry winters. Significant seasonal temperature variability is evident, with winter lows dropping to -30˚F and summer highs reaching in excess of 100˚F. Spring and fall temperatures can vary dramatically and change rapidly. Average annual precipitation is 16 inches, mostly occurring in the late spring and early summer. Afternoon and evening thunderstorms, sometimes torrential, are frequent during the summer (Hauk 1993). The presence of highly erodable sedimentary bedrock (for example, shale and mudstone), coupled with the lack of soil-stabilizing vegetation creates a rapidly eroding landscape. Such erosion has produced dramatic sculpted landforms and exposed innumerable fossils, both of which were driving forces for the park's creation.

CULTURAL RESOURCES

Note: Unless otherwise noted, the following summary is based primarily on information included within the Draft General Management Plan and Environmental Impact Statement, Badlands National Park [NPS, in preparation] The Cedar Pass Developed Area, Badlands National Park, Cultural Landscape Report [John Milner Associates 2004], and the South Dakota Historical Society [2004].

Culture History

Evidence of the earliest prehistoric use of the Badlands National Park area dates to around 11,500 BP (before present) (Paleo-Indian Period) in the form of big-game hunting sites. Over time, these early big game hunting cultures made increasing use of plant foods and long-term food storage. Remains of two butchered mammoths have been recorded at the Lange/Ferguson site (39SH33) on what is now the Pine Ridge Indian Reservation, approximately five miles outside the park boundary in the south unit (NPS 2000).

When a drier climate prevailed around 8,000 to 7,000 BP (Plains Archaic Period), subsistence strategies shifted from predominantly big-game hunting to a more generalized hunting and gathering strategy with people living in small groups. Foraging activities are represented by the recovery of numerous grinding and milling stones and remains of elk, deer, antelope, rabbits, birds, rodents and reptiles. Evidence of stone circles, believed associated with a form of superstructure for temporary habitation, occurs for the first time during this period. Eight sites within Badlands National Park are believed to date to the Plains Archaic Period, none of which occurs within the Cedar Pass Developed Area or Pinnacles area (NPS 2000).

Around 1,500 BP (Late Prehistoric Period) new cultural patterns characterized by a variety of subsistence strategies, presence of pottery, burial mounds, social and religious cultural changes, the presence of exotic trade items, the bow and arrow, and horticulture are evident. However, many of these traits are not apparent in western South Dakota as the Archaic Period lingered on with continued reliance on bison hunting and plant gathering. Eight sites identified within the park date to this period, none of which are located within the Cedar Pass Developed Area or the Pinnacles area. The Pinnacles area (39PN9) is located to the northwest of the study area, within the north unit, and contains ceramics dating to about 1050 BP. The Johnny site (39JK4), located to the north of the study area in the north unit of the park, dates to approximately 1000 BP.

The earliest signs of European contact with native inhabitants in South Dakota occur during the Protohistoric/Historic Period (approximately 250-150 years ago) in the form of glass trade beads, iron knives, and other metal implements. The introduction of the horse to the region, combined with acquisition of firearms, transformed the lives of the Plains hunters in South Dakota, ultimately giving rise to the horse-mounted cultures so familiar to Americans. Subsistence was based on seasonal adjustments, with groups coming together in the summer for cooperative hunting efforts (for example, animal drives). Seven sites dating to this time period have been identified within Badlands National Park. An iron point believed to be associated with the Arikara was recovered from site 39PN32. Two stone circle sites (39SH34 and 39SH35) are

believed associated with the Sioux. Site 39PN2 may have been occupied by Big Foot prior to the Wounded Knee massacre in 1890 (NPS 2000:15-16).

During the Historic Period (approximately 150-60 years ago), the acquisition of the Louisiana Territory by the U.S. (in 1803) paved the way for the Lewis and Clark expedition a year later. Their notes are the first European records to address the cultural and biological history of the badlands region. Exploration and settlement of the park region was restricted by topography, climate, and the insecure nature of the area. Intertribal relations were often tense during this time, exacerbated by the presence/use of the area by Europeans. With the passage of the Indian Removal Act in 1830, the U.S. government empowered itself to move eastern Indians west of the Mississippi to the area that is now essentially Oklahoma. By 1831, smallpox had infected the Plains Indian groups, killing more than 50 percent of the population.

The U.S. government established territorial status for South Dakota in the 1860s. The interest in the fossil beds of the badlands region grew as fur traders shared the fossils with scientists in the mid-19th Century. American Indians continued to be displaced from their land by new nonnative homesteaders, traders, trappers, and others. In 1889, South Dakota was admitted to the Union as a state. By 1890, Indians had lost most of their territory and were confined to reservations. One of the last armed engagements of the U.S. and the Indians occurred along Wounded Knee Creek in the Pine Ridge Indian Reservation, some of which is now encompassed within the south unit of the park. A band, led by Chief Big Foot, was pursued and overtaken by U.S. solders that attempted to disarm the band. Gunfire erupted and ultimately, 200-300 American Indians and 30 soldiers lay dead.

History of Badlands National Park

In 1909, Senator Peter Norbeck was instrumental in the State House and Senate approval of a joint resolution requesting that the U.S. Congress set aside a national park in the South Dakota Badlands, though it was not officially declared a national park. In 1929, Congress authorized the creation of Badlands National Monument (originally approximately 50,000 acres) and, at the same time, required as conditions for monument designation that the state of South Dakota acquire certain lands and construct a scenic road for public access. By 1939, these conditions were met and the monument was established. In 1968, expanded monument boundaries were authorized through “acquisition of certain lands of outstanding scenic and scientific character,” capping the total acreage at 244,000 (P.L. 90-468). Under this provision, approximately 133,000 acres of tribal reservation (Oglala Sioux) lands were included in the monument. In 1978, the monument was redesignated as Badlands National Park.

Major road/highway construction efforts during the first half of the 20th Century provided access for visitors/tourists to the Cedar Pass Developed Area. This area was named for a pass through the formations located about one mile north of the current visitor center. Construction of the loop road that runs past the Cedar Pass Developed Area occurred in segments between 1930 and 1940, funded by a variety of sources. In addition, tourists could view the Badlands area from the Chicago, Milwaukee, and St. Paul Railroad, which ran south of the Cedar Pass Developed Area.

In the 1920s, Senator Norbeck, aided by Ben Millard, began plans to develop visitor and tourist attractions in the park area. By 1935, Cedar Pass included a dining hall and kitchen with 15 associated cabins, as well as a dance hall. A gas station and restroom facility also existed. The NPS considered these amenities to be inadequate and recommended major development at several proposed sites, one of which was the existing Cedar Pass Developed Area (study area), eventually selected. Development of a monument headquarters at Cedar Pass was underway by 1942. For several decades after this, improvements to visitor facilities and access to the area continued, with the Civilian Conservation Corp (CCC) occasionally playing a part in these efforts. Existing structures at the site were incorporated into the general design of the area, with some improvements. Some utility buildings were moved elsewhere, some were remodeled. The Cedar Pass Lodge underwent repairs and the cabins' batten strip exteriors were replaced with stucco.

By 1955, visitation to the national monument had increase so significantly that new facilities were required. At the service-wide level, NPS Director Conrad Wirth and colleagues had proposed the Mission 66 program whereby funding from Congress would be petitioned for an entire decade to correct the parks' degraded condition and provide assistance for parks to realize their full potential. It was designed to fund projects from 1956-1966 that would ensure basic facilities would be provided at all parks. The importance of visitor "enjoyment without impairment" and resource protection were emphasized. Mission 66 was intended to "replace outmoded and inadequate facilities with physical improvements adequate for expected demands but so designed and located to reduce the impact of public use on valuable and destructible features" (John Milner Associates 2004: 2-50).

The Mission 66 program was described by the NPS as

> …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; and maximum protection of the scenic, scientific, wilderness, and historic resources that given them distinction (NPS n.d.).

Many of the new structures/amenities constructed at the Cedar Pass Developed Area were accomplished as a result of the Mission 66 Program, intended to replace inadequate facilities with structures designed and located to minimize impacts of public use on valuable park features. This included alterations to interpretive signs, educational materials, additional natural resource research, scenic overlooks, trail exhibits, picnic areas, staff residence facilities, campgrounds, and, eventually, a visitor center which combined visitor contact and museum facilities, completed in 1958. (Refer to John Milner Associates 2004, chapter 2, for detailed information on the Mission 66 period.)

By 1968, parking at the visitor center, the campground and the lodge was considered inadequate. New office space and storage was needed for park administration; park staff housing was also lacking. Changes occurred throughout the 1970s and 1980s to accommodate these needs at the Cedar Pass Developed Area (for example, lodge extension, residence improvements, addition of office space and interpretive/information services) (refer to John Milner Associates 2004, chapter 2 for detailed history of the Cedar Pass Developed Area).

Cultural Resources Located within the Cedar Pass Developed Area and Pinnacles Area

The NPS categorizes cultural resources by the following categories: archeological resources, historic structures, cultural landscapes, museum objects and ethnographic resources. Archeological resources and cultural landscapes are addressed below. Historic structures are included within the cultural landscape discussion as all such resources fall within the Cedar Pass Developed Area cultural landscape boundaries. It is not expected that ethnographic resources and museum collections would be affected by this proposal; consequently, they are not discussed further.

Because only approximately 5-10% of the park has been inventoried for cultural resources, information is limited.

Cultural Landscapes

Several localities within Badlands National Park have been identified as candidates for consideration as cultural landscapes. These include

- The south end of Stronghold Table—site of prolonged Ghost Dances during 1890, which contributed to the events of Wounded Knee. This is the site of the last known Ghost Dances of the 19th Century.
- Big Foot Pass—believed to be the route of Chief Big Foot and his band as they fled from the U.S. Army to Wounded Knee in 1890.
- The fossil collecting sites of early paleontologists.
- Sage Creek Road, Sage Creek homesteads, and remnant sections of the Forts Pierre and Laramie roads (NPS, in preparation: 16).

None of these has undergone formal documentation or evaluation; none are located within the current study areas (Cedar Pass Developed Area and Pinnacles area). A park-wide cultural landscape inventory is scheduled for Badlands National Park in the near future.

The Cedar Pass Developed Area Cultural Landscape

The Cedar Pass Developed Area, the subject of this analysis, is considered eligible for the NRHP (appendix A). Its period of significance is believed to range from 1928-1966 and is associated with:

- early monument/park development and tourism (1928-1938)
- the New Deal/CCC development (1938-1941)
- the NPS Mission 66 initiative (1956-1966)

The majority of the cultural developments at Badlands National Park are clustered within the boundaries of the proposed Cedar Pass cultural landscape. This area, located just southwest of Cedar Pass Developed Area, includes approximately 290 acres and contains, among other things, park administrative offices, park operations facilities, visitor center and other amenities, and staff housing.

Ben Millard began building in the study area around 1928, including a dance hall, a lodge, and associated guest cabins. Many new buildings were added during the Mission 66 Period including the visitor center, seven single-family residences, three apartments, campground comfort station, the amphitheater, and two maintenance buildings. Most of the Mission 66 period structures exist today with minor repairs and little change in appearance (John Milner Associates 2004). Since the period of significance (1928-1966) buildings and structures have been added to the landscape (for example, maintenance buildings, single-family residence, apartment building).

The Cedar Pass Developed Area cultural landscape

> …appears to possess state-level significance as a historic district under National Register Criteria A and C for 1) early tourism associated with western landscapes and parks; 2) CCC development and New Deal Master Planning; and 3) the NPS's Mission 66 initiative within the areas of Architecture, Landscape Architecture, Social History/Tourism, Recreation and Community Planning and Development during the period 1928 through 1966. Despite the Mission 66-era Cedar Pass development being less than fifty years of age, Cedar Pass Developed Area appears to meet the eligibility requirements of Criterion G as a relatively complete example of a Mission 66 developed area with a high degree of integrity, which remains rare and unusual within the state of South Dakota (John Milner Associates 2004:1-16).

Development during the early tourism period (1929-1938) focused on promoting viable tourism attractions and transportation related to Badlands National Monument. Between 1938 and 1941 (CCC development/New Deal Master Planning), master planning and implementation had significantly improved tourism facilities at the Monument. The NPS Mission 66 Initiative (1956-1966) involved monument/park planning and development programs, including, among others:

- improved access by developing interpretive facilities as close to the resource as possible
- expanded interpretive opportunities by extending interpretation into the landscape through a range of experiential activities
- managing visitor movement
- clustering relatively dense site planning of new facilities and complexes
- utilizing a unifying design concept that made use of an armature or datum along which development occurred
- employing zoning of like uses (John Milner Associates 2004: 4-9)

The extended period of significance for the Cedar Pass Developed Area cultural landscape reflects "a continuum of use of Cedar Pass Developed Area by various individual and agencies to site services and amenities for visitors" (John Milner Associates 2004: 1-17). Private and federal efforts to encourage tourism in the area coexisted with ever-increasing efforts to provide the needs of visitors and park administration.

The Cedar Pass Developed Area is comprised of a variety of landscape elements that contribute to its NRHP eligibility. These include natural systems, spatial organization, land use, circulation, topography, vegetation, buildings and structures, small-scale features, views and vistas, and archeological resources (John Milner Associates 2004) (see table 3-1 at the end of this chapter). These are described briefly below (please refer to John Milner Associates 2004, chapter 3, for greater detail).

Natural Systems—Natural systems identified within the landscape include topography (such as badlands formations and washes) and vegetation (such as grasslands and shrublands). The systems present during the period of significance are still observable today with only minor alterations. The one notable exception is the presence of invasive vegetation species (for example, Siberian elms).

Spatial Organization—Spatial organization within the study area is dominated by badlands formations and building clusters located along circulation corridors. The area contains four separate nodes of development including the visitor center/administration/residential cluster, the maintenance area, Cedar Pass Lodge and associated structures, and the park campground. The general spatial organization of the landscape has remained relatively constant since the period of significance; however some changes in specific areas have occurred, primarily with the addition and removal of structures related to park administration/maintenance and housing/lodging. For example, recent construction of a new fire cache structure in a previously undeveloped area has broken the continuous open space originally planned by Mission 66 planners (John Milner Associates 2004: 4-21).

Land Use—A variety of land uses exist within the study area, including those related to visitor accommodations, interpretation, lodging, recreation, park administration, maintenance, utilities, and housing. Important aspects of the Mission 66 land use concepts included leaving "unused (natural) portions of the site as a setting for the developed portions and separating maintenance uses from the rest of the site" (Milner, Associates 2004: 4-22). The land use pattern of the study area has not changed significantly since the period of significance (1928-1966).

Circulation—The circulation features of the study area took shape during the early tourism period (1929-1938), with alterations and additions continuing through time as needed. CCC efforts in the park area from 1938-1941 included road improvement activities. During the Mission 66 Period (1956-1966) additions to the circulation patterns included construction of the Visitor Center parking lot and realignment of the service road around it; a residential loop off the service road; a parking lot for the apartments; the three campground loops; the amphitheater trail and parking lot; the maintenance drive/yard; and sidewalks and gravel paths associated with the visitor center and residences (John Milner Associates 2004: 4-23).

Topography—Over the years, the topography of the Cedar Pass Developed Area has been altered to accommodate construction of roads, buildings, the amphitheater, and other park facilities. The most significant topographic alterations were the construction of the wastewater lagoons. Four former lagoons have recently been restored to original grade and replanted with native vegetation. Most of the topographic alterations to the study area are evident today.

Vegetation—Planted vegetation within the Cedar Pass Developed Area currently consists primarily of trees, shrubs, and mown turf. Invasive Siberian elms exist southwest of the visitor center and to the southwest of the Cedar Pass Lodge. Small groupings of cedar trees are scattered throughout the landscape. Several historic planting plans provide detail regarding specific plantings associated with the residences, apartments and visitor center. The vegetation evident around the visitor center is consistent with those indicated in the planting plans.

Buildings and Structures—Over 70 structures have been identified within the study area, 47 of which are believed to contribute to the significance of the Cedar Pass Developed Area cultural landscape (John Milner Associates 2004) (see table 3-1 and figure 3-1 at the end of the chapter). These 47 include the:

- Ben Reifel Visitor Center (independently determined eligible for the NRHP)
- Cedar Pass Lodge
- Cedar Pass Lodge Cottage Building
- Cedar Pass laundry building
- Cedar Pass lodge maintenance building
- Cedar Pass lodge cabins (numbers 1-1A, 2-2A, 3-12, 14-16A, 18-23, 33)
- Campground comfort stations (group 2, station A, station B)
- Resource protection building
- Staff residences (#28-34A)
- Seasonal apartments (#45, 51, 52)
- Maintenance shop and cold storage structures
- Cedar Pass Lodge ice house
- Cedar Pass tack room

Small-Scale Features—Small-scale features of the Cedar Pass Developed Area cultural landscape include signs, fencing, trash receptacles, and lighting. Several features are considered unique or only occur in specific locations (for example, metal flagpole, wood information kiosk, amphitheater benches, and portable picnic shelters). Many of the small-scale features have been replaced or modified since the end of the period of significance. Various contemporary small-scale features have been added (picnic tables, vending machines, utility boxes) (John Milner Associates 2004).

Views and Vistas—Dramatic views and vistas of the scenic landscape, most of which are accessed by automobile, are an integral part of the visitor experience at Badlands National Park. The historic design of the study area was significantly influenced by the potential opportunities for visual enjoyment of the natural surroundings. Views that contribute to the NRHP-eligibility of the cultural landscape include those toward badlands formations from the visitor center, lodge/cabins, campground, Loop Road and residence areas (figure 3-2). Badlands formations

were also used in design of the landscape to block incompatible views (for example, screening of maintenance area). Over the years, views have been altered by addition/removal of contributing buildings and structures. The construction of the fire cache is perhaps the most disruptive alteration of views since the period of significance (John Milner Associates 2004).

Archeological Resources—Three historic archeological sites have been recorded within the Cedar Pass Developed Area. These include remnants of Millard's dance hall (39JK251), dating to the early 20th Century; brick and concrete remnants of a possible structure (39JK237), dating to the early 20th Century; and a concrete foundation (39JK227). Individually, none of the recorded resources is considered to be eligible for the NRHP (see below for further discussion). No prehistoric archeological sites have been recorded within the Cedar Pass Developed Area.

In addition to the 11 landscape characteristics, the CLR has defined ten character areas within the Cedar Pass Developed Area landscape based on similarities of land uses, historic resource character and types, and patterns of spatial organization (John Milner Associates 2004: 6-3 to 6-4). These character areas were used to structure the alternatives descriptions and treatment information and include the following areas (figure 3-3):

1. visitor/administrative
2. residential
3. Cedar Pass Lodge
4. campground
5. maintenance
6. fire cache
7. wastewater lagoon
8. Badlands Loop Road and S.D. 377 Corridor
9. service road corridor
10. open space areas

Archeological Resources

Only a small portion of the land in the north unit of the park has been systematically inventoried, resulting in a fragmentary view of the prehistoric use of the area. Most of the archeological sites identified to date are described as prehistoric lithic/artifact scatters; however, a few historic archeological sites (such as farmsteads) have also been recorded (NPS 2004c).

No prehistoric archeological sites are known to occur within the Cedar Pass Developed Area or Pinnacles area, though several historic archeological sites have been identified/recorded (see below). Archeological investigations in these general areas have added to the understanding of the prehistoric use of the area and include, among others, Beaubien 1953; Johnson 1987a, 1987b; Jones 1991, 1999, 2000; Miller 2002; NPS 1974, 1976, 2002; SARC 1997; and Taylor 1961. Two Late Prehistoric Period sites located north of the Cedar Pass Developed Area in the north unit of the park--the Johnny Site and the Cedar Pass Butte Site--suggest occupation of the area by probable Woodlands groups, as well as later populations (Beaubien 1953, Taylor 1961). The Cedar Pass Butte site is very rare for the park in that it contains architectural features (rock wall, subrectangular, two-room structure). Further investigative work was recommended for this site

(NPS 1974). The Johnny site includes cord-roughened pottery, evidence of lithic processing, and extensive faunal remains, suggesting its use as a base camp (NPS 2000). The Pinnacles Site (not located within the Pinnacles area analyzed in this EA), also dating to the Late Prehistoric Period, contains ceramics dating to around 900 A.D. Several other sites in the north unit of the park have yielded ceramics similar to the pottery recovered from the Johnny Site. In addition, some sites have yielded hearths and thousands of bison bones believed to represent faunal processing and/or village sites.

Three historic archeological sites have been recorded within the Cedar Pass Developed Area. Remnants of Millard's dance hall (39JK251) were encountered during the initial stage of a construction project within the Cedar Pass Developed Area in 2001 (Miller 2002). Documentation of disturbed resources was completed prior to construction resuming and monitoring of the site continued throughout the remainder of the project. The site is believed to be the remnants of a dance hall built by one of the early 20th Century settlers in the area (Ben Millard) who provided a variety of services and facilities to early tourists and visitors to the Badlands area. A significant amount of historic material was recovered though no footprint of the dance hall structure was located. It is believed that much of the dance hall remnants had been significantly impacted by previous ground disturbance. The site has been determined as not eligible for inclusion in the National Register of Historic Places (NRHP) (see Miller 2002, South Dakota State Historical Society 2002).

Site 39JK237 is described as a "sparse scatter of red brick fragments, two concrete slabs, and a short section of abandoned road" (NPS 2002: 17). Dating to the first half of the 20th Century, it is believed related to operations of the Cedar Pass Lodge or early park operations. Due to its significant lack of integrity, the site has been recommended as not eligible for nomination to the NRHP (NPS 2002).

Site 39JK227, a concrete foundation located off of an access road, was recorded in 1998 by Augustana College Archeology Lab and recommended as not eligible for the NRHP (Augustana College Archeology Lab 1998; Miller 2002).

In addition to the above, several structures known to have existed in the Cedar Pass Developed Area are no longer evident on the surface. Research shows that these include two lodge dormitories, several lodge cabins, a service station, early maintenance buildings, the CCC camp, pit toilets at the campground and lodge, and the lodge laundry. While general locations of these missing structures are known, no surface evidence is apparent. These areas may potentially contain historic archeological data related to these original structures and should be treated as sensitive areas prior to any development (appendix C [CONFIDENTIAL--not available for public distribution]).

No historic archeological resources are known to exist within the Pinnacles area. However, the area has not been systematically surveyed for cultural resources.

VEGETATION

Badlands National Park is located on the western edge of the mixed-grass prairie of the central United States. This ecosystem forms a transition zone between arid short-grass prairie ecosystems to the west and mesic tall-grass prairie ecosystems to the east. The region's climate is continental, semi-arid, and characterized by short, hot, dry summers, and long, cold, dry winters. Average annual precipitation in the Northern Plains is 16 inches, occurring mostly in the late spring and early summer in the form of intense, frequent afternoon thunderstorms. The mixed-grass prairie is characterized by diverse grassland communities that are adapted to withstand long periods of dry weather, high winds, and frequent fires. Fire suppression, past dryland farming, and grazing have substantially affected the grasslands in Badlands National Park. However, management activities such as the reintroduction of a frequent fire regime have restored much of the park's grasslands to conditions present before European settlement (NPS, in preparation). Today, the park supports one of the largest contiguous native mixed-grass prairies under Federal protection in the United States. Grasslands cover about 109,065 acres, or 45% of the park area.

Vegetation associated with badlands formations is quite sparse as a result of the lack of moisture and high surface temperatures of the badlands formations during the growing season. Much of the moisture falling on these formations runs off the steep slopes instead of soaking into the ground. Drought-tolerant shrubs and annual forbs associated with badlands formations are found on pinnacles, outwash fans, seasonal drainages, and low hills, which harbor greater soil moisture. Approximately 48% or 114,568 acres of Badlands National Park is sparsely vegetated or barren as a result of the harsh environmental conditions imposed by badlands physiographic features as well as from constant soil disturbance caused by prairie dogs.

Shrublands cover about 10,072 acres, or 4% of the park. They are mainly found in riparian areas, floodplains, sandhills, mesic slopes, and draws. Woodlands are uncommon in Badlands National Park, covering about 3,566 acres or 2% of the park. They generally are restricted to floodplains, drainage bottoms, sandhill toeslopes, seasonal draws, and slumps on butte and cliff faces. The lack of surface water in this region limits the distribution of wetlands and wet meadows in the park; these occupy approximately 1% of the park (1,783 acres) and are found along the bottoms of drainage channels.

The vegetation of the Badlands National Park was mapped in 1999 as part of a nationwide mapping project by the U.S. Geological Survey and the NPS (USGS 1999). Nine major vegetative communities were identified in this analysis: dry mixed-grass prairie, mesic mixed-grass prairie, introduced grasslands, riparian/wet meadows, dry plains shrublands, mesic plains shrublands, riparian shrublands, dry coniferous forest and woodlands, and riparian deciduous forests and woodlands.

A number of botanical studies conducted in the park have identified 457 vascular plants, representing about 70 different plant families. The largest number of species present is in the Asteraceae (sunflower) family. A complete inventory of lichens was also undertaken by Will-Wolf in 1998. A total of 171 lichen species and four species of lichenicolous fungi were recorded within the park boundaries (Will-Wolf 1998). Grasses are the dominant plants in Badlands National Park. Forty-one species of native grasses have been recorded in the park. Among the

most important are buffalo grass (*Buchloe dactyloides)*, blue grama grass (*Bouteloua gracilis*), western wheat grass (A*gropyron smithii),* and needle-and-thread grass (*Stipa comata).*

Nonnative plants can be found throughout the park on lands that have been disturbed by prior grazing and dryland farming. A total of 71 exotic plant species have been documented in the park. Most nonnative species are found primarily in disturbed areas, and are fairly localized in their distribution. However, Japanese brome (*Bromus japonicus)* and downy brome (*Bromus tectorum*) are present to some degree in all the park's grasslands, particularly western wheatgrass (A*gropyron smithii)* stands, and are of special concern because of their ability to invade and compete with native species. These exotic species have been experimentally controlled since 2000 with springtime prescribed fires and seeding with native species. Chemical and biological control have been used to limit the spread of Canada thistle (*Cirsium arvense*), which occurs on an estimated 8,000 acres in the park, and has greatly altered riparian communities and invaded native grassland communities. In addition, control of noxious weed species such as spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Acroptilon repens*), and biennial sweetclover (*Melilotus officinalis*) has been the subject of recent management activities.

Vegetation in the Cedar Pass Developed Area

The Cedar Pass Developed Area occupies 290 acres in the northeastern portion of the north unit of Badlands National Park (John Milner Associates 2004). The park's visitor center, Cedar Pass Lodge, campground, administrative offices, and most tourist amenities are located within the Cedar Pass Developed Area (Figure 1-3). This area is accessed by automobile via Badlands Loop Road or S.D. Highway 377 from Interior, South Dakota.

As in the larger park, vegetation communities in the Cedar Pass Developed Area are largely comprised of grasslands, Badlands vegetation communities, and limited shrublands, woodlands, and wetlands (table 3-2). The following plant communities were identified inside the project area by the USGS-NPS Vegetation Mapping Program (1999): Western Wheatgrass Alliance, Switchgrass Grassland, Western Snowberry Shrubland, Chokecherry Shrubland, Eastern Cottonwood Woodland, Emergent wetland grassland and Badland Sparse Vegetation Complex (figure 3-4). In addition, exotic Siberian Elms have been planted around the Lodge area, and have escaped into native grassland areas.

Table 3-2: Vegetation Community Types in Cedar Pass Developed Area

	TOTAL ACRES OF CEDAR PASS STUDY AREA	PERCENT OF CEDAR PASS STUDY AREA
Grasslands		
Western Wheatgrass Alliance Grassland	154 acres	53%
Switchgrass Alliance Grassland	3.5 acres	1.2%
Shrublands and Woodlands		
Western Snowberry Shrubland	2.9 acres	1%
Chokecherry Shrubland	>2.9 acres	>1%
Eastern Cottonwood	>2.9 acres	>1%
Wetlands		
Emergent Wetland Grassland	>2.9 acres	>1%
Sparsely Vegetated and Barren Areas		
Badlands Sparse Vegetation Complex	44 acres	15%
Developed Areas and Standing Water	77 acres	27%
Total	**290 acres**	**100%**

Source: *The Cedar Pass Developed Area, Badlands National Park Cultural Landscape Report* (John Milner Associates 2004).

Grassland Communities

Western Wheatgrass alliance covers the majority of the project area (154 acres). This association is dominated by western wheatgrass (*Pascopyrum smithii*), a sod-forming grass that thrives in clay and silt soils. This grass can form pure, monotypic stands, but will also grow in association with green needlegrass (*Nassella virdula*), blue grama grass (*Bouteloua gracilis*), buffalo grass (*Buchloe dactyloides*) and threadleaf sedge (*Carex filifolia*) in a true mixed-grass prairie. Other species commonly found in this alliance include exotic Japanese brome (*Bromus japonicus*), and Kentucky bluegrass (*Poa pratensis*).

Switchgrass alliance grasslands are commonly found in wet, shallow basins in Badlands National Park, but are relatively restricted within the Cedar Pass Developed Area (3.5 acres). The dominant species is switchgrass (*Panicum virgatum*), a fire-adapted rhizomatous grass. Other associated species include: little bluestem (*Schizachyrium scoparium*), heath aster (*Aster ericoides*), wild licorice (*Glycyrrhiza lepidota*), prairie dropseed (*Sporobolus heterolepis*), and western wheatgrass (*Pascopyrum smithii*).

Shrubland and Woodland Communities

Western Snowberry shrubland is found in moist drainages, swales, or depressions or other low areas where moisture is available. Within the Cedar Pass Developed Area, western snowberry shrublands are found on 2.9 acres along the eastside wash and the switchgrass alliance grassland in the southeastern portion of the study area (figure 3-4). Western snowberry (*Symphoricarpos occidentalis*) is a small (less than 3 feet tall), rhizomatous shrub that forms clonal colonies within the study area. Other species in this community include: skunkbush (*Rhus trilobata*), prairie wild

rose (*Rosa arkansana*), poison ivy (*Toxicodendron rydbergii*), mountain wormwood or white sage, *Artemisia ludoviciana*), and western wheatgrass (*Pascopyrum smithii*). Exotic species commonly associated with western snowberry shrublands include brome or cheatgrass (*Bromus tecorum*), and Japanese brome (*Bromus japonicus*).

Chokecherry shrubland commonly occurs in mesic draws, slumps, along the edge of sand hills, and on slopes where mesic conditions persist. In the Cedar Pass Developed Area, chokecherry shrublands are found on less than 2.9 acres in the southeast corner of the study area, in close proximity to the maintenance buildings (figure 3-4). This plant community often forms impenetrable thickets composed of deciduous shrubs such as American plum (*Prunus americana*), chokecherry (*Prunus virginiana*), and western snowberry (*Symphoricarpos occidentalis*). Other species associated with this community include skunkbush (*Rhus trilobata*), currant (*Ribes odoratum*), and exotic Kentucky bluegrass (*Poa pratensis*).

Eastern cottonwood woodlands are one of the few wooded associations in Badlands National Park. Only a few trees are found within the study area, primarily in the northern portion of the eastern wash and north of the old wastewater ponds (less than 2.9 acres; figure 3-4). Common species in this association include cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*) with snowberry (*Symphoricarpos occidentalis*), western wheatgrass (*Pascopyrum smithii*), and exotic Kentucky bluegrass (*Poa pratensis*).

Wetland Communities

Emergent wetlands are found on less than 2.9 acres of the study area that appears to have been used as a borrow pit, located west of the maintenance buildings (figure 3-4). Species found in these wetland areas included grass-like plants such as cattail (*Typha angustifolia* and *T. latifolia*), bulrush (*Scirpus americanus* and *Scirpus validus)*, barley (*Hordeum vulgare*), and common rush species (*Juncus spp*.).

Sparsely Vegetated and Barren Areas

Badland sparse vegetation complex is the second most common vegetation community in Badlands National Park and in the Cedar Pass Developed Area (44 acres). Badlands sparse vegetation develops on siltstone, volcanic ash, and claystone and occurs on steep shale slopes and other heavily-eroded areas where moisture is scarce and temperatures are extreme. These areas are almost barren of vegetation. Plant species capable of growing in these areas include drought-tolerant silverscale saltbush (*Atriplex argentea*), wild buckwheat (*Eriogonum pauciflorum*), broom snakeweed (*Gutierrezia sarothrae*), curly-cup gumweed (*Grindelia squarrosa*), and other annual forbs.

Vegetation in the Pinnacles Area

Vegetation in the Pinnacles area is comprised primarily of grasslands (Kenner, pers. comm. 2004). The area has been disturbed to a certain degree by prior park development in the area (such as the ranger station, entrance booths, radio tower).

Species of Special Concern

There are no known federal or state-listed rare plant populations inside the Cedar Pass Developed Area or Pinnacles area (John Milner Associates 2004; U.S. Fish and Wildlife Service [USFWS] 2004a, b; SDGFP 2004a, b; Mills, pers. com. 2004; Kenner, pers. com. 2004).

Although three plants listed as rare by the state of South Dakota are found within the boundaries of Badlands National Park, none occur within the Cedar Pass Developed Area or Pinnacles area. These plants include: Barr's milkvetch (*Astragalus barrii*), Dakota buckwheat (*Eriogonum visheri*), and secund bladderpod (*Lesquerella arenosa var. argillosa*) (NPS in preparation). In addition, Easter daisy (*Townsendia exscapa*) and the largeflower Townsend daisy (*Townsendia grandiflora*) are state-listed rare plants that are found in the park's prairies, but are not endemic to this region (NPS, in preparation) and are not found within the study areas. Hopi tea (*Thelesperma megapotamicum*), hairy virgin's bower (*Clematis hirsutissima*), Parry's rabbitbrush (*Chrysothamnus parryi*), and silver-mounded candleflower (*Cryptantha cana*) are state-listed rare species that may occur in Badlands National Park, but have not been recorded within park boundaries (NPS, in preparation).

Exotic Species

Cedar Pass Developed Area

Exotic species of particular concern in the Cedar Pass Developed Area are halogeton (*Halogeton glomeratus),* yellow sweet clover (*Melilotus officinalis),* alfalfa (*Medicago sativa),* puncture vine (*Tribulus terrestris*), and Canada thistle (*Circium averense)*. Halogeton (*Halogeton glomeratus*) is a noxious weed that is poisonous to ungulates and is common on badlands features in the Cedar Pass Developed Area. At high densities this plant could pose a risk to the park's bighorn sheep population. Yellow sweet clover (*Melilotus officinalis*) is a biennial herb from Europe that invades and degrades native grasslands by shading native plants and altering soil nutrient availability. It responds favorably to fire and grows abundantly on disturbed areas and roadsides. Puncture vine (*Tribulus terrestris*), is an exotic forb from southern Europe that is common along the park's gravel-surfaced roads. The sharp, spiny seed pods of this species frequently cause flat tires on visitors' bicycles.

In addition, Japanese brome (*Bromus japonicus*) and downy brome (*Bromus tectorum*) are commonly found in western wheatgrass alliance grasslands and chokecherry shrublands within the study area. Research conducted in Badlands National Park indicates that Japanese brome (*Bromus japonicus)* is reduced by spring burning (Whisenant 1987a). Research conducted outside the park indicates that repeated spring fires could also decrease the abundance of other exotic grasses such as Kentucky bluegrass (*Poa pratensis*), crested wheatgrass (*Agropyron desertorum),* smooth brome (*Bromus inermis*), and downy brome (*Bromus tectorum*) (Whisenant 1987b; USDA 2000).

Siberian elm (*Ulmus pumila*) has been planted at the lodge and has escaped to the grassland area east of the Lodge. Siberian elm (*Ulmus pumila*) is an exotic, fast-growing, hearty tree that

tolerates a variety of conditions such as poor soils, low moisture, cold winters and long summer droughts. This species is known to invade dry and mesic prairies, including sand prairies.

Other exotic or invasive species found in the park that may occur in the Cedar Pass Developed Area include: giant ragweed (*Ambrosia trifida*), field bindweed (*Convolvulus arvensis*), spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Acroptilon repens*), houndstongue (*Cynoglossum officinale*), and perennial sow thistle (*Sonchus arvensis*).

Pinnacles Area

The Pinnacles area is currently impacted by park development and exotic species (Kentucky blue grass [*Poa pratensis*] and smooth brome [*Bromus inermis*]) can be found there, primarily in disturbed areas (Kenner, pers. comm. 2004). Most of the 71 exotic species known to exist in the park have been in the area for a long time and are likely to continue to exist in disturbed areas, posing little threat to native species (NPS, in preparation: 78). The location of the Pinnacles area immediately adjacent to a private inholding may have influenced the presence and types of exotic species now found at the site (Mills, pers. comm. 2004).

WILDLIFE

As comprehensive wildlife surveys/studies are not available for the Cedar Pass Developed Area and Pinnacles study area, the information provided below is general in nature. General park conditions are described, followed by wildlife and habitat information more specific to the Cedar Pass Developed Area and Pinnacles area.

Badlands National Park

Within the general park area, 56 mammal species; 112 bird species, 17 reptile and amphibian species; and at least 11 fish species have been documented (NPS, in preparation).

Ungulates

The restoration of Rocky Mountain bighorn sheep (*Ovis Canadensis Canadensis*) in the 1960s filled the ecological niche formerly occupied by the now extinct Audubon's bighorn sheep. This effort has resulted in numbers ranging from 58 to 74 animals in three distinct populations, primarily within the north unit, as well as in the Cedar Butte area in the south unit. The long-term viability of the sheep in the park is uncertain at this point, though staff is attempting to translocate animals to enhance the population genetically and reproductively.

White-tailed deer (*O. virginianus*) are seen infrequently; pronghorn antelope (*Antilocapra americana*) and mule deer (*Odocolileus hemionus*) are much more common, moving in and out of the park. They are hunted by tribal members in the south unit. Cattle grazing also occurs in the south unit.

Bison (*Bison bison*) were reintroduced to the park in the 1960s; an additional release occurred in the 1980s. A healthy heard of about 700 head of bison now exists, ranging within about 40,000 acres in the north unit of the park. A bison management plan is currently being prepared.

Carnivores

A total of 12 carnivore species has been documented in the park. Common meso-carnivores include the coyote (*Canis latrans*) and bobcat (*Felis rufus*), while the red fox (*Vulpes vulpes*) and American badger (*Taxidea taxus*) are observed less frequently and considered uncommon. The swift fox (*Vulpes velox*)(state threatened), the mountain lion (*Felis concolor*) and the black-footed ferret (*Mustela nigripes)* have also been observed.

Small Mammals

Small mammals common to the park are the least chipmunk (*Eutamius minimus*), eastern cotton rabbit (*Sylvilagus floridus*), eastern cottontail rabbit (*Sylvilagus floridus*), thirteen-lined ground squirrel (*Spermophilus tridencemlineatus*), black-tailed prairie dog (*Cynomys ludovicanus*), deer mouse (*Peromyscus maniculatus*), muskrat (*Ondontra zibehicus*), black-footed ferret (*Mustela nigripes*)(federal threatened), and several other smaller rodents.

Small mammals influence both faunal and floral communities directly and indirectly through mechanisms such as seed dispersal and vegetation alteration. Changes in plant production may alter small mammal populations and, in turn, small mammals may impact plant communities. Small mammals, vegetation, and other mammals and bird species are closely intertwined ecologically. Consequently, changes in small mammal populations can lead to variations in abundance of other species.

The black-tailed prairie dog is considered a keystone species of the Great Plains, as survival of a number of species depends on its presence within the ecosystem. At least nine species depend directly on prairie dogs or their activities for their survival, and 137 additional species are associated with the species in an opportunistic manner (Kotliar et al. 1999).

In 2001, a total of 4,440 acres of active prairie dog colonies (127 separate colonies) were mapped within Badlands National Park, most of which occur in the north unit. Mapping and density estimates data indicate that the prairie dog population is stable or increasing slightly in Badlands National Park (NPS, in preparation: 84).

A prairie dog colony currently exists within and around the Pinnacles area, an area where future park development may occur under alternative B. The colony consists of approximately 60 acres and is currently encroaching on the north, east, and south sides of the Pinnacles developed area (Kenner, pers. comm. 2004).

Prairie dog burrows provide shelter for burrowing owls, rattlesnakes, swift foxes and other animals (NPS, in preparation: 83). Burrowing owls are known to use the Pinnacles area and swift foxes have also been released there in the recent past (Kenner, pers. comm. 2004). Prairie dogs

are themselves prey for black footed ferrets, hawks, eagles and other predators (NPS, in preparation: 83).

Birds

Badlands National Park provides habitat to a diverse bird population including raptors, waterfowl, shorebirds, herons, cranes, woodpeckers, and songbirds. Most are either summer residents or migrants. Sixty-eight species have been observed nesting in the park. Commonly observed birds are presented in Table 3-3.

Table 3-3. Birds observed within Badlands National Park (NPS, in preparation)

Scientific Name	Common Name
Hirundo spp.	barn, cliff and grasshopper swallows
Eremophila alpetstris	horned lark
Calamospiza melancocorys	lark bunting
Zenaida macroura	mourning dove
Agelaius phoeniceus	Red-winged blackbird
Sturnella neglecta	western meadowlark
Circus cyaneus	northern harrier
Buteo jamaicensis	Red-tailed hawk
Falco mexicanus	prairie falcon
Charadrius vociferous	killdeer
Sialia currucioides	mountain bluebird
Turdus migratorius	American robin
Aquila chrysaetos	golden eagle
Asio otus	long-eared owl
Tyto alba	barn owl
Athene cunicularria	burrowing owl
Nyctea scandiaca	snowy owl
Buteo regalis	ferruginous hawk
Buteo swainsoni	Swainson's hawk
Meleagris gallopavo	wild turkey
Haliaeetus leuocephalus *	bald eagle
Grus Americana **	whooping crane
Falco peregrinus	peregrine falcon

* federal threatened
** federal endangered

Reptiles and Amphibians

Amphibians commonly observed in the park are the boreal chorus frog (*Pseudacris triseriata*), Woodhouse's toad (*Bufo woodhousii*), the Great Plains toad (*Cognatus bufonidae*) and the plains spadefoot toad (*Scaphiopus bombifrons*). Frequently observed reptiles include the red-sided garter snake (*Thamnophis sirtalis*), western plains hinges (*Heterodox nascius*), western plains

garter snake (Thamnophis radix), bullsnake (*Pituophis melanoleuc*), and prairie rattlesnake (*Crotalus viridis*)(Smith et al. 1998).

Insects

Approximately 19 species of butterflies have been observed in the park. Several species of grasshoppers and crickets (*Orthoptera*), along with elm leaf beetles (*Pyrrhalta luteola*) and elm bark beetles (*Scolytus multistriatus*) are also common (NPS 2004c).

Cedar Pass Developed Area

The general area in and around the Cedar Pass Developed Area provides habitat for a variety of wildlife species including, among others, mule deer, pronghorn antelope, coyotes, bobcats, muskrats, least chipmunks, jackrabbits, desert cottontails, and eastern cottontails. Swift fox, mountain lions, and bighorn sheep have also been observed in the general area (Kenner, pers. comm. 2004; John Milner Associates 2004: 3-18).

Grasslands habitat comprises the majority of the Cedar Pass Developed Area. The structure of grassland vegetation influences the diversity and abundance of plants and animals and provides habitat for many small mammals, ungulates, carnivores, etc. Prairie birds such as the western meadowlark and horned lark are common. Birds of prey find good hunting opportunities in the open grassland areas.

Badlands sparse vegetation present within the Cedar Pass Developed Area is characterized by minimal vegetation resulting from little moisture and extreme temperatures. Drought-tolerant vegetation (saltbush, wild buckwheat, broom snakeweed, forbs, etc.) in these areas provides habitat (cover, food) for a variety of the animals using the area and throughout the park.

Small emergent wetland areas make up about one percent of the Cedar Pass Developed Area and provide habitat for amphibians and reptiles, as well as a variety of rodents and other wildlife. Small mesic shrublands and woodlands areas, about one percent of the study area, provide wildlife with important protection from both extreme hot and cold temperatures and are used by a variety of animal species (e.g., rodents, coyotes, deer, birds).

About a quarter of the of the Cedar Pass Developed Area is classified as “developed” or “standing water”. The area has sustained impacts from past park development (visitor center, lodge, campgrounds, wastewater lagoons, etc) that have resulted in considerable wildlife habitat alteration/loss through the decades. At the same time, structures attract certain animals (e.g., rodents) that many benefit from and use them.

Most visitor use of the Cedar Pass Developed Area is concentrated in these previously impacted areas. Human activity in these areas has and will continue to disrupt movements and use by wildlife. Wildlife sensitive to human use already avoid areas of high human activity. Conversely, animals that do use the Cedar Pass Developed Area are accustomed to human activity though these species could be potentially impacted by future development in the area.

Pinnacles Area

Vegetation in the Pinnacles area is comprised primarily of grasslands (Kenner, pers.comm. 2004), providing habitat for a number of small mammals (including the black-tailed prairie dog), ungulates (pronghorn antelope), carnivores (coyotes, swift fox, mountain lions, bobcats), a variety of insects and birds, etc.

A prairie dog colony of approximately 60 acres in size currently encroaches on the north, east, and south sides of the Pinnacles developed area (Kenner, pers. comm. 2004). Sparse vegetation is found within areas of established prairie dog towns. Through their cycle of burrow establishment, grazing, and burrow abandonment, prairie dogs may alter grassland vegetation types over time. This constant use causes native vegetation to revert back to an early successional state dominated by annual forbs, sometimes including non-native weeds (NPS 2004c).

Prairie dog burrows provide shelter for burrowing owls, rattlesnakes, swift foxes and other animals. Burrowing owls are known to use the Pinnacles area and swift foxes have been released there in the recent past (Kenner, pers. comm. 2004)(see Special Status Species below). Prairie dogs are themselves prey for black footed ferrets, hawks, eagles and other predators (NPS, in preparation: 83)(see Special Status Species below).

The Pinnacles area has been disturbed by prior park development (ranger station, entrance booths, radio tower, etc.) that has undoubtedly resulted in wildlife habitat alteration/loss. At the same time, structures attract certain animals (e.g., rodents) that many benefit from and use them. Though human activity within this area is not as intense as that at the Cedar Pass Developed Area, wildlife sensitive to human use already avoid these developed areas. Animals that do use the developed area around Pinnacles are accustomed to human activity though these species could potentially be impacted by future development.

SPECIAL STATUS SPECIES—THREATENED, ENDANGERED OR CANDIDATE SPECIES

Badlands National Park contains several special status wildlife species including the black-footed ferret (*Mustela nigripes* [state and federal endangered; listed as threatened on NPS lands]), the swift fox (*Vulpes velox* [state threatened]), the mountain lion (*Felis concolor* [state threatened]), the bald eagle (*Haliaeetus leucocephalus* [federal threatened]), and the whooping crane (*Grus Americana* [federal endangered]).

Cedar Pass Developed Area

Consultations with the South Dakota Department of Game, Fish and Parks (2004a, b) and the U.S. Fish and Wildlife Service (2004 a, b) have resulted in the conclusion that no federal or state species considered threatened, endangered, or of special concern are currently known to exist in the Cedar Pass Developed Area (appendix D).

Pinnacles Area

Consultations with the South Dakota Department of Game, Fish and Parks (2004b) and the U.S. Fish and Wildlife Services (2004b) have resulted in the following information regarding federal and state species considered threatened, endangered, or of special concern known to exist within the Pinnacles area (appendix D).

Black-footed Ferret

Both the Federal and State governments list the black-footed ferret (*Mustela nigripes*) as endangered (SDGFP 2004b; USFWS 2004b). It was first listed as such in 1967 (Endangered Species Protection Act) and later, in 1973 (Endangered Species Act). However, within Badlands National Park, the ferret is considered threatened at the federal level and is managed according to a block clearance strategy.

> Block clearance is a strategy developed by the Service to determine the likelihood of black-footed ferret occurrence in a geographic area and provide sufficient information to allow the Service to assess an area for the biological potential for contributing to recovery of the ferret. The act of block clearing an area negates the need to conduct future ferret surveys to comply with section 7 of the Endangered Species Act. The exception is for NPS lands and U.S. Fish and Wildlife Service lands - ferrets are considered threatened in those areas. Black-footed ferrets have been reintroduced in Badlands National Park, Buffalo Gap National Grasslands and Cheyenne River Sioux Tribe Reservation (USFWS 2004b).

The Pinnacles area is not currently known to be used by black-footed ferrets and little historic information exists about ferret densities in the park. Documented populations were found in neighboring Shannon and Mellette Counties in the 1960s and 1970s. The last confirmed sitings of black-footed ferrets in South Dakota were in 1979 and 1983 (NPS, in preparation: 82).

Black-footed ferrets are typically associated with prairie dogs colonies, feeding primarily on prairie dogs and relying on their burrows for shelter, family rearing and escape from predators. It is believed that they cannot survive for extended periods outside of prairie dog colonies (Licht 1997; NPS, in preparation: 82).

Once found throughout South Dakota, the black-footed ferret population has declined to near extinction. This decline has been attributed to habitat conversion for agriculture, extensive efforts to control prairie dogs that compete with livestock for forage, and sylvatic plague, a disease that has killed large numbers of prairie dogs on which ferrets prey. These three factors also fragmented prairie dog colonies on which the black-foot ferret relies. In addition, the removal of large carnivores (bears, wolves) from the Badlands area, likely increased predation of coyotes (their main predator) on ferrets (NPS, in preparation: 82).

Badlands National Park and the Conata Basin area of Buffalo Gap National Grassland have been designated as reintroduction sites (USFWS et al. 1994). In 1994, a partnership among the NPS, U.S. Forest Services, USFWS, and SDGFP provided funds and personnel for reintroduction and monitoring efforts. Between 1994 and 1999 (when the reintroduction ended), an average of 35

animals were released in the park each year. Many died soon after release as a result of predation. However, successful reproduction of ferrets has been detected every year. Since the end of the reintroduction period (1999), the ferret population has begun to disperse outward from release sites to smaller adjacent prairie dog colonies. This has resulted in an increase in prairie dog colonies confirmed to be occupied by ferrets. The population reached a high in 2000 with a minimum of 33 individuals but then declined to an estimated 14 individuals in 2001. The ferret population is currently concentrated in the north unit in Kocher Flats and the Roberts area (approximately four miles to the west/northwest of the Pinnacles area). The park's reintroduced black-footed ferret population is designated a nonessential experimental population under the Endangered Species Act which provides more management flexibility (NPS in preparation: 83).

Swift Fox

The swift fox (*Vulpes velox*), listed by the State of South Dakota as threatened (SDGFP 2004b), generally inhabits flat, open prairie areas. Swift fox habitat in Badlands National Park is concentrated in the Sage Creek area and along the northern edge of the north unit where the Pinnacles area is located. While once believed to be relatively abundant, the population has declined in its northern range as a result of trapping, hunting, predator and rodent control programs, habitat loss, droughts, severe winter, and disease (Carbyn et al. 1993). By 1900, the swift fox was relatively rare in the northern plains (NPS, in preparation: 84).

The park is currently working with the SDGFP, South Dakota State University, and the Turner Endangered Species Fund in re-establishing a self-sustaining swift fox population in the Badlands ecosystem. Reintroduction efforts are ongoing. A release of the fox into the prairie dog town at the Pinnacles area occurred in 2003 with another planned for the fall of 2004. Three litters (15 pups with at least 13 still alive) have been documented as a result (Kenner, pers. comm. 2004).

PALEONTOLOGICAL RESOURCES

Note: The following is based primarily on information included within the Draft General Management Plan and Environmental Impact Statement, Badlands National Park [NPS, in preparation], the Cedar Pass Developed Area, Badlands National Park, Cultural Landscape Report [John Milner Associates 2004],the Environmental Assessment: Site Development for new Fire Cache, Resource Management Storage Building, and Museum Storage Building at Cedar Pass Developed Area (NPS 2002), and Fossil Hunters (NPS 2004d).

The presence of significant paleontological resources was a major incentive for the establishment of Badlands National Monument and the later park designation. While only a small percentage of the park has been surveyed, it is possible that the entire park area contains fossils. Generalized mapping of the area can be found in Raymond and King (1976). A variety of small, historic research and project sites comprise the majority of fossil information for the park. The draft general management plan contains a list of these research projects (NPS, in preparation: 75).

The area in and around the Badlands National Park contains the largest known deposits of late Eocene and Oligocene mammal fossils in North America. Fossils from this area are typically

used to define the North American Land Mammal Ages for these time periods and have contributed significantly to the understanding of mammalian evolution and diversity, paleoecology, and paleoclimates.

The park region is particularly conducive to paleontological research due to the characteristic erosion that has exposed numerous mammal and marine fossils. However, once exposed, fossils can disintegrate within a few years and are often lost before they can be recorded and preserved. Fossil collecting without a research permit, though illegal in the park, is common and visitors pick up an unknown amount of material every year.

Interest in the park's paleontological resources can be traced to the traditional American Indian knowledge of the area. The Lakota had observed fossilized bones, seashells and turtle shells in the Badlands region. In the 1840s, trappers and traders made some of the first collections of paleontological resources. By 1854, 84 distinct species had been discovered in North America, 77 of which were found in the White River Badlands.

From 1899 to present, the South Dakota School of Mines remains one of the most active paleontological research institutions working in the White River Badlands. Throughout the late 1800s and continuing today, scientists and institutions from all over the world have benefited from the fossil resources of the White River Badlands (NPS 2004d).

Marine fossils have been recovered in the deposits of an ancient sea that existed in the area 65 to 80 million years ago (Cretaceous Period). Pierre Shale in the region contains abundant Late Cretaceous marine fossils, including more than 80 species of ammonites, mosasaurs, plesiosaurs, fish, sea turtles, and crabs in tan limestone nodules.

Twenty-five to 34 million years ago (Oligocene Epoch), a great diversity of animal life existed in the Badlands region, including camels, horses, oreodonts, antelope-like animals, brontotheres, rhinoceroses, false deer, rabbits, beavers, creodonts, saber-toothed cats, land turtles, rodents and birds. Many of these animals, upon death, were deposited in lakes, waterways, and floodplains of the area.

The Cedar Pass Developed Area and Pinnacles Area

Bedrock in the Cedar Pass Developed Area consists of the Scenic Member of the Brule Formation, part of the Eocene/Oligocene White River Group. The Brule and Sharps Formations underlie the Pinnacles area, both considered fossil-rich (Benton, pers. comm. 2004). Bedrock depth in these area is variable, and is sometimes exposed at ground surface.

The Brule Formation contains the world's most extensive known source of Oligocene fossil mammals, with more than 150 different genera of rodents, horses, camels, pigs, deer, antelope, beaver, felines, canines, and oreodonts (Gries 1998: 95). Of particular note are *Metamynodon*, a large aquatic rhinoceros, *Protoceras*, a primitive camel, and *Leptauchenia*, an oreodont. Fossils are particularly common in the irregular channel sands, indicating that the animals either became mired or drowned, perhaps as part of a herd trying to cross during flood stage.

The Brule Formation makes up much of the feature known as the Badlands Wall, just north of the Cedar Pass Developed Area. It consists of steeply spired brown and tan volcaniclastic mudstones and siltstones modified by ancient soil development. Fossil soil horizons can be observed in the area as parallel reddish and greenish bands in outcrops (Terry 1998).

The Scenic Member of the Brule Formation, believed to range between 27 and 39 meters in thickness, has been the source of many important scientific studies including the Big Pig Dig and the baseline mapping of fossil bone beds study (Benton et al. 2001; Bjork 1994-1996; Clark et al. 1967; DiBenedetto 1997, 1998, 1999; Herbel 1997, 1998; Stevens 1995, 1996a, b; Terry 1996a, b). A three-year survey of fossil bone beds in the Poleslide Member of the Brule Formation is currently underway.

The Big Pig Dig site, located west of the Cedar Pass Developed Area, was discovered in 1993 along Conata Road. Fossil remains included those of *Subhyracadon* (early rhinoceros), *Archaeotherium* (a piglike mammal), *Mesohippus* (early horse), *Leptomeryx* (a deerlike mammal), saber-tooth cat, oreodont, and rodent. This site is considered significant in that it may be the largest concentration of early Oligocene mammals ever recorded. Preservation is excellent and individuals are relatively complete.

VISITOR EXPERIENCE

Note: The following information is based primarily on the Draft General Management Plan and Environmental Impact Statement, Badlands National Park [NPS, in preparation], the Cedar Pass Developed Area, Badlands National Park, Cultural Landscape Report [John Milner Associates 2004], Badlands National Park Visitor Study (Simmons and Gramann 2001) and Castle Trail Complex Demonstration Transportation System Plan (NPS 2003b)

Visitors travel to Badlands National Park for a variety of reasons including the natural and scenic beauty, as well as the natural history of the area. As home to one of the world's richest fossil beds, the paleontological resources of the area attract many visitors. The history of local American Indians and their strong connections to this region and landscape attract visitors as well.

Neighboring areas are generally sparsely populated and rural. The gateway communities of Interior and Scenic flank the north unit of the park to the east and west respectively. The north unit is almost completely surrounded by the Buffalo Gap National Grassland. The large Pine Ridge Indian Reservation, a portion of which is included within Badlands National Park (south unit), stretches across the southwestern part of the state, bordering the south, west and east portions of the southern half of the park (see figure 1-2). The south unit is cooperatively managed by the NPS and the Oglala Lakota (Sioux) tribe residing on the reservation. The Pine Ridge Indian Reservation, best known as the site of the 1890 Wounded Knee massacre, is home to as many as 40,000 members of the Oglala Lakota tribe. This two million acre reservation is the second largest in the United States.

Badlands National Park can be accessed by five official entrances, all managed and maintained by the NPS. Entryways include the northeast, Conata Road, Interior, Pinnacles, and Sage Creek,

all with self-serve entrance stations. The northeast entrance, which leads to the Cedar Pass Developed Area, is the most frequently used; the Pinnacles entrance station is the second most used access point to the park. Visitors can also enter the park on secondary gravel roads primarily used by local residents. The Cedar Pass Developed Area, located in the northeastern portion of the park, can be accessed by automobile via Badlands Loop Scenic Byway (Loop Road) or S.D. Highway 377 from Interior. The Pinnacles entrance area, approximately 20 miles northwest of the Cedar Pass Developed Area, can be reached from I-90, using Highway 240, or from the Cedar Pass Developed Area using the Loop Road.

The State of South Dakota has designated the Loop Road from Cactus Flats to the Pinnacles entrance of the park as the Badlands Loop Scenic Byway (figure 3-5). This road, with its numerous pullouts, is typically crowded during the summer season. Prior to redesigning pullouts and parking lots, visitors could experience congestion during this period. According to NPS visitation data, more than 90% of park visitors travel the Loop Road. In 1999, August was determined the busiest month (annual daily traffic of 2,734 vehicles) for the road. In 1999, the annual traffic count on the Loop Road was approximately 348,640 (annual daily traffic of 995 vehicles).

The park conducted a formal visitor survey in August of 2000 (Simmons and Gramann 2001). Park employees have also collected additional visitor information at entrance stations, during routine patrols, and from backcountry and wilderness registration points. The following summarizes the results of these efforts.

Badlands National Park averages approximately 1 million visitors a year, with up to 70% of the visitation occurring in June, July and August. A downward trend in visitation (approximately –2% a year) has been apparent over the past decade. This rate of decline would result in approximately 885,000 annual recreational visitors by 2005, though it is believed that a steady downward trend in visitation is not likely over a long period. At the same time, a steady upward trend in visitation may not be sustainable in terms of park resources or infrastructure.

Currently, most park visitors travel from the upper Midwest (Minnesota, Wisconsin, Illinois, Michigan); visitors from 40 others states and Washington D.C. also visit the park. Seven percent of park visitors are international, primarily from Canada, England, and Germany. Members of the scientific community come to study the park’s natural and cultural resources.

Most groups visiting the park consist of four or fewer people, primarily in family groups. Approximately 83% stay in the park less than one day; of these, 75% percent stay only two to four hours, mostly in the north unit. Tour buses visit the Cedar Pass Developed Area but are typically on tight schedules, resulting in short visits. A moderate number of school groups also visit the park, mostly from Pine Ridge Indian Reservation. The park is also a destination park for an increasing number of wilderness backpackers. Informal visitor studies in 1984 indicated that visits to the south unit were typically longer (one to three days) and focused on American Indian culture, history, and the Pine Ridge Indian Reservation.

Services and facilities (paved roads, visitor center, overlooks, trails, restrooms) most used are located in the north unit (figure 3-5). The most commonly visited sites in the park are in the

north unit (Pinnacles Overlook, Ben Reifel Visitor Center, Cedar Pass Lodge, Journey Overlook picnic area, the Roberts Prairie Dog Town, and the Big Pig Dig [a paleontological site]). The Cedar Pass Lodge is adjacent to the Ben Reifel Visitor Center and offers overnight lodging, a restaurant and a large gift shop (figure 1-3). In surveys, visitors expressed that the overlooks and Cedar Pass campground are the most important park services and facilities. Facilities and services offered within the Cedar Pass Developed Area (visitor center; restrooms; lodge, restaurant, gift shop, and cabins; campground; and picnic areas) rated as either "very important" or "extremely important" to visitors. The presence of these services and amenities contributes to the high visitation rates in this area. Bus traffic is increasing (approximately 12 buses/day) which causes significant parking congestion at the Ben Reifel Visitor Center. All park services and facilities were rated by visitors as above average in importance and quality.

Constructed in 1959, the Ben Reifel Visitor Center, functions as the park's primary orientation and educational facility with about 25% of all park visitors stopping there (figures 1-3, 3-5). It is open year-round with extended hours from Memorial Day to late August. The visitor center is currently undergoing an expansion and remodel to provide for additional educational exhibits and facilities. The parking lot is inadequate and often appears full, likely prompting many to bypass the visitor center. It is not well signed and many visitors miss the turn-off. Tour buses use the visitor center parking lot for picnics because no other picnic facilities large enough are available.

Relative to the Cedar Pass Developed Area, the Pinnacles entrance area has few visitor facilities/services (figure 3-5). The area currently contains a ranger station (infrequently-staffed with no public contact responsibilities), two self-service entrance booths, park law enforcement offices, a radio repeater tower, and several other associated outbuildings/structures. While few visitor services are offered, the Pinnacles entrance is the second most frequently used access to the park.

Recreational Opportunities

Park information is available online from the NPS web site (www.nps.gov) and from a variety of travel guides and welcome centers. Information is also available at the northeast, Interior and Pinnacles entrance stations, as well as at visitor centers and waysides along the Loop Road.

Existing recreational opportunities within the park include experiencing paleontological resources, camping, picnicking, bicycling, horseback riding, nature study, ranger programs, experiencing wilderness, photography, bird and flower observation. Both the north and south units of the park contain prehistoric, historic, scenic, scientific and human resources.

Campgrounds at the Cedar Pass Developed Area and Sage Creek provide camping on a first-come, first-served basis with reserved sites available for groups (Figure 3-5). Evening programs are popular with campers. Campgrounds typically fill to capacity, with most campers staying only one night. The park's main campground located within the Cedar Pass Developed Area contains 96 sites, four group sites, running water, flush toilets, shaded picnic tables, paved roads, parking areas and a trailer sewage dump station. Camping fees are $10/night. Summer programs are offered in the amphitheater and are typically well attended. Though it contains no formal

campsites or potable water, the Sage Creek campground, located along the west edge of north unit off Sage Creek Rim Road, contains pit toilets and picnic tables. Popular with wilderness visitors and pack stock users, no fees are charged at this campground.

Small picnic areas are available at the Ben Reifel Visitor Center, the Cedar Pass campground, Journey Overlook, Conata Road, and the White River Visitor Center (Figure 3-5).

The highly developed Loop Road area of the north unit is the most heavily visited section of the park where there are hiking and interpretive trails, overlooks, wayside exhibits, picnic areas and restrooms (Figure 3-5). The Sage Creek Rim Road to the primitive Sage Creek campground is less impacted by visitors and offers a less structured environment with a sense of discovery, remoteness and solitude.

In additional to the use of private vehicles for sightseeing, tour bus rides along the Loop Road are available for visitors to enjoy the scenery that forms the badlands, as well as the priories ecosystems. Of the 14 designated overlooks along the Loop Road, six contain interpretive panels depicting geologic scenes. Visitors can also use short interpretive trails. A few of the more popular stopping places along the Loop Road include (Figure 3-5):

- Big Badlands Overlook—the first vista of badlands country from the northeast entrance. At this location there are two waysides and a 60-yard path. About 30-35% of visitors stop at this overlook.
- Window, Door, and Notch Trails—first opportunity to get “up close” to the scenery. Easy and accessible paths traverse out and through the Badlands Wall.
- Prairie Winds—an elevated boardwalk at the Prairie Winds stop. Visitors can walk a short distance into the prairie.
- Fossil Exhibit Trail—5 miles east of Cedar Pass Developed Area, paleontology is interpreted with self-guided trail booklets for the elevated 400-yard boardwalk. Guided fossil walks are available in the summer. Twenty-minute fossil talks are given daily at the parking lot pavilion. Vault toilets are available. One of the first 100% accessible trails in the national park system (listed as a national recreation trail in 1985).
- Pinnacles Overlook—offers a spectacular view of the spires and canyons of the region. A short trail leads down a set of stairs to wayside panels and overlooks.
- Roberts Prairie Dog Town—located about four miles west of the Pinnacles entrance station, along Sage Creek Rim Road.

Hiking and backpacking are permitted with the north unit offering the Castle Trail Network (7 miles) and Cliff Shelf (.5 mile nature trail/viewpoint) facilities. Bicycle use is increasing in the park with most preferring the Loop Road, Sage Creek Rim Road, and other secondary roads. Horseback riding and pack stock use are allowed in the park but not in developed areas or on marked trails, roads, or highways. This activity is very popular in the wilderness areas of the park.

Badlands National Park is world renowned as one of the largest storehouses of North American vertebrate fossils. Opportunities for observations of scientific paleontological excavations are available to visitors from June through August at a site on Conata Road (Big Pig Dig). Researchers and educators are available during the summer to answer questions as they work.

The park's landscape contains numerous scenic features with limited visual intrusions (such as park facilities at Cedar Pass Developed Area and Pinnacles area). Smaller intrusions (shade shelters and restrooms) are located at trailheads and waysides. The viewshed beyond the park boundary is rural and includes manufactured features (ranches, roads, communications towers). Intrusions to the night sky have resulted from some of these features (radio/cell towers). Certain areas, such as the Cedar Pass Developed Area, create lighting that is visible within the park.

PARK OPERATIONS

The Cedar Pass Developed Area contains a variety of visitor services and facilities, as well as the centralized park administrative and maintenance operations. The area contains the Ben Reifel Visitor Center, the Cedar Pass Lodge and cabins/restaurant/gift shop, park and lodge staff housing, park staff administrative offices, the Cedar Pass campground, a maintenance area, a fire cache, associated infrastructure (utilities, roads). How well these elements function as intended contributes to the efficiency of park operations.

The existing visitor center includes office space for five permanent employees; the park library; administrative functions for public affairs, cultural, resource management, education, and partnerships (fax, copying machine, mail table, storage); as well as exhibits, visitor bathrooms, lobby, and bookstore. The new addition will provide a theater; workspace for seven permanent employees and fifteen temporary employees; an enlarged library; a classroom for school groups; tripled bookstore and exhibit areas; doubled public bathrooms area; an audiovisual room; a break room; and storage for the bookstore (Mills, pers. comm. 2004).

Fire-fighting capabilities have been recently centralized at the Cedar Pass Developed Area. With the construction of the fire cache (NPS 2002), fire-fighting equipment and supplies previously stored in several locations around the park have been moved to the fire cache structure (fire engines, search and rescue cache, equipment storage, personal lockers, office/work space for fire crew). This has decreased the time it takes to inventory and maintain equipment. An engine and some supplies continue to be maintained at Pinnacles Ranger Station to facilitate quick response to the northwestern portion of the park (20 miles from Cedar Pass Developed Area).

The recently constructed resource management storage building houses supplies and equipment programs related to vegetation and wildlife management, ferret reintroduction and paleontology. This includes all-terrain vehicles, flatbed trailers, recreational vehicle trailers, spray tanks, backpacks, traps, loading ramps, and various items of personal protection for staff. The building also provides an office area for field employees (NPS 2002).

The museum storage building, currently under construction, will meet a long-identified need for the park. It has provided the needed environmental controls, storage, safety, lighting and security

for the storage of park museum objects. The structure is designed to comply with NPS standards as identified in 36 CFR 79 (Curation of Archaeological Collections).

The addition of these three buildings will increase the number of structures requiring maintenance for which no new money has been appropriated (NPS 2002). Those expenses are currently being absorbed by the park's existing budget, reducing money available for other activities.

The CLR has identified a variety of issues as existing management concerns which will need addressing in the future, all of which affect park operations. Among others, these include:

- Administration, visitor center and maintenance facilities—inadequate space.
- Parking, visitor center—insufficient parking areas for park staff and maintenance equipment.
- Parking, Cedar Pass Lodge—no separate employee parking leading to inadequate parking space during peak periods.
- Lodge housing—mobile home structures are inconsistent with what visitors would expect in the area. There is a need for an on-site housing structure.
- Culverts—drainage problems require some culverts replacement and road grading changes.
- Badlands Loop Road—when this road fails, a new corridor will be required to connect Cedar Pass Developed Area with routes to the north and west.
- Utilities—underground all above-ground utilities; all new utilities would be install underground (John Milner Associates 2004, chapter 5).
- Circulation—pedestrian/vehicular conflicts, particularly at the visitor center.

The Pinnacles area contains a ranger station (infrequently-staffed, no public contact responsibilities), two self-serve entrance stations, park law enforcement offices, a radio repeater tower, and some associated outbuildings. A fire engine and some fire-fighting supplies are maintained at the Pinnacles area to facilitate quick response to the northwestern portion of the park (NPS 2002). No formal maintenance facilities are located at the Pinnacles area.

Table 3-1. List of Contributing and Noncontributing Structures/Features/Elements, Cedar Pass Developed Area Cultural Landscape

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Natural Systems						
Eastside Wash	C					
Westside Wash	C					
Badlands Formations	C					
Western Wheatgrass Alliance Grassland	C					
Badlands Sparse Vegetation Complex	C					
Western Snowberry Shrubland	C					
Emergent Wetland Grassland	C					
Switchgrass Grassland	C					
Chokecherry Shrubland	C					
Eastern Cottonwood	C					
Invasive Siberian Elms Thicket Along Eastside Wash	NC					
Spatial Organization						
Badlands Loop Road Corridor	C	•				
South Dakota Highway 377 Corridor	C	•				
Service Road Corridor	C/NC	•	•	•		
Visitor Center Surrounds	C			•		
Cedar Pass Lodge/Cabins Surrounds	C	•				

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Spatial Organization (continued)						
Campground Surrounds	C			•		
Amphitheater Parking/Interpretive Shelter Surrounds	C			•		
Amphitheater Surrounds	C			•		
Administration Area Surrounds	C					
Residence Area Surrounds	C			•		
Seasonal Apartments Surrounds	C			•		
Maintenance Yard Surrounds	C			•		
Waste Water Lagoon Surrounds	NC					
Former Waste Water Lagoon Surrounds	C			•		
Open Meadow	C					
Land Use						
Visitor accommodations	C	•	•	•		
Interpretive	C			•		
Lodging	C	•	•	•		
Recreation	C	•	•	•		
Administration	C		•	•		
Maintenance	C		•	•		
Utility	C	•	•	•		

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Land Use (continued)						
Housing	C		•	•		
Circulation						
Badlands Loop Road	C	•				ca. 1935
South Dakota Highway 377	C	•				ca. 1928
Service Road	C/NC	•	•	•		1940/ 1952-55/ 1970?
Service Road Spur	NC					1970?
Former Service Road Segment	C	•				1952-55
Residential Loop Road	C			•		1959
Cedar Pass Lodge Drive	C	•				ca. 1940s
Lodge Service Road	NC					varies
Campground Drive	C			•		1955-59
Visitor Center Front Parking Lot	C			•		ca. 1960
Visitor Center Rear Parking Lot	NC					ca. 1970
Administration Parking Lot	NC					ca. 1971
Lodge Parking Lot	C					varies
Amphitheater Parking Lot	C			•		1956
Maintenance Parking Lot	C			•		varies

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Circulation (continued)						
Visitor Center Sidewalks	C			•		ca. 1960
Lodge Sidewalks	C					ca. 1969
Amphitheater Sidewalks	C			•		1956
Campground Sidewalks	C			•		ca. 1960
Trail from Visitor Center to Amphitheater	C			•		ca. 1960
Administration Area Sidewalks	NC					ca. 1969
Residences Area Sidewalks	C			•		1955-59
Maintenance Yard	C			•		varies
Waste Water Lagoon Access Drive	NC					2002
Former Waste Water Lagoon Access Drive	UD					1940s
Topography						
Former Waste Water Lagoons	C			•		1940s
New Waste Water Lagoons	NC					2002
Circulation Corridors	C/NC					Varies
Building Sites	C	•	•	•		Varies
Borrow Pits	UD					?
Vegetation						
Visitor Center Landscape	C			•		1959

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Vegetation (continued)						
Cedar Pass Lodge/Cabins Landscape	UD					Varies
Maintenance Area Nursery	NC					post 1985
Residential Landscape	C			•		1959
Campground Landscape	UD					Varies
Buildings and Structures						
Ben Reifel Visitor Center #26	C			•	Fair	1959
Cedar Pass Lodge #100	C	•			Fair	ca. 1927
Lodge Cottage #102	C		•		Good	1946
Lodge Laundry Building #108	C	•			Fair	1927-49
Lodge Maintenance Building #109	C	•			Fair	1927-49
Cabin #1-1A-2-2A (110)	C	•			Fair	1927-49
Cabin #3 (111)	C	•			Fair	1927-49
Cabin #4 (112)	C	•			Fair	1927-49
Cabin #5 (113)	C	•			Fair	1927-49
Cabin #6 (114)	C	•			Fair	1927-49
Cabin #7 (115)	C	•			Fair	1927-49
Cabin #8 (116)	C	•			Fair	1927-49
Cabin #9 (117)	C	•			Fair	1927-49

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Buildings and Structures (continued)						
Cabin #10 (118)	C	•			Fair	1927-49
Cabin #11 (119)	C	•			Fair	1927-49
Cabin #12 (120)	C	•			Fair	1927-49
Cabin #14-15-16-16A (121)	C	•			Fair	1927-49
Cabin #18 (122)	C	•			Fair	1927-49
Cabin #19 (123)	C	•			Fair	1927-49
Cabin #20 (124)	C	•			Fair	1927-49
Cabin #21 (125)	C	•			Fair	1927-49
Cabin #22 (126)	C	•			Fair	1927-49
Cabin #23 (127)	C	•			Fair	1927-49
Cabin #33 (128)	C	•			Fair	1927-49
Campground Comfort Station Group 1	NC				Good	1957-60
Campground Comfort Station Group 2	C			•	Good	1955
Campground Comfort Station A	C			•	Good	1957-60
Campground Comfort Station B	C			•	Good	1957-60
Administration Building #164	NC				Good	post 1985
Conference/Maintenance Building #152	NC				Good	post 1985
Collection Storage Building #173	UD				Good	post 1985

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Buildings and Structures (continued)						
Resource Protection (CCC Ranger Station) #12	C		•		Good	post 1985
Natural Resources Office Building #172	NC				Good	post 1985
Residence #28	C			•	Good	1952-1955
Residence #29	C			•	Good	1952-1955
Residence #30	C			•	Good	1952-1955
Garage #30A	C			•	Good	1952-1955
Residence #31	C			•	Good	1958-1959
Garage #31A	C			•	Good	1958-1959
Residence #32	C			•	Good	1958-1959
Garage #32A	C			•	Good	1958-1959
Residence #33	C			•	Good	1958-1959
Garage #33A	C			•	Good	1958-1959
Residence #34	C			•	Good	1958-1959
Garage #34A	C				Good	1958-1959
Residence #46	NC				Good	ca. 1970s
Garage #46A	NC				Good	ca. 1970s
Seasonal Apartment #135	NC				Fair	1971-1974
Seasonal Apartment #45	C			•	Fair	1958-1960

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Buildings and Structures (continued)						
Seasonal Apartment #51	C			•	Fair	1959-1960
Seasonal Apartment # 52	C			•	Fair	1959-1960
Fire Cache #177	NC				Good	2003
Maintenance Shop #35	C			•	Fair	ca. 1950
Maintenance Cold Storage #36	C			•	Fair	ca. 1950
Maintenance Storage Building #150	NC				Good	LATER
Sand Shed #146	NC				Good	?
Hazmat Building #180	NC				Good	LATER
Lodge Employee Mobile Home	NC				Good	2003
Lodge Ice House #107	C	?			Fair	1927-49
Interpretive Shelter	NC				Good	post 1985
Campground Shed	NC				Good	?
Campground Entrance Booth #160	UD				Good	?
Amphitheater Stage	UD				Good	?
Amphitheater Projection Booth	UD				Good	?
Amphitheater Retaining Wall	UD				Good	?
Air Quality Monitoring Station	NC				Good	post 1985
Sewage Treatment Lift Station	NC				Good	2003

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Buildings and Structures (continued)						
Tack Room (Horse Barn) #21	UD				Poor	older than 1977
Water Supply Tank	NC				Good	2002
Water Supply Pump Building	NC				Good	2002
Waste Water Lagoons and Structures	NC				Good	2003
Concrete Box Culverts	NC				Good	varies
Timber Footbridge	NC				Good	post 1985
Concrete Block Retaining Wall	C				Good	1956-66
Small-Scale Features						
Visitor Center Sign	C					1958/1979
Informational Signs (traffic, location, etc.)	NC					varies
Phone Box	NC					post 1985
Flagpole	C			•		1951
Trash/Recycle Receptacles	NC					?
Kiosk	UD					post 1985
Post and Rail Fencing	UD					varies
Electrical and HVAC Utility Boxes	NC					varies
Dumpsters	NC					post 1985

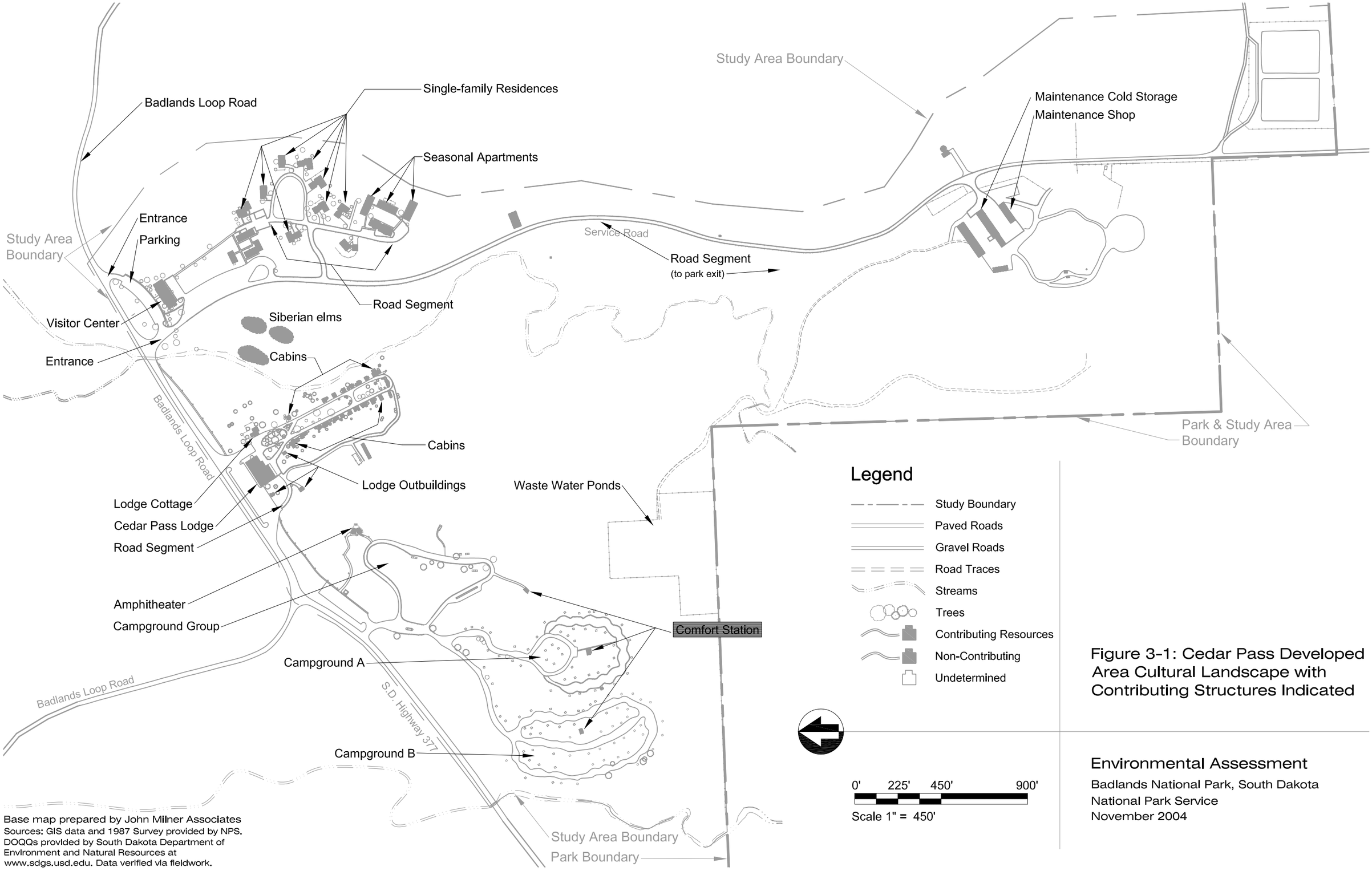
Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Small-Scale Features (continued)						
Tire Stops	NC					post 1985
Bike Racks	NC					post 1985
Fire Hose Boxes	NC					1959?
Fire Hydrants	NC					post 1985
Picnic Tables	NC					post 1985
Bollard Lights	NC					post 1985
Stone Tree Dedication Plaques	NC					post 1985
Cedar Pass Lodge Sign	UD					?
Pale Fencing	NC					varies
Timber Overhead Lighting Post	UD					varies
Irregular Cut Log Edging	UD					post 1985
Benches	UD					varies
Plastic Lawn Chairs	NC					post 1985
Picnic Shelters (Portable)	C			•		1956-1959
Gravel Landscape Decorations	NC					post 1985
Concrete Water Valve Caps	NC					?
Chain Link Fencing	NC					post 1985
Timber Bollards	NC					post 1985

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Small-Scale Features (continued)						
Amphitheater Benches	C			•		1959
Interpretive Display Cart	NC					post 1985
Metal Access Gates	NC					varies
Picnic Shelters (Fixed)	NC					?
Drinking Fountains	UD					varies
Water Spigots	UD					varies
Concrete/Gravel Splash Basin	UD					varies
RV Utility Connections	NC					?
RV Dump Station Connections	NC					?
Vending Machine	NC					post 1985
Circular Concrete Culverts (as play equipment)	NC					?
Metal Post and Wire Fencing	NC					varies
Play Swings	NC					post 1985
Portable Storage Sheds	NC					post 1985
Clotheslines	NC					varies
Dog Houses	NC					post 1985
Hose Reels	NC					post 1985
Satellite Dishes	NC					post 1985

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Small-Scale Features (continued)						
Mail Boxes and Stand	NC					post 1985
Gas Utilities	NC					1959?
TV Antennas	NC					post 1985
Concrete and Corrugated Metal Culverts	NC					post 1985
Covered Walkways	UD					varies
Metal Bollards	NC					post 1985
Propane Tanks	NC					post 1985
Abandoned Equipment/Junk Piles	NC					varies
Maintenance Equipment (salt trucks, plows, trailers, etc)	NC					post 1985
Portable Research Vehicles (RVs)	NC					varies
Wood Post and Wire Fencing	UD					post 1985
Wood Post and Plank Fencing	UD					post 1985
Views and Vistas						
View of Area from Top of Cedar Pass Developed Area	C					
View from Visitor Center Area	C					
View from Lodge and Cabin Area	C					
View of Area from Top of Formation west of Lodge	C					
View from Campground Area	C					

Feature		Associated Historic Periods				
	C/NC[1]	Early Tourism	NPS CCC	NPS Mission 66	Condition	Date of Origin
Views and Vistas						
View from Badlands Loop Road	C					
Views of New Buildings	NC					varies
View from inside Visitor Center Porch	C					
Archeological Features						
Dance Hall Area						
Former Service Road Segments						
Residence Tennis Court						
Early Maintenance Area						
CCC Camp						
Lodge Area						
Former Campground Structures						

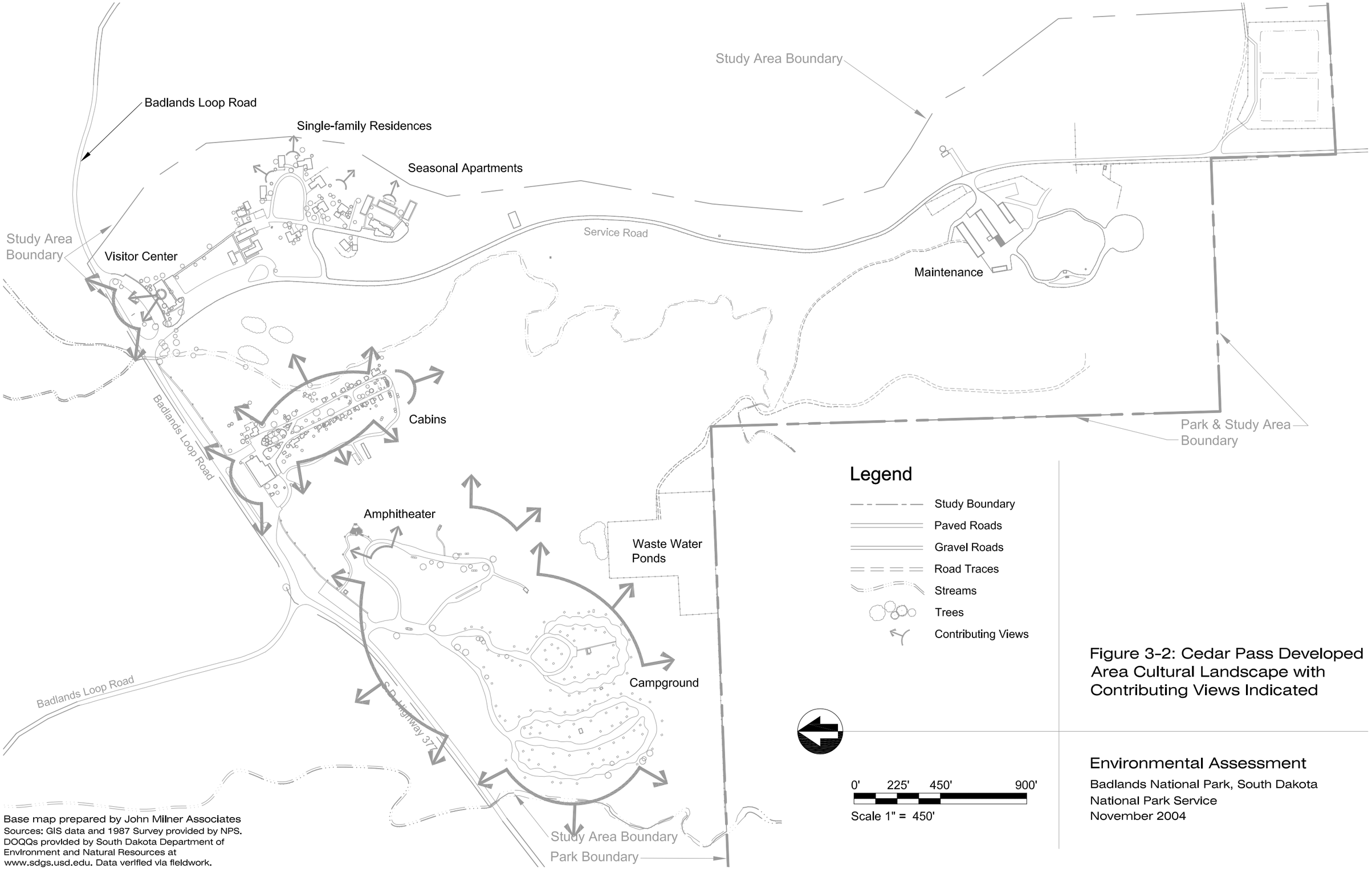
[1] C = Contributing; NC = Noncontributing; UD = Undetermined



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Figure 3-1: Cedar Pass Developed Area Cultural Landscape with Contributing Structures Indicated

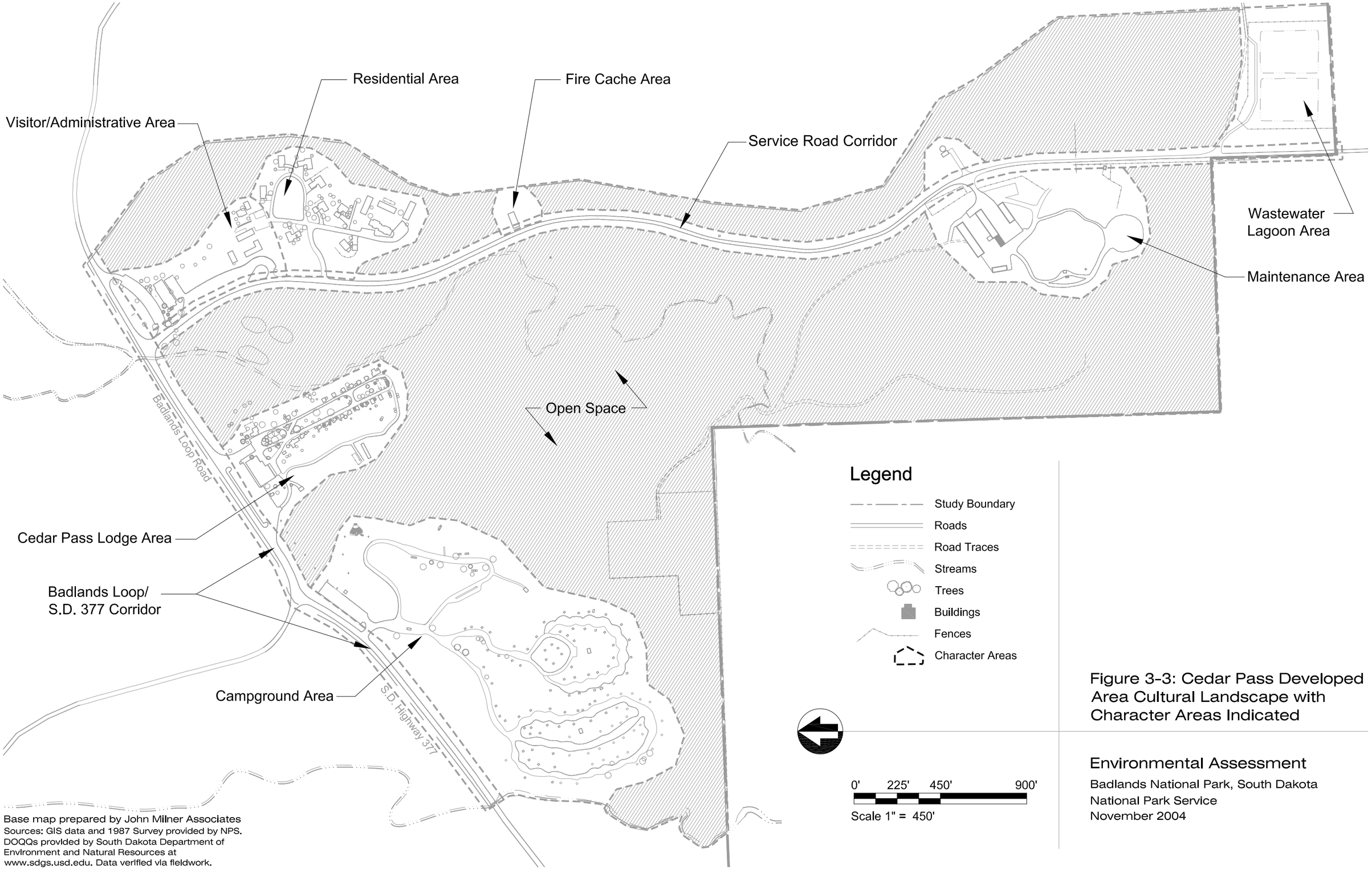
Environmental Assessment
Badlands National Park, South Dakota
National Park Service
November 2004



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Figure 3-2: Cedar Pass Developed Area Cultural Landscape with Contributing Views Indicated

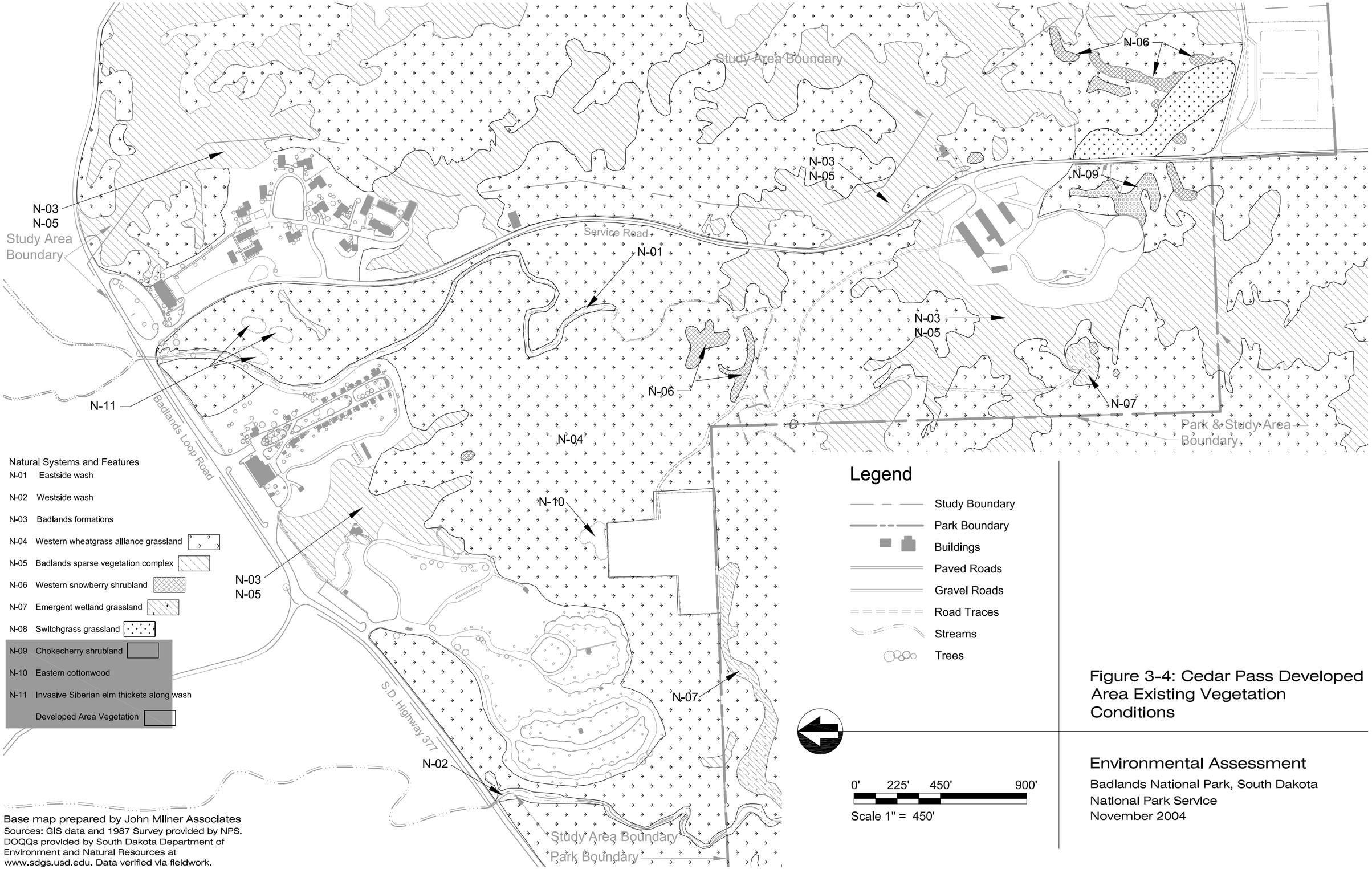
Environmental Assessment
Badlands National Park, South Dakota
National Park Service
November 2004



Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Figure 3-3: Cedar Pass Developed Area Cultural Landscape with Character Areas Indicated

Environmental Assessment
Badlands National Park, South Dakota
National Park Service
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Natural Systems and Features

N-01 Eastside wash

N-02 Westside wash

N-03 Badlands formations

N-04 Western wheatgrass alliance grassland

N-05 Badlands sparse vegetation complex

N-06 Western snowberry shrubland

N-07 Emergent wetland grassland

N-08 Switchgrass grassland

N-09 Chokecherry shrubland

N-10 Eastern cottonwood

N-11 Invasive Siberian elm thickets along wash

Developed Area Vegetation

Base map prepared by John Milner Associates
Sources: GIS data and 1987 Survey provided by NPS. DOQQs provided by South Dakota Department of Environment and Natural Resources at www.sdgs.usd.edu. Data verified via fieldwork.

Legend

- Study Boundary
- Park Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Road Traces
- Streams
- Trees

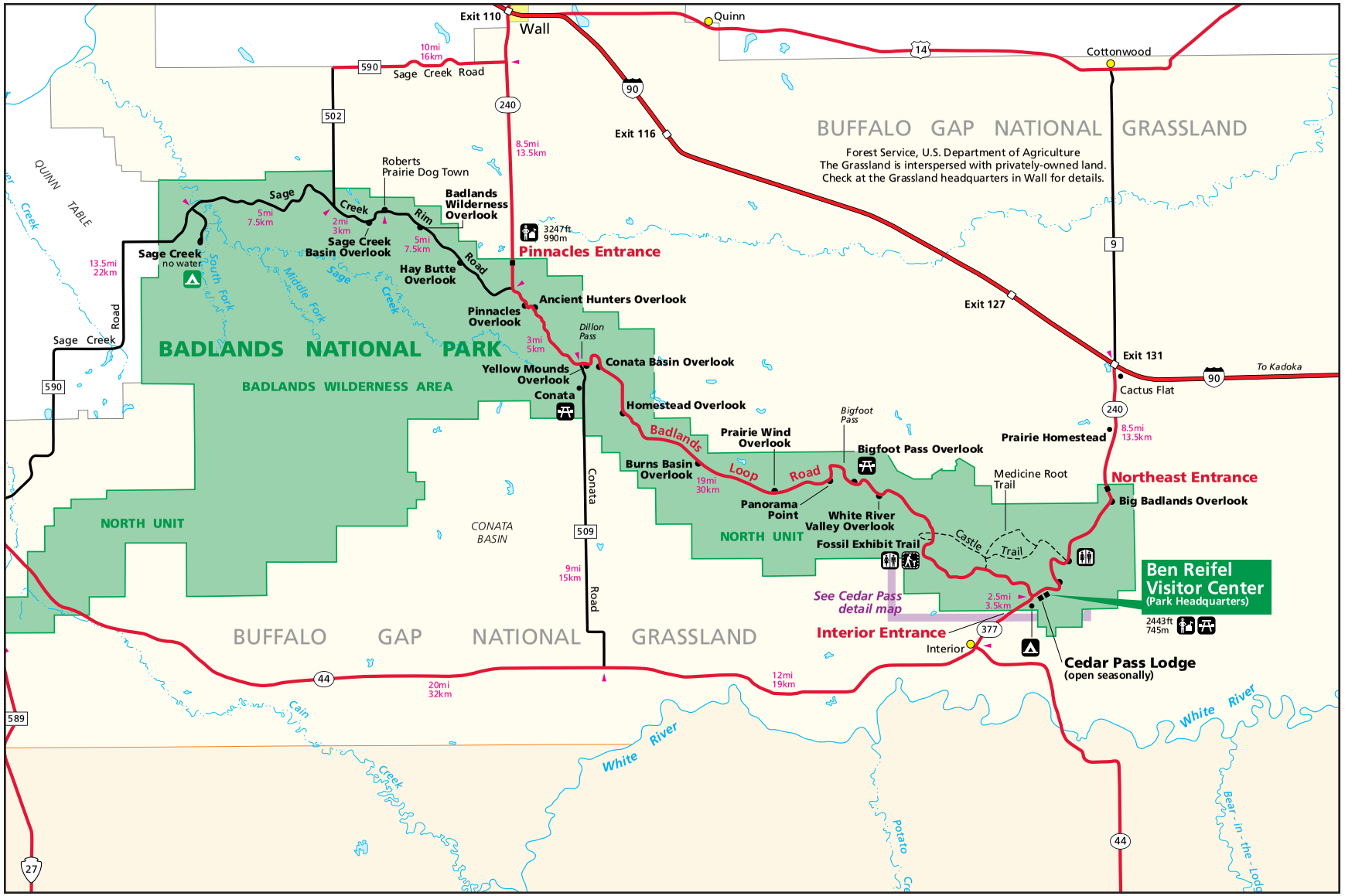
0' 225' 450' 900'

Scale 1" = 450'

Figure 3-4: Cedar Pass Developed Area Existing Vegetation Conditions

Environmental Assessment

Badlands National Park, South Dakota
National Park Service
November 2004



Source: National Park Service

Figure 3-5: Badlands National Park, North Unit, Pinnacles and Northeast Entrance and Visitor Attractions Indicated



Chapter Four

Environmental Consequences

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

The National Environmental Policy Act (NEPA) requires the disclosure of environmental impacts of a proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the preferred alternative be implemented. This section presents the analysis of environmental impacts of the three alternatives on cultural resources, wildlife, special status species, paleontology, vegetation, visitor experience, and park operations. Through this analysis, effects of the three alternatives are compared.

As the analysis of this EA is programmatic in nature, potential effects to resources are discussed below in general terms. Additional and more specific impact analysis will occur once details and locations of future actions are finalized, prior to construction.

GEOGRAPHIC AREA OF ANALYSIS

This EA contains programmatic analysis of impacts of future management of the 290 acres Cedar Pass Developed Area over the next 10-15 years. Similar programmatic impact analysis for the Pinnacles area associated with alternative B is also included (approximately 5-10 acres). While most effects of the proposal are typically focused on the Cedar Pass Developed Area and Pinnacles area, in certain cases they can result in park-wide impacts (for example, park operations) and are accordingly discussed within this analysis.

ASSUMPTIONS

Certain assumptions that influence the analysis of impacts of alternatives have been made regarding the study areas covered within this EA and are described below.

- Having been previously analyzed (NPS 2002), the impacts of the plans for the expansion of the NRHP-eligible Ben Reifel Visitor Center, as well as the construction of the fire cache, resource management and museum storage buildings are not analyzed in this EA.
- The research provided within the CLR (John Milner Associates 2004) related to NRHP significance, historic contexts, integrity, landscape features of the Cedar Pass Developed Area cultural landscape forms the basis for the formulation of the management alternatives and the identification/evaluation of impacts within this EA.
- Reference to the Cedar Pass Developed Area implies the 290-acre study area discussed above (“Geographic Area of Analysis”); reference to the Pinnacles area implies that area designated in the CLR as the site for off-site development under alternative B (approximately 20 miles northwest of the Cedar Pass Developed Area).

METHODOLOGY

Analysis for this EA is programmatic in nature. Impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect the environment, the broad analysis contained in this EA is designed to aid in future planning efforts.

Potential impacts are described in terms of

- type—adverse, beneficial.
- context—site-specific, local, regional.
- duration—short-term, less than one year; long-term, longer than one year. Unless otherwise noted, all direct adverse impacts to cultural and paleontological resources are considered permanent in nature due to the nonrenewable nature of these resources.
- intensity (see impact thresholds for each impact topic below)—It is assumed, when the impact analysis includes the use of mitigation measures described in chapter 2, that these measures would, in fact, be applied. As these measures are designed to minimize or avoid negative impacts, potential for resource impact and the intensity of that impact would almost certainly increase if they are not implemented as described in the analysis.

Impairment

NPS policy also requires that potential effects of proposals evaluate the likelihood of causing "impairment" of resources. An action results in impairment when its impacts "harm the integrity of park resources or values" (*NPS Management Policies* [NPS 2001, sec. 1.4.4]). Established by the 1916 Organic Act, one of the primary purposes of the national park system is a mandate to conserve park resources and values. NPS managers must always seek to avoid adversely impacting park resources and values or to minimize those impacts to the greatest degree practicable. Although the NPS has the discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that park resources and values remain unimpaired, unless a specific law directly provides otherwise.

Every park varies in its enabling legislation, resources and missions and, consequently, the level at which resource impairment could occur varies from one park to another. Analysis of the context, duration and intensity of impacts of each alternative, as well as the potential for impairment are evaluated in this EA as required under Director's Order 12 (NPS 2004a).

Where appropriate, an evaluation relative to impairment is included for each impact topic analyzed (paleontology, cultural resources, vegetation, wildlife, special status species). Visitor use and park operations are not considered park resources and, therefore, no impairment statements are provided.

Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations to implement NEPA requires the analysis of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are analyzed for all alternatives.

Past actions include the incremental development of the Cedar Pass Developed Area and the Pinnacles area. Current/recent projects within the Cedar Pass Developed Area include the rehabilitation of the Ben Reifel Visitor Center and the construction of the Fire Cache, the Museum Storage, and the Resource Management buildings (NPS 2002). A number of future projects at the Cedar Pass Developed Area are at various stages of planning and development (for example, renovation of seven permanent housing units, updating of structural fire readiness, replacement of Cedar Pass laundry facility, campground improvements) (Kirk Associates 2004: 67).

CULTURAL RESOURCES

The potential to impact cultural resources exists under all alternatives. Archeological resources may be affected as a result of ground disturbance associated with future development; cultural landscapes may be affected as a result of future modifications and new, incompatible development. Project-specific studies have documented the presence of a cultural landscape (including historic structures) and historic archeological resources within the Cedar Pass Developed Area (see chapter 3). No formal cultural resource studies exist for the Pinnacles area; however, alternative B proposes new construction (ground disturbance) in this area, an activity that could affect these resources.

Following is a summary of NPS regulations and policies related to cultural resource management, as well as a description of the methods used to analyze potential impacts to these resources.

Guiding Regulations and Policies

Federal actions that have the potential to affect cultural resources are subject to a variety of regulations. Compliance with these and other laws serves as the foundation for general protection of cultural resources important to the nation. The National Historic Preservation Act (NHPA) (1966, as amended) is the principal legislative authority for management of cultural resources associated with NPS projects. Section 106 of the NHPA requires all federal agencies to consider the effects of their actions on cultural resources determined eligible for inclusion in the National Register of Historic Places (NRHP). In addition, the NHPA requires that federal agencies take actions to minimize harm to historic properties that would be adversely affected by a federal undertaking. Section 110 of the NHPA, among other things, charges federal agencies with the responsibility for establishing preservation programs for identification, evaluation and nomination of historic properties to the NRHP.

Other important laws and regulations designed to protect cultural resources follow:

- The Native American Graves Protection and Repatriation Act (NAGPRA), 1990
- American Indian Religious Freedom Act (AIRFA), 1978
- The National Environmental Policy Act (NEPA), 1969
- The Archeological Resources Protection Act (ARPA), 1979
- Executive Order 11593, 1971

In addition, the NPS is charged with protection and management of cultural resources in its custody. This is furthered through the implementation of the NPS's *Cultural Resources Management Guidelines* (NPS 1998), the *NPS Management Policies* (NPS 2001), and the 1995 Service-wide Programmatic Agreement with the Advisory Council on Historic Preservation (ACHP) and the National Conference of State Historic Preservation Officers (SHPO). These documents charge NPS managers with avoiding, or minimizing to the greatest degree practicable, adversely impacting park resources and values.

The draft general management plan for Badlands National Park also addresses the management and protection of cultural resources, outlining the following strategies:

- continuation of survey, inventory and evaluation of resources in accordance with the NHPA
- development of more accurate predictive modeling of prehistoric site distribution
- use of avoidance techniques to prevent impacts to significant sites
- continued support of cultural resource research
- consultation with the SHPO and federally recognized tribes regarding actions that could potentially affect the resource (NPS, in preparation: 16)

Assumptions Related to Cultural Resource Analysis

To promote consistency and clarity, the following assumptions have been made for the evaluation of effects to cultural resources under all alternatives.

- The Cedar Pass Developed Area cultural landscape is considered eligible for inclusion in the NRHP (appendix A).
- Under all alternatives, it is assumed that future development and alteration of cultural resources (landscape, archeological resource) would comply with Section 106 of the NHPA.
- It is assumed that under all alternatives *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (NPS 1996) would be used for guidance for work within the cultural landscape.

- Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect cultural resources, the broad analysis contained in this EA is designed to aid in future planning efforts. For instance, in general any ground-disturbing activity such as clearing/grading, trenching/excavation, and filling could affect buried archeological resources through the loss of cultural contexts of artifacts, features. The intensity of these potential impacts remains largely unknown without the benefit of extensive surveys. Intensity of impacts of future projects can be influenced by the type/nature of the archeological resource encountered, the ability of workers to recognize buried cultural materials during construction, and the level of disturbance of the cultural resources as a result of the actions.

Methods of Impact Analysis for Cultural Resources

The NPS categorizes cultural resources by the following categories: archeological resources, cultural landscapes, historic structures, museum objects and ethnographic resources. The proposal under consideration is not believed to have the potential to affect museum objects or ethnographic resources and they are not discussed further. All historic structures are considered part of the Cedar Pass Developed Area cultural landscape and are, therefore, addressed in the "Cultural Landscapes" section. A review of reference materials regarding cultural resources within Badlands National Park, as well as communications with NPS staff, were completed to identify and evaluate potential impacts to cultural resources located within the Cedar Pass Developed Area and Pinnacles area.

Cumulative impacts to cultural resources over time can include total loss of sites or parts of sites due to development, erosional processes or lack of appropriate maintenance; loss of integrity and interpretive value; and the gradual loss of the cultural resource base within the park.

The area included in the impact analysis for cultural resources includes the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B) (figure 1-2).

Cultural Resource Impact Thresholds Definitions

Cultural Landscapes

Negligible: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect.*

Minor: **Adverse impact** – impact(s) would alter a pattern(s) or feature(s) of the cultural landscape but would not diminish the overall integrity of the landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – preservation of landscape patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic*

Properties With Guidelines for the Treatment of Cultural Landscapes. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: **Adverse impact** - impact(s) would alter a pattern(s) or feature(s) of the cultural landscape, diminishing the overall integrity of the landscape. For purposes of Section 106, the determination of effect would be *adverse effect*. A memorandum of agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). The mitigative measures identified in the MOA reduce the intensity of impact under NEPA from major to moderate.

Beneficial impact – rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: **Adverse impact** - impact(s) would alter a pattern(s) or feature(s) of the cultural landscape, diminishing the overall integrity of the resource. For purposes of Section 106, the determination of effect would be *adverse effect*. The NPS and applicable state or tribal historic preservation officer are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Beneficial impact – restoration of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Impairment: A major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Badlands National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning document.

Archeological Resources

Negligible: Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: **Adverse impact** - disturbance of a site(s) results in little, if any, loss of integrity. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: **Adverse impact** - disturbance of a site(s) results in loss of integrity. For purposes of Section 106, the determination of effect would be *adverse effect*. A memorandum of agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). The mitigative measures identified in the MOA reduce the intensity of impact under NEPA from major to moderate.

Beneficial impact – stabilization of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect.*

Major: **Adverse impact** – disturbance of a site(s) results in loss of integrity. For purposes of Section 106, the determination of effect would be *adverse effect*. The NPS and applicable state or tribal historic preservation officer are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Beneficial impact – active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Impairment: A major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Badlands National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning document.

Section 106, National Historic Preservation Act

These analyses are designed to comply with requirements of Section 106 of the NHPA, which requires an assessment of the effect of the undertaking (implementation of an alternative) on cultural resources based upon the criterion of effect and criteria of adverse effect found in the Advisory Council on Historic Preservation's (ACHP) regulations. In this EA, a Section 106 summary is included at the end of each alternative's discussion. In accordance with the ACHP regulations implementing Section 106 (36 CFR 800), impacts to cultural resources are identified and evaluated by:

1. Determining the area of potential effect (APE). For the purposes of this EA, the APE is defined as the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B), both located within Badlands National Park (figure 1-2).
2. Identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places.
3. Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register.

4. Considering ways to avoid, minimize or mitigate adverse effects.

An *adverse effect* occurs when an impact alters any characteristic of a cultural resource that qualifies it for inclusion in the NRHP. Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR 800.5). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

If it is determined that the proposed actions would adversely affect National Register eligible or listed cultural resources, the park would prepare an environmental assessment to analyze the impacts of the action on the cultural resources, as well as negotiate and execute a memorandum of agreement with the South Dakota SHPO to stipulate how the adverse effect would be minimized or mitigated. If it is determined that the proposed action would have no adverse effect on National Register eligible or listed cultural resources, the park would document this determination and consult with the South Dakota SHPO for comment.

CEQ regulations and the NPS's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12, NPS 2004a) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (reducing impacts from major to moderate). Any reduction in intensity of impact due to mitigation however, is an estimate of the effectiveness of mitigation under NEPA only and does not suggest that the level of effect under Section 106 is similarly reduced. Cultural resources are nonrenewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, while adverse effects under Section 106 may be mitigated, the effect to the resource remains adverse.

Environmental Consequences

Impacts Common to All Alternatives

The eventual failure of the Loop Road at the Cedar Pass could result in changed traffic patterns in the area, including that portion of the Loop Road contained within the Cedar Pass Developed Area cultural landscape (northern boundary) (NPS, in preparation) (figure 1-3). While the route of this future road realignment is unknown at this time, it has the potential to affect both archeological and cultural landscape resources within the study area (figure 1-3). Potential impacts to the NRHP-eligible cultural landscape vary among alternatives and are discussed below. Potential effects to archeological resources are similar under all alternatives and are related to construction activities (ground disturbance), which can uncover or damage such resources, particularly those unidentified and buried. With implementation of mandatory mitigation measures (preconstruction survey, monitoring of ground disturbance [chapter 2]), adverse impacts would likely be held to minor and site-specific.

Under all alternatives, archeological resources within the Cedar Pass Developed Area would be preserved and protected to the greatest extent possible, a minor, localized benefit.

Alternative A—No Action

Under the no-action alternative, as under all alternatives, the Cedar Pass Developed Area cultural landscape would be treated as a historic landscape. Development and alterations of the cultural landscape would be preceded by Section 106 (NHPA) review to ensure that adverse effects are minimized *and that NPS historic preservation standards are met*. Though the district would be managed for historic resource values, the assumption used in the EA for analysis purposes is that a minimum application of available preservation knowledge and technology would be applied *(e.g., no additional research)*. The NPS would continue to manage and use the Cedar Pass Developed Area cultural landscape in the current (2004) manner, without historic preservation guidance provided for in the draft CLR (for example, detailed historical research yielding information regarding original design and construction of facilities, high levels of historical research regarding building exterior/interiors, evaluation of historic integrity, conservation assessments) (John Milner Associates 2004). New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. Designers of new facilities, general contractors constructing them, and laborers/contractors involved in maintenance operations would *not necessarily* be required to have training, education, and/or experience in preservation technology. *Park maintenance staff currently has minimal preservation training*. In sum, no park- and Developed Area- policies, strategies, and implementation initiatives would be available to lend a comprehensive and sustained program of the historic landscape and building preservation as outlined in the CLR (figure 2-1).

Analysis

Analysis of impacts to cultural resources under the no-action alternative would be primarily related to future development and its effects on the cultural landscape, including impacts to buried cultural resources. These impacts include landscape modifications associated with the future use and management of the Cedar Pass Developed Area cultural landscape, as well as ground disturbance associated with future new construction.

Cultural Landscapes (Cedar Pass Developed Area)

Characteristic features of the circulation element of the cultural landscape (roadway dimensions, layout, spatial organization) are considered significant. In particular, the portion of the Loop Road associated with the Cedar Pass Developed Area could be affected by a change in the overall road alignment in the event of future road failure at Cedar Pass. The no-action alternative includes no historic preservation management guidance related to the cultural landscape. Without such guidance, future realignment of the Loop Road at the Cedar Pass Developed Area could involve only minimal understanding of the historic sensitivity of the landscape and could result in adverse impacts resulting from its loss of historic association with this circulation element. Depending on the ultimate realigned route of the Loop Road, localized, long-term, effects of unknown type and intensity could occur to the Cedar Pass Developed Area cultural landscape under this alternative. When the future route is selected, a more definitive statement of effect to the cultural landscape will be possible. When compared to the no-action alterative under which

only minimal historic preservation planning is likely, the action alternatives offer a greater degree of protection to the integrity of the historic landscape related to future road realignment.

Open space areas are defined within the CLR as one of ten character areas, and one which retains a high degree of integrity (John Milner Associates 2004, Map 4-4). Open spaces "encompasses all the open, undeveloped space that surrounds the other character areas" (Milner 2004: 6-4; also see chapter 2). The natural system landscape features that have been identified within these areas include drainages, vegetation, Badlands formations, and wildlife (John Milner Associates 2004: 3-14 through 3-18).

Under the no-action alternative, it is assumed that the cultural landscape would be managed in a minimal way for historic resource values. Future projects proposed within open space areas may not initially appear to jeopardize the integrity of the historic landscape. However, over time, the cumulative effect of multiple projects could directly affect the integrity of the open space areas and, indirectly, the spatial organization of the landscape and contributing views into and out of the Cedar Pass Developed Area. This potential increase in future development in open space areas and its potential to affect its integrity could result in localized, long-terms impacts to the cultural landscape. Depending on the type and amount of future development in the open space areas, intensity of potential impacts could vary (negligible to major) through time, possibly becoming more intense as incremental encroachment into open space areas occurs over the next 10-20 years. Potential development within open space areas under the no-action alternative would put cultural resources at a higher risk when compared to the action alternatives under which open space areas are specifically preserved and protected.

Under the no-action alternative, new development within the Cedar Pass Developed Area would not be guided by the CLR as is the case under alternatives B and C. Without the benefit of such guidance, development proposals that reflect minimal sensitivity to the context and integrity of the resource are possible throughout the cultural landscape. In addition, new development could be planned, designed and constructed by those untrained and inexperienced in historic preservation planning and construction techniques. As a result, new construction has the potential to create adverse effects to the Cedar Pass Developed Area cultural landscape in its impacts to the historic integrity and context of contributing elements.

Future new construction and development in the Cedar Pass Developed Area would undergo required compliance with federal historic preservation policies and regulations (see "Guiding Regulations and Policies" and "Assumptions" above). However, incremental loss of the integrity of the NRHP-eligible cultural landscape as a result of the lack of management guidance, coupled with lack of use of trained historic preservation specialists in design and construction of new development, is a possibility under the no-action alternative. Loss of integrity from future development within the general landscape could occur through insensitive planning, incompatible design, and incremental loss of significant landscape elements/features. This potential incremental loss could result in long-term, localized, adverse impacts. The intensity of potential impacts could vary (negligible to major) through time, likely becoming more intense as incremental development proceeds over the next 10-20 years within the Cedar Pass Developed Area. When compared to the action alternatives under which historic preservation guidance is

provided, new development under the no-action alternative presents a decidedly greater risk to the cultural landscape of the Cedar Pass Developed Area.

Under the no-action alternative, future vegetation management consists of the removal of invasive Siberian elms in the open space areas of the Cedar Pass Developed Area. This action would result in negligible effect on the cultural landscape. When compared to alternatives B and C, which recommend increased efforts of management designed to restore historic vegetation patterns within the Cedar Pass Developed Area, the no-action alternative offers a lesser benefit to the historic patterns of the cultural landscape.

Archeological Resources

Open space areas are defined within the CLR as one of ten character areas. The natural system landscape features that have been identified within these areas include drainages, vegetation, Badlands formations, and wildlife (John Milner Associates 2004: 3-14 through 3-18). Under the no-action alternative, there is a greater possibility of impact to open space and natural systems as a result of the lack of specific management guidance for the NRHP-eligible cultural landscape at the Cedar Pass Developed Area. As this alternative provides no historic preservation-related guidance for open space protection, it is more likely that development/ground disturbance in these large areas could impact buried archeological resources (prehistoric and historic). Permanent adverse impacts to archeological resources of unknown intensity are possible as a result of potential ground disturbance in these open space areas possible under this alterative. However, with the implementation of mitigation measures (chapter 2), adverse impacts would likely not exceed the site-specific, minor level. When compared to the no-action alternative, alternatives B and C would provide reduced potential for disturbance of archeological resources through the protection of open space areas within the cultural landscape.

Under the no-action alternative, the potential for future new development and associated ground disturbance in all areas of the Cedar Pass Developed Area cultural landscape is more likely than that under the other two alternatives. This situation would result from the lack of historic preservation planning guidance (CLR) in the future management and use of the Cedar Pass Developed Area under this alternative. As a result, this alternative would likely result in the greatest amount of ground disturbance from future development in both disturbed and undisturbed areas of the study area.

The risk to prehistoric and historic archeological resources from future development (ground disturbance) is greatest to those buried, unidentified resources. Potential impacts can be associated with construction activities, structure and vegetation removal, structure modifications (additions), road realignments and parking alterations. All such future proposals have the potential to result in adverse impacts of unknown intensity to buried archeological resources. However, the implementation of mitigative measures (for example, pre-construction surveys, presence of a cultural resource specialist during such ground disturbing activities) would likely reduce potential adverse impacts to no greater than minor (see the “Mitigation Measures” section in chapter 2). When compared to the action alternatives, the no-action alternative would create the greatest risk to archeological resources throughout the Cedar Pass Developed Area resulting from potential development/ground disturbance.

Under the no-action alternative, future vegetation management is limited to the removal of invasive Siberian elms in the open space areas of the cultural landscape. Tree removal would occur through cutting and application of herbicides to the stump to prevent re-growth (Prosser, pers. comm. 2004). As no ground disturbance would occur, this action would result in negligible impacts to archeological resources. This represents a benefit to archeological resources when compared to the action alternatives under which additional vegetation management work (ground disturbance) would occur.

Cumulative Impacts

On-going and future actions within the park have the potential to result in cumulative loss of, or impacts to cultural resources (construction of the Lakota Heritage and Education Center, possible expansion of the Sage Creek campground, realignment of the Loop Road, gunnery range clean-up [south unit], park maintenance activities, theft/vandalism). Some of these actions could contribute adverse cumulative effects to scenic views into and out of the cultural landscape at the Cedar Pass Developed Area. Actions outside the park, which could adversely affect cultural resources over time, include the construction of transportation and utility facilities, increased use of adjacent National Grasslands, and illegal collecting on private lands. In addition, the result of natural erosion processes undoubtedly contributes to the cumulative loss of these resources, particularly archeological resources, throughout and around the park.

To complicate the picture, less than 10% of the park has been inventoried for cultural resources, resulting in a significant lack of data from which to predict potential cumulative loss of cultural resources. However, a variety of project-specific cultural resources studies for the Cedar Pass Developed Area have been undertaken through the years, allowing for a clearer picture of the cultural resource database for this area (see chapter 3). The gradual park development of the Cedar Pass Developed Area and the Pinnacles area has almost certainly contributed to the cumulative loss of the park's cultural resources. Many of these adverse effects were created at a time when little or no formal protection existed for historic properties. Periodic evaluation and monitoring of known/recorded cultural resources within the Cedar Pass Developed Area would help reduce additional cumulative loss of the park's cultural resources.

Conclusions

The no-action alternative would result in risks to the NRHP-eligible cultural landscape primarily due to the lack of specific management guidance for the future development/use of the historic landscape, as well as the minimal use of historic preservation expertise for planning, design and construction. Potential adverse impacts to the landscape range from negligible to major, primarily resulting from effects to views, spatial organization, and open space, as well as the potential for incompatible planning/design and loss of significant landscape elements/features. This risk could increase incrementally as development continues through the years within the Cedar Pass Developed Area.

The no-action alternative would also result in minor, adverse effects to archeological resources, particularly buried resources, as a result of the potential for greater development in undeveloped

(open space) areas within the Cedar Pass Developed Area, as well as future realignment of the Loop Road. Minor benefits would result from the commitment to preserve archeological resources within the Cedar Pass Developed Area, to the extent possible.

Compared to the two action alternatives that include historic preservation-based management guidance for the Cedar Pass Developed Area, including the use of additional historic preservation expertise and technology, this alternative would provide no similar efforts and could potentially result in increased disturbance of archeological resources and incremental loss of integrity and character of the cultural landscape. However, compliance with Section 106 of the NHPA prior to development and for those cultural resources encountered during construction activities would occur to ensure that the effects of such actions are identified, evaluated and mitigated, if necessary.

As impairment is defined, implementation of alternative A would not result in impairment of cultural resources within Badlands National Park (see "Methods of Impact Analysis for Cultural Resources").

Section 106 Summary

Future actions associated with the no-action alternative that have the potential to affect cultural resources have been analyzed at the programmatic level. Pursuant to 36 CFR 800.5, implementing regulations of the NHPA, addressing the criteria of effect and adverse effect, the NPS finds that, the no-action alternative could potentially result in an *adverse effect* to the Cedar Pass Developed Area cultural landscape resulting from potential realignment of the Loop Road, use of open space areas within the landscape, and new development within the general landscape. Vegetation management would not result in adverse effects (*no adverse effect*) to cultural landscape resources within the Cedar Pass Developed Area.

Pursuant to the same regulations and level of analysis, the NPS finds that the no-action alternative is not likely to result in adverse effects (*no adverse effect*) to archeological resources currently identified as eligible for or listed in the NRHP.

As this programmatic analysis includes no site-specific information regarding direct impacts to cultural resources, additional Section 106 compliance efforts will be necessary at the time specific projects are proposed in the future. In cases where they have not been identified as part of this analysis, potential adverse impacts (as defined in 36 CFR 800) to cultural resources listed in or eligible for listing in the NRHP will be coordinated by the NPS with the SHPO to determine the level of effect on the property and to determine any necessary mitigative measures.

Alternative B—Preservation

Alternative B focuses on the management and preservation of the historic integrity of the NRHP-eligible cultural landscape at the Cedar Pass Developed Area through the application of moderate levels of preservation knowledge and technology. Park growth needs would be met in other areas of the park. Historic functions of the cultural landscape's facilities and land use would continue. Contributing cultural landscape resources would be protected and maintained, while limited

efforts would be made to remove or mitigate intrusive elements. Only minor changes within the Cedar Pass Developed Area would be allowed to meet identified facility and operational needs. Existing roads, buildings and other landscape features would be repaired with the historic nature of the resource in mind. Surviving historic resources would be maintained/preserved through the application of moderate levels of preservation knowledge and technology. Natural systems (drainages, vegetation, Badlands formations, wildlife) and open space areas would be preserved (figure 2-2).

As no new development would occur within the Cedar Pass Developed Area, new facility needs would be met through new development at the Pinnacles area, located approximately 20 miles to the northwest (figure 1-2). It is estimated that approximately 5-10 acres of land in the Pinnacles area will be needed to fulfill future park development needs (figure 1-2).

Analysis

Analysis of potential impacts to cultural resources under alternative B is primarily related to levels of ground disturbance, particularly at the Pinnacles area, and cultural landscape modification and preservation efforts.

Cultural Landscapes (Cedar Pass Developed Area)

Characteristic features of the circulation element of the Cedar Pass Developed Area (for example, roadway dimensions, layout, spatial organization) contribute to the significance of the NRHP-eligible cultural landscape. The portion of the Loop Road associated with the Cedar Pass Developed Area (northern boundary) could be affected by a change in the overall road alignment in the event of future road failure at Cedar Pass. A loss of the cultural landscape's association with this circulation element could result in adverse impacts. Under alternative B, efforts would be made to ensure the integrity of characteristic features of this road through the use of moderate levels of historic preservation expertise for road design. As the alignment is unknown at this time, it is assumed that localized, long-term effects of unknown type and intensity could occur to the Cedar Pass Developed Area cultural landscape under this alternative. When the future route is selected, a more definitive statement of effect to the cultural landscape will be possible.

Under alternative B, the open space elements and associated natural systems of the NRHP-eligible cultural landscape would be retained and protected. This action would result in a minor, localized, long-term benefit to the Cedar Pass Developed Area cultural landscape. When compared to the no-action alternative, alternative B offers decidedly greater protections for the historic integrity of open space areas of the historic landscape.

Under alternative B, no future development would occur within the Cedar Pass Developed Area, contributing to the overall preservation of the integrity of the NRHP-eligible cultural landscape. Rather, future development would occur at the Pinnacles area, approximately 20 miles to the northwest (figure 1-2). This, coupled with preservation efforts of existing contributing landscape elements, would result in a minor, long-term, localized benefits to the Cedar Pass Developed Area cultural landscape. When compared to the no-action alternative, alternative B offers a

higher degree of protection of cultural landscape integrity through its preclusion of new development and its preservation efforts.

Under alternative B, future vegetation management actions within the cultural landscape include the removal of invasive Siberian elms from the Cedar Pass Lodge and the open space areas. Trees removed from the Lodge area would be replaced with noninvasive, deciduous trees of similar form and character. Open space areas would be restored to native prairie grassland. In addition, future maintenance and in-kind replacement of the existing foundation plantings within the cultural landscape may occur. These future vegetation management actions would further the preservation of the historic landscape patterns, resulting in a localized, long-term, negligible to minor benefit to the landscape. When compared to the no-action alternative, alternative B provides additional and beneficial benefits to the cultural landscape related to vegetation management.

Under alternative B, minimal and limited efforts would be made to reduce or eliminate the intrusive nature of noncontributing landscape features (structures), with removal only after their useful life. Future removal of intrusive features would result in negligible to minor, long-term, localized benefits to the cultural landscape. When compared to alternative B, the no-action alternative offers no similar benefits, as it includes no mitigation of intrusive landscape elements.

Archeological Resources

Under alternative B, the open space elements and their associated natural systems of the NRHP-eligible Cedar Pass Developed Area cultural landscape will be retained and protected. This action would further strengthen the protection of archeological resources in these areas through its resulting lack of ground disturbance and park use, a minor, site-specific benefit to archeological resources. When compared to the no-action alternative, alternative B offers a notably increased level of protection for archeological resources through its open space preservation.

Under alternative B, no new construction development would take place within the Cedar Pass Developed Area, a minor, localized, beneficial effect to archeological resources. Comparatively, development potential under the no-action alternative would result in reduced protection for archeological resources.

Future needs for new facilities/development would be met at the Pinnacles area, approximately 20 northwest of the Cedar Pass Developed Area (figure 1-2). Future development could include new housing, RV sites for researchers, staff offices, utilities, and parking. Future construction activities have the potential to adversely affect prehistoric and historic archeological resources, particularly those buried resources that have not been identified or evaluated. The effects of such actions have the potential to result in permanent, site-specific adverse impacts of unknown magnitude, depending on the archeological resource and level of disturbance. However, the implementation of mandatory mitigative measures (for example, presence of a cultural resource specialist during such ground disturbing activities) would likely mitigate potential adverse impacts to no greater than minor and site-specific (see the “Mitigation Measures” section in

chapter 2). No development would occur within the Pinnacles area under the other two alternatives.

The future removal and replacement of invasive Siberian elms in the Cedar Pass Lodge area, the removal of the elms in the open space areas, and the maintenance and in-kind replacement of contributing site foundation plantings would result in minor ground disturbance within the Cedar Pass Developed Area. Much of this activity will occur in previously disturbed (landscaped) areas. If previously unidentified archeological resources were encountered subsurface, adverse effects would be expected with the intensity of the effect depending on the resource and level of disturbance. The implementation of mandatory mitigative measures (for example, presence of a cultural resource specialist during such ground disturbing activities) would likely hold potential adverse impacts to the negligible level (see the "Mitigation Measures" section in chapter 2). When compared to the no-action alternative which involves the least amount of vegetation management (ground disturbance), risks from such activities to buried archeological resources are increased under this alternative.

Under alternative B, minimal and limited efforts would be made to reduce or eliminate the intrusive nature of noncontributing landscape features (structures.), removing them only after their useful life. These measures would result in very limited amounts of ground disturbance. With the implementation of mandatory mitigation measures, site-specific adverse impacts to archeological resources would not exceed negligible to minor in intensity. No similar risks to archeological resources are expected under the no-action alternative under which mitigation of intrusive landscape elements would not occur.

Cumulative Impacts

Cumulative impacts to cultural resources of alternative B are similar to those described under the no-action alternative.

Conclusions

Alternative B would result in minor benefits for archeological and cultural landscape resources due to open space/natural systems preservation efforts, the lack of new development within the Cedar Pass Developed Area, maintenance of historic vegetation patterns, removal of intrusive landscape features, and the protection of archeological resources. Conversely, minor adverse impacts to archeological resources are expected as a result of future realignment of the Loop Road, new development at the Pinnacles area, and the removal of intrusive landscape elements at the Cedar Pass Developed Area. Impacts to the NRHP-eligible cultural landscape as a result of future realignment of the Loop Road are unknown at this time; however, the use of designers/contracts with moderate levels of historic preservation expertise could result in benefits to the landscape.

When compared to the no-action alternative, alternative B is believed to offer an increased level of protection for archeological and cultural landscape resources throughout the Cedar Pass Developed Area due to the reduced likelihood of landscape alterations. However, compared to

the no-action alternative, it would provide a notably greater risk to archeological resources in the Pinnacles area where off-site development would occur.

As impairment is defined, alternative B will not result in impairment of cultural resources within Badlands National Park.

Section 106 Summary

Future actions associated with alternative B that have the potential to affect cultural resources have been analyzed at the programmatic level. This analysis is pursuant to 36 CFR 800.5, implementing regulations of the NHPA, addressing the criteria of effect and adverse effect. At the programmatic level, the NPS finds that the following future actions under alternative B, with mandatory mitigation measures, would not result in adverse effects (*no adverse effect*) to archeological or cultural landscape resources currently identified as eligible for or listed in the NRHP: protection of archeological resources, use/preservation of open space, new development, vegetation management and removal/mitigation of intrusive cultural landscape features. In some cases, benefits to these resources may occur under alternative B (*no adverse effect*).

Pursuant to the same regulations, the NPS finds that the future realignment of the Loop Road would result in unknown effects (*no adverse effect or adverse effect*) to the Cedar Pass Developed Area cultural landscape. A final determination of effect under 36 CFR 800 will be possible when the realignment route is finalized and impacts can be evaluated some time in the future. The potential future realignment of the Loop Road would not result in adverse effects (*no adverse effect*) to archeological resources located within the Cedar Pass Developed Area.

As this programmatic analysis includes no site-specific information regarding direct impacts to cultural resources, additional Section 106 compliance efforts will be necessary at the time specific projects are proposed in the future. In all cases where cultural resource have not been identified as part of this analysis, potential adverse impacts (as defined in 36 CFR 800) to those listed in or eligible for listing in the NRHP will be coordinated by the NPS with the SHPO to determine the level of effect on the property and to determine any necessary mitigative measures.

Alternative C—Rehabilitation (Preferred Alternative)

This alternative focuses on the rehabilitation of the Cedar Pass Developed Area cultural landscape for limited new uses, while protecting significant historic landscape elements to the greatest extent possible. Necessary growth would be accommodated within the Cedar Pass Developed Area through the modern, contemporary use of the historic landscape through rehabilitation techniques. It is designed to enhance the surviving historic resources through the application of high levels of preservation knowledge and technology. Only alterations that preserve/restore the historic character of the cultural landscape would be allowed. New development would be limited to critical park needs and would occur within defined and distinct development sites, most of which have been previously disturbed (for example, sites where buildings existed at one time and have since been removed, and within developed/altered vegetation areas) (figure 2-3). Open space areas and their associated natural systems would

generally be preserved, with minor exceptions (trails/paths). New development would be compatible with or nonintrusive to the historic landscape. Existing noncontributing structures compatible with the cultural landscape would be retained and rehabilitated for use. Historic planting designs would be restored in some areas (figure 2-3).

Analysis

Analysis of potential impacts to cultural resources under alternative C is related to ground disturbance associated with new construction and other modifications associated with the rehabilitation of the Cedar Pass Developed Area cultural landscape.

Cultural Landscapes (Cedar Pass Developed Area)

Characteristic features of the circulation element of the Cedar Pass Developed Area (for example, roadway dimensions, layout, spatial organization) contribute to the significance of the NRHP-eligible cultural landscape. The portion of the Loop Road associated with the Cedar Pass Developed Area (northern boundary) could be affected by a change in the overall road alignment in the event of future road failure at Cedar Pass. A loss of the cultural landscape's association with this circulation element could result in adverse impacts. Under alternative C, efforts would be made to ensure the integrity of characteristic features of this road (dimensions, layout, spatial organization) through the use of high levels of historic preservation expertise for road design. As the alignment is unknown at this time, it is assumed that localized, long-term effects of unknown type and intensity could occur to the Cedar Pass Developed Area cultural landscape under this alternative. When the future route is selected, a more definitive statement of effect to the cultural landscape will be possible. When compared to the no-action alternative, alternative C offers the highest level of protection for the historic integrity of the cultural landscape related to this portion of the circulation element.

Alternative C includes the preservation of general spatial characteristics of the landscape, including its open space areas and associated natural systems. This would result in a minor, localized, long-term benefit to the Cedar Pass Developed Area cultural landscape through its protection of these areas.

At the same time, this alternative would accommodate development within open space areas which does not jeopardize its historic character. Design/construction of compatible, minor development within open space areas (for example, trails/paths) would incorporate a high level of historic preservation expertise. This increases the likelihood that new features would be designed and constructed with the integrity of the NRHP-eligible cultural landscape in mind (see the "Mitigation Measures" section in chapter 2). Consequently, the construction of these new features within the open space areas of the landscape should have no more than a localized, minor, long-term adverse impact on the resource. When compared to the no-action alternative, alternative C offers greater protections for the historic integrity of open space areas of the historic landscape.

Under alternative C, new development for critical needs would be allowed within the cultural landscape and would occur within defined, previously impacted, development sites (figure 2-3).

New development could include replacement structures that are substantially more compatible with the historic landscape than were the intrusive structures they replaced. New construction has the potential to create adverse impacts of unknown magnitude to the NRHP-eligible cultural landscape in its effects on both visual and physical characteristics. The strategy under alternative C is designed to preserve the integrity of the existing historic landscape and its contributing elements, while incorporating Mission 66 design principles into the design and placement of new structures. Under this alternative, new development would involve the use designers and construction workers with high levels of historic preservation expertise. New construction would be required to differ from, but be compatible with, existing historic structures. The clustering of new development into pre-determined areas, coupled with the incorporation of high levels of historic preservation expertise to ensure compatible design and construction principles, would likely hold adverse impacts to long-term, localized, and no greater than negligible to minor in intensity. When compared to the no-action alternative, the manner in which future development occurs under this alternative would result in greater preservation of the landscape's integrity.

Potential vegetation management associated with alternative C includes the removal of invasive Siberian elms from the Cedar Pass Lodge and open space areas. Trees would be replaced with similar, deciduous species in the Lodge area; open space areas would be restored to native prairie grassland. In addition, original historic planting designs would be reestablished, where possible, at the Ben Reifel Visitor Center, Cedar Pass Lodge, residential, and campground areas of the Cedar Pass Developed Area. At the Visitor Center and residential areas, the historic foundation planting design would be reestablished to the original Mission 66 plan. Problematic or inappropriate plants would be substituted with more suitable but similar plantings that require less maintenance. The focus would be on re-establishing the overall character—"buildings surrounded by mown lawn with clusters of mixed shrubs and tree plantings" (John Milner Associates 2004: 6-27). Visitor safety and resource protection would also guide plant selection. Plantings within the Cedar Pass Lodge area would be based on further research to discover historic planting design intent. Plantings within the campground area would follow the example proposed by the 1956-planting plan for the area. The vegetation management actions under alternative C would contribute to maintaining the integrity of the cultural landscape and would be considered a minor to moderate, long-term, localized benefit to the resource. Comparatively, no such vegetation management is included under the no-action alternative and, thus offers no similar benefits.

Under alternative C, efforts would be made to mitigate intrusive, noncontributing landscape features that post-date the landscape's period of significance (structures, roads.), removing them after their useful life. These efforts would result in minor, long-term, localized benefits to the cultural landscape. Comparatively, alternative A proposes no mitigation efforts related to intrusive landscape elements and, thus, offers no similar benefits.

Under this alternative, alterations of cultural landscape features and structures (for example, building modifications, rehabilitation efforts) that are consistent with its historic character and are considered necessary to ensure the landscape's continued use would be allowed. A high level of historic preservation expertise would be utilized in the rehabilitation (design, construction, repair/maintenance) of such structures. Collectively, these rehabilitative efforts would likely result in a minor to moderate, long-term, localized benefit to the landscape. Comparatively,

under the no-action alternative only minimal historic preservation knowledge would be utilized to evaluate the potential usefulness of a historic structure, making it possible that compatible structures would be removed and replaced--a potential detriment to the cultural landscape when compared to alternative C.

Archeological Resources

Alternative C proposes the preservation of general spatial characteristics of the Cedar Pass Developed Area landscape, including natural systems and open space areas, while allowing for development within the landscape that does not jeopardize its historic character. This general preservation of open space areas is a negligible to minor benefit to archeological resources.

Minor, compatible development within open space areas (for example, trails/paths) could involve ground disturbance and the potential to adversely impact buried, unrecorded archeological resources. Such impacts can result in permanent loss of cultural contexts or artifact and features. Implementation of mandatory mitigation measures described in chapter 2 would likely hold these potential adverse impacts to site-specific and minor in intensity. When compared to alternative A, incremental development could occur within open space areas, resulting in a notably increased potential risk to archeological resources than that likely under alternative C.

Under alternative C, future improvements and new critical needs development could occur within the Cedar Pass Developed Area within specified development sites, typically where other buildings or development have existed in the past (figure 2-3). Almost all of these locales have been previously impacted through construction and landscape management activities. Potential future development within the Cedar Pass Developed Area could include construction of new structures, compatible additions to existing ones, underground utilities installation, RV facilities, trails/paths, laundry and shower facilities, dormitories. Ground disturbance resulting from new construction has the potential to adversely affect prehistoric and historic archeological resources, particularly those buried resources that have not been identified or evaluated. The effects of such actions can result in permanent adverse impacts of unknown magnitude, depending on the archeological resource and level of disturbance. The fact that most new construction will occur with previously impacted development sites, coupled with implementation of mandatory mitigation measures (see chapter 2), would likely hold potential adverse impacts to no greater than minor and site-specific. Comparatively, the no-action alternative would likely result in the highest potential for impacts to archeological resources from new development due to the possibility of disturbance throughout the Cedar Pass Developed Area.

Potential vegetation management efforts associated with alternative C includes the removal of invasive Siberian elms from the Cedar Pass Lodge and open space areas, as well as their replacement with similar, deciduous trees in the Lodge area. Where trees are removed from open space areas, native prairie grassland vegetation would be restored. In addition, original historic planting designs and intents would be reestablished, where possible, at the Ben Reifel Visitor Center, Cedar Pass Lodge, residential, and campground areas of the Cedar Pass Developed Area. Some of these vegetation management efforts (plantings, grassland restoration) would result in ground disturbance that could adversely impact buried cultural resources. However, ground disturbance is anticipated to be minor and would occur primarily in previously impacted areas.

This fact, coupled with implementation of mandatory mitigation measures (chapter 2), would likely hold potential effects to archeological resources in these areas to negligible to minor, site-specific adverse impacts. When compared to the no-action alternative, which includes fewer vegetation management activities, alternative C would result in increased risks to archeological resources.

This alternative proposes mitigation measures to reduce the intrusive nature of nonhistoric buildings that are retained within the Cedar Pass Developed Area, as well as the possible removal of incompatible structures/features that detract from its surviving historic nature. This effort could result in minor ground disturbance with potential adverse impact to archeological resources, particularly those buried, unidentified resources. The fact that these activities would occur in previously impacted areas, coupled with implementation of mandatory mitigation measures (chapter 2), would likely ensure adverse impacts to archeological resources could be limited to site-specific and negligible to minor in intensity. No similar risks to archeological resources are expected with the no-action alternative under which mitigation of intrusive landscape elements is not included.

Cumulative Impacts

Cumulative impacts to cultural resources of alternative C are similar to those described under alternative A.

Conclusions

Under alternative C, impacts to the NRHP-eligible cultural landscape resulting from future realignment of the Loop Road are unknown at this time. Negligible to minor adverse impacts to the cultural landscape could result from new development within the Cedar Pass Developed Area. Minor to moderate benefits to the historic landscape would be realized by way of vegetation management, rehabilitation of cultural landscape elements, mitigation of intrusive landscape features, and general preservation of open space areas. Alternative C offers notable historic preservation benefits through its focus on rehabilitation of the cultural landscape and the use of highly trained historic preservation specialists for design, construction and repair/maintenance activities. Alternative C would result in negligible to minor adverse impacts to archeological resources within the Cedar Pass Developed Area as a result of ground disturbance associated with new development, landscape modifications (vegetation management, removal of intrusive landscape features), and future realignment of the Loop Road. Minor benefits to archeological resources are possible as a result of the commitment to preserve these resources within the Cedar Pass Developed Area. Of all alternatives, this approach provides maximum flexibility for the park in meeting future needs within the Cedar Pass Developed Area, while ensuring the retention of a high level of historic integrity of cultural resources, particularly when compared to impacts to cultural resources possible under the no-action alternative.

Implementation of alternative C will not result in impairment of cultural resources within Badlands National Park.

Section 106 Summary

Future actions under alternative C that have the potential to affect cultural resources have been analyzed at the programmatic level. This analysis is pursuant to 36 CFR 800.5, implementing regulations of the NHPA, addressing the criteria of effect and adverse effect.

The NPS finds that alternative C would not likely result in adverse effects (*no adverse effect*) to archeological or cultural landscape resources resulting from protection of archeological resources, use/preservation of open space, new development, vegetation management, removal/mitigation of intrusive cultural landscape features, and rehabilitation of existing landscape features. In some cases, benefits to these resources could occur under alternative C (*no adverse effect*).

Pursuant to the same regulations, the NPS finds that the future realignment of the Loop Road would result in unknown effects (*no adverse effect* or *adverse effect*) to the Cedar Pass Developed Area cultural landscape. A final determination of effect under 36 CFR 800 will be possible when the realignment route is finalized and impacts can be evaluated some time in the future. Potential realignment of the Loop Road would not result in adverse effects (*no adverse effect*) to archeological resources located within the Cedar Pass Developed Area.

As this programmatic analysis includes no site-specific information regarding direct impacts to cultural resources, additional Section 106 compliance efforts will be necessary at the time specific projects are proposed in the future. In all cases where cultural resource have not been identified as part of this analysis, potential adverse impacts (as defined in 36 CFR 800) to those listed in or eligible for listing in the NRHP will be coordinated by the NPS with the SHPO to determine the level of effect on the property and to determine any necessary mitigative measures.

VEGETATION

Future development analyzed at the programmatic level in this EA involves the potential to impact natural vegetation resources at the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B), primarily as a result of ground disturbing activities. Most of the natural vegetation at the Cedar Pass Developed Area consists of grasslands (Western Wheatgrass Alliance Grassland and Switchgrass Alliance Grassland). Over a quarter of this area consists of "developed area" with landscaped vegetation. The Pinnacles area consists primarily of grasslands (Kenner, pers. comm. 2004).

Following is a summary of NPS regulations and policies related to vegetation resources, as well as a description of the methods used to analyze potential impacts to these resources.

Guiding Regulations and Policies

NPS regulations such as the *Organic Act of 1916* and *NPS Management Policies* provide for the protection of park resources, including vegetation communities. The *NPS Management Policies* (NPS 2001) state that "The National Park Service will preserve the natural resources, processes, systems, and values of units of the national park system in an unimpaired condition, to

perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them."

Specific guidelines with respect to the management of natural resources, including vegetation resources, include:

- Preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- Restoring native plant and animal populations in parks when they have been extirpated by past human- caused actions; and
- Minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (*NPS Management Policies*, NPS 2001, Section 4.4.1).

In addition, the Badlands National Park Draft General Management Plan (NPS, in preparation) includes the following mission goal, relevant to overall natural resources for the park, including vegetation:

> The natural and cultural resources and associated values in Badlands National Park are protected, restored, and maintained in good condition and managed within their broader ecosystem and cultural context (NPS, in preparation: 9).

Specific guiding management principles and strategies related to the protection of vegetation communities within their broader ecosystem context recommend that:

> Plant communities and the processes governing them will continue unaltered in most of the park. Communities will include the diverse species, genetic variability, plant associations, and successional stages representative of an ecologically functioning system in the Great Plains. The following actions will be taken to manage the park's vegetation:
>
> - Plant communities will be inventoried to determine the species present and monitored to assess their condition. The park will continue its effort to inventory rare plants.
> - The NPS will continue efforts to eradicate invasive exotic (nonnative) plants in the park. The park staff will continue to work with the U.S. Forest Service, the Oglala Sioux Tribe, and private landowners to prevent the spread of exotic plant species into and out of the park.
> - The park will continue to use fire as a management tool for maintaining plant communities (NPS, in preparation: 14).

Methods of Impact Analysis for Vegetation

In this section, the impacts of alternatives on vegetation resources are evaluated individually. Unless otherwise noted, analysis involves effects to natural or native vegetation as opposed to landscape vegetation. The analysis of alternative A (no-action alternative) includes discussion of what the future conditions in the park would be if no changes were made to facilities or park management in the Cedar Pass Developed Area. The two action alternatives (Alternatives B and C) are then compared to the no-action alternative to identify the incremental changes that would result from changes in park infrastructure and management.

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect vegetation resources, the broad analysis contained in this EA is designed to aid in future planning efforts.

The review of each alternative begins with a brief summary of the proposed alternative. Impacts on vegetation resources are then evaluated at a programmatic level in terms of the *type* of impact, and the *intensity, context,* and *duration* of the impact (see "Methodology" above). A discussion of the cumulative impacts of the proposed alternatives follows the review of impacts. In the conclusion section, individual and cumulative impacts of the proposed alternatives are summarized. A determination is made about the potential for impairment of vegetation resource as a result of the proposed alternative. Impairment of the vegetation resource is defined below.

The analysis of impacts and the conclusions in this section are based largely on information from NPS experts, professional judgments, as well as on the review of existing literature and studies. In the absence of quantitative data, best professional judgment prevailed.

The area included in the impact analysis for vegetation includes the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B) (figure 1-2).

Vegetation Impact Thresholds Definitions

Negligible: Impacts might occur, but would have no measurable or perceptible changes in plant community size, integrity, or continuity.

Minor: Impacts would be measurable or perceptible but would be small in magnitude and localized within a relatively small area. The overall viability of the plant community would not be affected and, if left alone, would recover.

Moderate: Impacts would cause a clearly detectable change in the plant community (for example, abundance, distributions, quantity, or quality); however, the impact would remain localized and would not affect the viability of regional plant populations.

Major: Impacts to the plant community would be substantial, highly noticeable, widespread and permanent. This could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial).

Impairment: The action would contribute substantially to the deterioration of vegetation within the Badlands vegetation complex to the extent that vegetation communities would no longer function as a natural system within the Great Plains ecosystem. The action would harm the integrity of park resources or values to the point of violating the NPS *Organic Act of 1916*.

Environmental Consequences

Impacts Common to All Alternatives

Under all alternatives, future realignment of the Loop Road could result in removal of road sections and construction of new road sections within the Cedar Pass Developed Area. Depending on the potential realignment of this road, localized, permanent, adverse impacts of unknown magnitude could occur to natural vegetation within the Cedar Pass Developed Area as a result of vegetation removal and ground disturbance. If road sections are removed, and revegetated with native vegetation, positive impacts to the vegetation resource could occur. Until and when this realignment occurs, a more definitive statement of level of impact is not possible.

Alternative A—No Action

Under the no-action alternative, as under all alternatives, the Cedar Pass Developed Area cultural landscape would be treated as a historic landscape. The area would continue to be managed and used in the current (2004) manner, without historic preservation guidance provided for in the draft CLR (John Milner Associates 2004). Buildings, structures and landscape features could be altered, removed, or added as needed. New development and facility siting would not utilize the original planning approach of the Cedar Pass Developed Area. Designers of new facilities, general contractors constructing them, and laborers/contractors involved in maintenance operations would not be required to have training, education, and/or experience in preservation technology. In sum, no park- and Developed Area- policies, strategies, and implementation initiatives would be available to lend a comprehensive and sustained program of the historic landscape preservation as outlined in the CLR (figure 2-1). Invasive Siberian elm would be removed from open space areas.

Analysis

Analyses of impacts to vegetation under the no-action alternative are related to new development, removal of Siberian elm, and use of open space areas.

Under alternative A, buildings, structures and other landscape features throughout the landcape could be altered, removed, or added as needed. Future projects would likely be associated with facilities related to park administration/operations and visitor services. Construction of new structures and features in areas vegetated with native plants, particularly open space areas, would directly and negatively affect vegetation communities by destroying vegetation in the building site, and disturbing vegetation in surrounding areas. The destruction of vegetation is a moderate impact because the effects clearly decrease plant abundance in the long-term, but the impact is localized to the construction area. Disturbance to surrounding vegetation is a minor, localized, short-term impact, as vegetation is expected to recover on its own in less that a year's time. Construction in built-up areas and areas that do not currently harbor native plants would have a negligible impact on native plant communities.

Where structures are removed, prompt replanting according to mitigation measures (chapter 2) would occur. Replanting with appropriate native vegetation after structure removal would result in minor, localized, long-term beneficial effects on native vegetation.

Construction also results in soil disturbance and soil erosion, which could indirectly affect vegetation adversely communities by facilitating the expansion of invasive species, such as spotted knapweed (*Centaurea maculosa*), Canada thistle (*Centaurea maculosa),* and biennial sweetclover (*Melilotus officinalis*) in open space areas (Larson 2003). Expansion of invasive species cover has the potential to result in minor to moderate, long-term negative impacts, depending on the extent of invasive species spread. Planting disturbed soil areas with appropriate native vegetation soon after construction, before invasive species have the opportunity to establish, and would reduce both soil erosion and invasive species spread. These mandatory mitigation measures would decrease the detrimental indirect effects of construction on vegetation, making them relatively minor, short-term and localized. When compared to the no-action alternative, types of potential impacts to vegetation under alternative C are similar. However, potential impacts to vegetation in undisturbed areas of the landscape are greater under the no-action alternative than would occur under alternative C.

Under alternative A, buildings, structures and landscape features could be altered, removed or added within the open space areas with minimal consideration for the integral part this area and its associated natural systems play within the larger cultural landscape. Repeated removal of vegetation in open space areas as a result of construction would be a moderately negative, long-term impact to localized vegetation communities. Construction in open space areas would also result in the fragmentation of vegetation communities in the open space area, which would have a moderate, long-term negative impact to the Cedar Pass Developed Area. When compared to the two action alternatives under which open space areas would be protected, the no-action alternative could result in increased risks to vegetation resources.

Under this alternative, nonnative, invasive Siberian elm vegetation species would be removed from open space areas. Siberian elm (*Ulmus pumila*) is an exotic tree species that had been planted at the Lodge and has escaped to the grassland area east of the Lodge. In open space areas where elms are removed, native prairie species would be restored, promoting the growth of a healthy native prairie ecosystem in formerly invaded areas and aiding in reducing the spread of this exotic, invasive species into noninvaded areas. Removal of Siberian elms would occur

through cutting and application of herbicides to the stump to prevent re-growth (Prosser, pers. comm. 2004). Use of chemical controls to remove Siberian elms could have a minor, short-term negative impact on individual plants. This negative impact however, is outweighed by the moderate, long-term positive benefits of Siberian elm removal within the open space areas of the Cedar Pass Developed Area. When compared to the two action alternatives, the no-action alternative involves similar effects to vegetation resources related to Siberian elm removal.

Cumulative Impacts

On-going and future actions within the park have the potential to result in cumulative effects to native vegetation. These include the construction of the Lakota Heritage and Education Center, possible expansion of the Sage Creek campground, possible realignment of the Loop Road, park maintenance, change in vehicular and pedestrian access, cleanup of the gunnery range (south unit), cattle grazing (south unit), and the designation of the Crazy Horse Scenic Byway (promoting additional traffic past the Cedar Pass Developed Area). Actions outside the park that could adversely affect vegetation over time include the construction of the roads and railroad, and the construction of primitive campgrounds and trails in Buffalo Gap National Grasslands, immediately adjacent to the park's north unit. Collectively, these actions could result in minor to moderate adverse cumulative effects to native vegetation resources.

Some on-going activities such as prescribed park and National Grasslands burns, as well as the reintroduction of native plants and weed management could result in cumulative benefits to vegetation. Invasive vegetation species are currently controlled in accordance with the park's current draft of the General Management Plan (NPS, in preparation). Collectively, these are considered moderate cumulative benefits for native vegetation within and around the park.

Conclusion

Alternative A would result in minor to moderate, long- and short-term, localized negative impacts to native vegetation communities within the Cedar Pass Developed Area. These impacts are primarily associated with potential for construction of new structures and features, particularly in undisturbed open space areas. Such activities would permanently remove vegetation, increase fragmentation of native plant communities within the Cedar Pass Developed Area open space areas, and reduce the integrity of these native plant ecosystems. The negative effects of construction on vegetation can be partially mitigated by the minor benefit of restoring native species to areas where structures are removed. Long-term, moderate benefits for native vegetation are also expected as a result of the removal of invasive Siberian elm trees within open space areas. As the potential for development in currently undisturbed areas of the Cedar Pass Developed Area is higher under this alternative (no management guidance for the historic landscape), it would pose the highest risk to native vegetation when compared to the other two alternatives.

Implementation of alternative A would not result in an impairment of vegetation within Badlands National Park.

Alternative B—Preservation

Alternative B focuses on the preservation of contributing historic features within the Cedar Pass Developed Area cultural landscape (figure 2-2). Only minor changes within the landscape would be permitted to meet facility and operational needs. Management of cultural and natural resources would be minimal and only to a level required to ensure the protection of resources. Natural systems and features, including vegetation patterns, would be protected and preserved with limited efforts to enhance them. Siberian elm would be removed from the Lodge and open

space areas, and other invasive species would be removed from the open space area in accordance with current invasive species policy. Open, undeveloped areas would remain undeveloped and in their natural state. Limited and minimal mitigation measures would be utilized to reduce the intrusive nature of nonhistoric features and structures, which would be removed only after their useful life.

Under this proposal, space for development needs for the park would be provided at the Pinnacles area, located approximately 20 miles to the northwest of the Cedar Pass Developed Area (figure 1-2). It is estimated that approximately 5-10 acres of land would be required to fill future park development needs. The vegetation of the area is primarily grassland (Kenner, pers. comm. 2004). As specific vegetation cover data were not available for this EA, assessments of possible impacts are likewise even more general than for the Cedar Pass Developed Area. As with other alternatives, more detailed impact analysis would be required prior to project-specific construction activities.

Analysis

Analysis of impacts to vegetation under alternative B is related to new construction at the Pinnacles area, as well as open space use/protection, vegetation management, removal of invasive Siberian elms, and removal of intrusive structures within the Cedar Pass Developed Area.

Under alternative B, no new development would occur within the Cedar Pass Developed Area. This would have a moderate, positive, long-term impact on vegetation resources in the Cedar Pass Developed Area through protection and preservation of the biotic integrity of existing vegetation communities. Compared to the no-action alternative, alternative B provides greater protection of native plant communities through the general preclusion of new development within the cultural landscape.

Under alternative B, construction activities at the Pinnacles area of the park would transfer the negative impacts of construction on vegetation from the Cedar Pass Developed Area to the Pinnacles area. Construction activities that may take place in the Pinnacles area would directly result in destruction of existing vegetation and disturbance of surrounding vegetation. Specific data cover information is not available for this analysis. Specific impacts to vegetation would be clearly identified prior to construction through environmental project review. In general, the effects of new development on vegetation in developed and undeveloped areas of the Pinnacles area are similar to those described under the no-action alternative for the Cedar Pass Developed Area.

Open space areas identified in the CLR would experience overall protection under alternative B. The protection and preservation of open space areas and its associated natural features provided under alternative B would strengthen the long-term integrity of existing vegetation communities in the Cedar Pass Developed Area and would be a moderate, long-term, benefit of this alternative. Of the three alternatives, alternative B provides for the greatest protection of open space areas, particularly when compared to the no-action alternative.

Under alternative B, removal of intrusive, nonhistoric and incompatible buildings, structures and landscape features may occur after their useful life. Surrounding vegetation is often disturbed in structure removal; however the effects to native vegetation communities are relatively negligible, localized, and temporary. Vegetation surrounding structures is usually nonnative or of lower quality than vegetation occurring in undeveloped areas. Prompt reestablishment of natural landforms and vegetation in areas where structures are removed should mitigate any negative effects of structure removal on vegetation communities. Replanting of these areas with native vegetation would have a net positive impact on vegetation by restoring native vegetation communities. The net positive effect would be minor, localized, and long-term in duration. The no-action alternative does not include removal of intrusive structures within the Cedar Pass Developed Area.

Under this alternative, nonnative, invasive Siberian elm vegetation species would be removed from open space and Lodge areas within the Cedar Pass Developed Area. Effects of this removal on native vegetation are similar to that described under the no-action alternative (moderate, long-term benefit). However, under alternative B, the long-term benefits to native vegetation are slightly, but not greatly, increased as a result of the removal of all invasive elms within the Cedar Pass Developed Area (versus removal only from open space areas under the no-action alternative). The total removal of Siberian elm will promote the growth of a healthy native prairie ecosystem in formerly invaded areas and would halt the spread of this exotic, invasive species into noninvaded areas. Compared to alternative A, greater numbers of Siberian elm would be removed under this alternative, a benefit to native vegetation (a benefit similar to that realized under alternative C).

Cumulative Impacts

Cumulative impacts to native vegetation of alternative B are similar to those described under the no-action alternative.

Conclusions

Alternative B would result in minor to major, positive, long-term effects on native vegetation resources in the Cedar Pass Developed Area, while displacing some potential adverse impacts to the Pinnacles area. The protection of open space from future development, the removal of invasive Siberian elm from open space and Lodge areas, and the reestablishment of native species cover in areas where intrusive structures are removed would result in minor to moderate benefits to native vegetation. New development that would likely occur at the Pinnacles area under this alternative would result in minor to moderate, long- and short-term, adverse impacts to native vegetation. Compared to the other two alternatives, alternative B is better for native vegetation resources in the Cedar Pass Developed Area but decidedly less protective of the resource in the Pinnacles area. Overall, impact to native park vegetation under alternative B may actually be more adverse than those under the no-action alternative because its primary effects to these resources occur in a less disturbed area (Pinnacles area).

Implementation of alternative B would not result in an impairment of vegetation within Badlands National Park.

Alternative C—Rehabilitation (Preferred Alternative)

Alternative C provides for the rehabilitation of the historic landscape at the Cedar Pass Developed Area for limited new uses, while preserving historic features. In general, open space areas would be preserved. New development would be limited to meet critical space needs and would be located in defined development sites where buildings have been removed, whenever possible (figure 2-3). Historic features would be identified, preserved and repaired. Buildings, structures and landscape features that are incompatible with surviving historic features or detract from the overall historic character of the cultural landscape could be mitigated and/or removed after their useful life. Missing historic features that are critical to the historic character of the Cedar Pass Developed Area could be added. Historic planting designs would be reestablished using Mission 66 planting plans. Siberian elm would be removed from open space and Lodge areas (figure 2-3).

Analysis

Analysis of impacts to vegetation within the Cedar Pass Developed Area under alternative C are related to new construction and modifications of the cultural landscape, open space use/preservation, removal of intrusive structures, removal of Siberian elm, and vegetation management,

Under alternative C, most new construction would occur within specific development sites within the Cedar Pass Developed Area (figure 2-3). These areas have typically been previously impacted; consequently, their use would result in fewer impacts to native vegetation. Construction which may occur within these development sites includes new buildings and features such as housing, administrative offices, visitor services/facilities, roadwork, etc. In addition, several intrusive structures may be remodeled and/or replaced. In general, most new development, remodeling and structure replacements would occur within the defined development sites in which little, if any, native vegetation remains (see figures 2-3 and 3-4). Construction related effects to vegetation in undeveloped and developed areas are similar to those described under the no-action alternative. However, most development under alternative C would likely occur in already built-up areas (less impact to native vegetation) versus the potential under the no-action alternative for greater impacts to undisturbed, native vegetation throughout the landscape.

Open space areas would experience general protection under alternative C, a minor to moderate, long-term, localized benefit to native vegetation within open space areas. At the same time, minor, compatible developments (such as trails/paths) that do not compromise the landscape's integrity are possible within open space areas. Construction impacts of such development on native vegetation in open space areas would result in permanent loss of vegetation within project areas and short-term effects to vegetation adjacent to the projects. In addition, such development could result in greater fragmentation of native plant communities and localized destruction of plants within open space areas. Collectively, these negative effects to native vegetation within open space areas would be long-term in duration and minor in magnitude. Compared to the no-

action alternative, this alternative provides a greater degree of protection of open space areas and, thus, greater protection for native vegetation within the Cedar Pass Developed Area.

Under alternative C, removal of intrusive, nonhistoric buildings, roads, structures and landscape features at the Cedar Pass Developed Area may be considered after their useful life. Impacts of structure removal are similar to that described under alternative B.

Under alternative C, historic planting designs would be reestablished in the Visitor Center, Residential, and Lodge areas. Invasive or otherwise problematic or inappropriate plants would be substituted with plants more suitable to the environment and landscape (Milner 2004). These actions would have a negligible impact on native plant communities because the plantings occur in developed areas where native plants are less abundant or do not exist. Mown grass in the Visitor Center Area may be substituted with a hardy low-growing native grass. This action could have a minor, positive long-term impact on native vegetation communities by expanding the cover of native grasses in the Cedar Pass Developed Area. This action provides an opportunity for additional enhancement of native plant communities in the Cedar Pass Developed Area, and is a benefit that is unique to alternative C.

Under alternative C trees would be planted to provide shade near RV sites, parking areas and in the campground. In these developed areas, tree planting would have a negligible effect on native vegetation communities. If planted in undeveloped areas, introduction of tree species could alter the structure of native grassland communities growing in those areas. Introduction of tree species would result in shading, which may indirectly result in the decrease of grass cover in areas surrounding the trees because grassland species are often not adapted to compete with tree species for sunlight and soil resources. Trampling of vegetation by people seeking shade would also result in decreased native vegetation cover. Thus, tree planting in undeveloped, open space areas could result in minor to moderate, site-specific long-term adverse impacts to native grassland vegetation communities. Similar activities are not expected under alternatives A and B.

Under this alternative, nonnative, invasive Siberian elm vegetation species would be removed from open space and Lodge areas within the Cedar Pass Developed Area. Effects of this removal on native vegetation are similar to that described under alternative B. The total removal of Siberian elm will promote the growth of a healthy native prairie ecosystem in formerly invaded areas and would halt the spread of this exotic, invasive species into noninvaded areas. Compared to alternative A, greater numbers of Siberian elm would be removed under this alternative, a benefit to native vegetation.

Cumulative Impacts

Cumulative impacts to native vegetation of alternative C are similar to those described under the no-action alternative.

Conclusions

Adverse impacts to native vegetation within the Cedar Pass Developed Area related to possible actions under alternative C include localized, long-term effects, ranging from negligible to

moderate in intensity. These primarily result from potential new construction and vegetation management activities in undeveloped, open space areas. In addition, minor to moderate, long-term benefits associated with open space preservation, restoration of native vegetation, and removal of invasive Siberian elm are also possible and would improve the health and biotic integrity of existing vegetation communities. As, for the most part, development would occur within previously impacted development sites where native vegetation would not be affected, the degree of potential impact to these resources under alternative C is notably reduced when compared to the no-action alternative where development could potentially occur throughout the landscape.

Implementation of alternative C would not result in an impairment of vegetation within Badlands National Park.

WILDLIFE

As no comprehensive wildlife surveys exist for the Cedar Pass Developed Area and Pinnacles area, general information regarding wildlife has been gleaned from the draft General Management Plan (NPS, in preparation). Site-specific impacts to wildlife will be analyzed prior to future development in the appropriate NEPA document. As previously noted, no specific development is proposed in any alternative; however, recommendations in the alternatives described in the CLR (and analyzed in this EA) could influence where and how future development in the park occurs. Park wildlife potentially affected by future development includes ungulates, carnivores, small mammals, birds, insects, reptiles and amphibians.

Following is a summary of NPS regulations and policies related to wildlife management, as well as a description of the methods used to analyze potential impacts to these resources.

Guiding Regulations and Policies

The NPS Organic Act directs parks to conserve wildlife unimpaired for future generation. Parks interpret this to mean that native animal life should be protected and perpetuated as part of a park's natural ecosystem. NPS management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity and ecological integrity of plants and animals (NPS 2001, sec. 4.1).

The park's draft General Management Plan has summarizes its intent to further the protection, study and management of wildlife resources with the following strategies for wildlife. These include

- the perpetuation of native animal life as part of the natural ecosystem by minimizing human influences
- ensuring the preservation of populations and habitats of migratory species
- providing visitor education programs
- management of exotic species that threaten park resources

- continuing to work to restore extirpated native species
- expanding the range of bison herd in the park (NPS, in preparation: 14-15)

Methods of Impact Analysis for Wildlife

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect wildlife and wildlife habitat, the broad analysis contained in this EA is designed to aid in future planning efforts.

A review of reference, planning and environmental documents regarding wildlife resources within Badlands National Park, as well as communications with NPS staff, were completed to identify and evaluate potential impacts to wildlife resources located within the areas of study.

The area of analysis includes the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (Alternative B)(Figure 1-2).

Wildlife Impact Threshold Definitions

Negligible: The action might result in a change but the change would not be measurable or would be at the lowest level of detection.

Minor: The action might result in a detectable change but the change would be slight and have a local effect on a population. This could include changes in the abundance or distribution of individuals in a local area, but not changes that would affect the viability of local populations. Changes to local ecological processes would be minimal.

Moderate: The action would result in a clearly detectable change in a population and could have an appreciable effect. This could include changes in the abundance or distribution of local populations, but not changes that would affect the viability of regional populations. Changes to local ecological processes would be of limited extent.

Major: The action would be severely adverse or exceptionally beneficial to a population. The effects would be substantial and highly noticeable, and they could result in widespread change and be permanent. This could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial). Significant ecological process would be altered, and "landscape-level" (regional) changes would be expected.

Impairment: Some of the major impacts described above might be an impairment of park resources if their severity, duration, and timing resulted in the elimination of a

native species or significant population decline in a native species, or they precluded the park's ability to meet recovery objectives for listed species. In addition, these adverse, major impacts to park resources and values would contribute to deterioration of the park's wildlife resources and values to the extent that the park's purpose could not be fulfilled as established in its enabling legislation; affect resources key to the park's natural or cultural integrity or opportunities for enjoyment; or affect the resource whose conservation is identified as a goal in the park's general management plan or other park planning documents.

Environmental Consequences

Impact Common to All Alternatives

The eventual failure of the Loop Road at Cedar Pass could require a route realignment that could affect that portion of the Loop Road encompassed within the Cedar Pass Developed Area cultural landscape (northern boundary)(NPS 2003a)(Figure 1-3). While the route of this future road realignment is currently unknown, the construction of new roadway has the potential to adversely affect wildlife resources within the study area. Such impacts are caused by ground disturbance, vegetation/habitat loss and fragmentation, noise, lighting, interference of wildlife movement, etc. With implementation of mitigation measures (pre-construction studies, appropriate design/construction [see Chapter 2]), it is believed that adverse impacts to wildlife within the Cedar Pass Developed Area would likely be long-term, site-specific, and no greater than minor in intensity.

Alternative A—No Action

Under the No Action alternative, as under all alternatives, the Cedar Pass Developed Area cultural landscape would be treated as an historic landscape. The park would continue to manage and use the Cedar Pass Developed Area in the current (2004) manner, without comprehensive historic preservation guidance (CLR)(John Milner Associates 2004). Development would continue in the area to accommodate future needs. Buildings, structures and other landscape features could be altered, removed, or added as needed. New development and facility siting would not have the benefit of management guidance similar to those associated with alternatives B and C and could potentially occur anywhere within the landscape (Figure 2-1).

Analysis

Potential impacts to wildlife under the No Action alternative are linked to on-going human use of the area (visitors, staff), as well as future management actions that may result in loss of habitat, disruption of wildlife corridors, and disturbance caused by construction/development activities within the Cedar Pass Developed Area (noise, lighting, human activity, ground disturbance, etc.)

While open space areas and their associated natural systems (drainages, vegetation, Badlands formations, wildlife) are defined within the CLR as important to the cultural landscape (John Milner Associates 2004), under this alternative there is a greater possibility of impact to these areas due to the lack of specific management guidance for the Cedar Pass Developed Area. The

majority of this open space area is dominated by native grassland vegetation, and, to a lesser degree, badlands sparse vegetation. Native grassland areas provide habitat for a variety of wildlife species including small mammals (e.g., rabbits, chipmunks, muskrats), pronghorn antelope, mule deer, carnivores (coyotes, swift fox, mountain lions, bobcats), and birds that use the area. A much smaller portion of the open space area is characterized by more mesic vegetation (emergent wetlands, shrublands/woodlands) and provides wildlife habitat for species similar to those found within grassland areas, as well as amphibians and reptiles (see Chapter 3, Wildlife).

This alternative makes it more likely that park activity would occur in currently undeveloped open space areas of the landscape that could adversely impact wildlife and their habitat. These effects primarily derive from construction development (noise, lighting, ground disturbance, vegetation cover impacts/habitat loss). The implementation of mitigation measures (Chapter 2) would likely ensure that adverse impacts to wildlife would not exceed that of minor in intensity, site-specific in scope, and short- and long-term in duration. When compared to the action alternatives, the No Action alternative would likely result in increased risks to wildlife within the Cedar Pass Developed Area as a result of potential development within open space areas. However, unlike the No Action alternative, alternative B has the potential to result in considerable adverse impacts to wildlife by development in the Pinnacles area.

Absent comprehensive management guidance under the No Action alternative, the potential for new development and its associated habitat disturbance in all areas of the Cedar Pass Developed Area is highest when compared to the other two alternatives. Consequently, the potential to adversely impact wildlife is greatest under this proposal, associated primarily with construction activities, structure and vegetation removal, structure modifications (additions, etc.), road realignments and parking alterations, etc. Where new development occurs in already impacted areas, effects to wildlife would be negligible. However, development could be located more randomly, including in open space areas now used by wildlife, potentially resulting in adverse impacts to habitat (see discussion of open space wildlife habitat immediately above). While specific impacts are unknown at this point, implementation of mitigation measures (e.g., pre-construction studies, minimization of habitat impact, etc. [Chapter 2]) would likely hold potential adverse impacts to site-specific, long-term, and no greater than minor in intensity. When compared to the action alternatives, the No Action alternative would likely result in increased risks to wildlife within the Cedar Pass Developed Area as a result of potential development throughout the general landscape. However, unlike the No Action alternative, alternative B could result in considerable adverse impacts to wildlife by its off-site development in the Pinnacles area.

Under the No Action alternative, vegetation management is limited to the removal of invasive Siberian elms in the open space areas of the Cedar Pass Developed Area. Tree removal would occur through cutting and application of herbicides to stumps to prevent re-growth (Chad Prosser, pers. comm. 2004). Open space areas where elms are removed would be restored to native grasses. Removal of Siberian elms could create a moderate, localized, long-term adverse impact to wildlife and their habitat (loss of habitat for some species [birds, small mammals]) resulting from the scarcity of trees in the Cedar Pass Developed Area. Similar but potentially increased adverse effects are expected under the two action alternatives.

Cumulative Impacts

Wildlife populations and their habitats within the park have been altered over the years by human activity, particularly within the Cedar Pass Developed Area and Pinnacles areas. These areas have sustained impacts from construction/development of numerous structures that have resulted in wildlife habitat alteration/loss through the decades. Within these areas, human activity has undoubtedly disturbed movements and use by wildlife. Most human use of the Cedar Pass Developed Area and the Pinnacles area is concentrated in previously impacted/developed areas typically avoided by wildlife sensitive to such activity.

In addition, the continuation of hunting (deer, pronghorn, small mammals) in the south unit of the park, the possible designation of the Crazy Horse Scenic Byway (promoting additional traffic past the Cedar Pass Developed Area), and the possible realignment of the Loop Road potentially contribute to minor, cumulative impacts to wildlife in and around the park. The construction of the Mni Wiconi water project and the DM&E railroad, both outside the park, could also result in minor, cumulative adverse effects on behavior, distribution and movements of wildlife in those areas (NPS 2003a:118). Prescribed burns which occur in and outside the park have the ability to cumulatively benefit wildlife habitat.

Conclusions

The No Action alternative would likely create negligible to moderate adverse impacts to wildlife and their habitat within the Cedar Pass Developed Area resulting from potential Loop Road realignment, use of open space areas, new development activities, and vegetation management activities. Compared to Alternatives B and C, the No Action alternative would likely result in an increased risk to wildlife/habitat due to the lack of management guidance for the future use of the cultural landscape at Cedar Pass Developed Area. This could result in a less predictable/random development and potentially higher levels of impact (disturbance) to wildlife and their habitat in previously undeveloped areas/open space areas. When compared to No Action, Alternative B proposes off-site development in a less developed area (Pinnacles) where adverse impacts to wildlife and habitat are likely and could be more intense. When effects of the No Action alternative are considered, long-term, cumulative adverse impacts to park wildlife and habitat are not expected to exceed minor levels.

The implementation of the No Action alternative would not result in impairment of wildlife resources within Badlands National Park.

Alternative B—Preservation

Alternative B focuses on preservation of the NRHP-eligible cultural landscape at the Cedar Pass Developed Area; no new development is expected. The alternative allows for only minor landscape changes to meet identified facility and operational needs. Historic resources would be protected and maintained while intrusive resources would be mitigated or removed after their useful life. The management of both cultural and natural resources would be minimal. Invasive Siberian elms would be removed from open space and Lodge areas. Open space areas and their

associated natural systems (drainages, vegetation, Badlands formations, wildlife) would be preserved.

New development would occur in the Pinnacles area located approximately 20 miles to the northwest of the Cedar Pass Developed Area (Figures 1-2 and 2-2). It is estimated that approximately 5-10 acres would be required to provide for needed park facilities that would not be constructed at the Cedar Pass Developed Area.

Analysis

Analysis of impacts to wildlife under this alternative includes potential loss of habitat, disruption of wildlife corridors, and disturbance caused by construction/development activities (noise, lighting, increased human activity, ground disturbance) within the Pinnacles area. In addition, structure removal and vegetation management activities within the Cedar Pass Developed Area have the potential to disrupt wildlife and their habitat.

Alternative B proposes the preservation of open space areas and their associated natural systems as identified within the CLR. Open space areas provide habitat to a variety of wildlife and are the least disturbed areas of the Cedar Pass Developed Area (see Chapter 3, Wildlife). As a result, preservation of these areas would result in a minor, localized, long-term benefit for wildlife and wildlife habitat. When compared to the No Action alternative, alternative B offers a notable benefit to wildlife in this area.

Under alternative B, no new construction development would occur within the Cedar Pass Developed Area. As a result, no further loss of wildlife habitat or habitat fragmentation in this area is anticipated, resulting in a minor, localized, long-term beneficial effect to wildlife. Compared to the No Action alternative under which new development could occur throughout the landscape, this is a benefit to wildlife and wildlife habitat within the Cedar Pass Developed Area resulting from its promotion of habitat conservation.

Under this alternative, new development would occur within the Pinnacles area. The Pinnacles area is comprised primarily of grasslands (Kenner, pers. comm. 2004), providing habitat for a number of small mammals (including the black-tailed prairie dog), pronghorn antelope, carnivores (coyotes, swift fox, mountain lions, bobcats), and a variety of insects and birds (see Chapter 3, Wildlife). Past park development (ranger station, entrance booths, etc.) has undoubtedly resulted in wildlife habitat alteration/loss. As much as 5-10 acres could be affected, potentially resulting in adverse impacts to wildlife/habitat in the area (habitat loss/fragmentation, construction activity). Specific development plans/locations are unknown at this time. However, with the implementation of mitigation measures (Chapter 2), it is likely that short-term adverse impacts during construction phase could be held to minor and site-specific. Long-term adverse impacts to wildlife would likely be localized, and range from minor to moderate in intensity due to the inevitable loss of habitat. No development at Pinnacles is planned under the other two alternatives, a benefit to wildlife in this area when compared to Alternative B.

Under alternative B, limited and minimal efforts would be made to reduce or eliminate intrusive and incompatible structures/features within the Cedar Pass Developed Area cultural landscape.

Such structures would be removed only after their useful life. These actions would occur in previously impacted areas, likely resulting in negligible to possibly minor, temporary, site-specific impacts to wildlife for the duration of the projects. If the impacted areas where features are removed are restored to native vegetation (see mitigation measures, Chapter 2), long-term impacts could be mitigated to negligible in the long-term owing to the enhancement of potential wildlife habitat within the Cedar Pass Developed Area.

Under Alternative B, invasive Siberian elm trees would be removed from open space and Lodge areas within the Cedar Pass Developed Area. In the Lodge area, elms would be replaced with non-invasive, deciduous trees (preferably native). In open space areas, native prairie grassland species would be restored. Techniques used for tree removal and impacts associated with them are similar to those described under the No Action alternative. However, under alternative B, a greater number of elm trees would be lost due to additional removal in the Lodge area. This additional tree removal could result in localized, long-term, adverse impacts to wildlife (birds, small mammals) and their habitat due to the scarcity of trees in the area. Adverse effects could range from moderate to major in intensity resulting from the abrupt loss of wildlife habitat. The intensity of effects would depend on the nature and size of wildlife populations that use the boreal habitat, as well as the type of tree replacement. Adverse effects could be partially mitigated by prompt replacement of Lodge trees with alternates of a size, nature and growth rate capable of contributing considerably to long-term habitat replacement. When compared to alternative B, decreased adverse effects to wildlife would be expected under the No Action alternative as it does not include the additional tree removal/replacement in the Lodge area.

Cumulative Impacts

Cumulative impacts to wildlife and their habitat under alternative B are similar to those described under the No Action alternative.

Conclusions

Alternative B would result in minor to possibly major adverse impacts to wildlife as a result of activities within the Cedar Pass Developed Area (potential Loop Road realignment, removal of intrusive features, vegetation management). Minor benefits to wildlife are also expected at the Cedar Pass Developed Area as a result of the lack of development and preservation of open space areas. Minor to moderate adverse impacts to wildlife and their habitat are possible at the Pinnacles area as a result of development in a relatively undeveloped area. When compared to the No Action alternative, alternative B would result in increased adverse impacts to wildlife and wildlife habitat owing to the future development of the Pinnacles area, a relatively undeveloped site (no development proposed at Pinnacles under alternatives A and C). Conversely, the lack of development within the Cedar Pass Developed Area under alternative B is an overall benefit to wildlife and their habitat when compared to both the No Action alternative and alternative C. When effects of alternative B are considered, the long-term, cumulative adverse impacts to park wildlife and their habitat are not expected to exceed minor levels.

The implementation of alternative B would not result in impairment of wildlife resources within Badlands National Park.

Alternative C—Rehabilitation (Preferred Alternative)

The Rehabilitation alternative allows for the adaptation of the historic landscape to limited new uses, while protecting its significant historic fabric and relationships through preservation and rehabilitation treatments. New development would be limited to critical park needs and would typically occur within defined and distinct areas of previous impact (see Figure 2-3 for development sites). In general, natural systems (drainages, vegetation, Badlands formations, wildlife) and open space areas would be preserved, with only minor alterations allowed. Siberian elms would be removed from the open space and Cedar Pass Lodge areas. Existing non-contributing, compatible structures would be retained and rehabilitated. Those features that are considered incompatible with the cultural landscape may be mitigated and/or removed after their useful life (Figure 2-3).

Analysis

Analysis of impacts to wildlife under Alternative C includes short-term disturbance caused by new construction, primarily restricted to areas previously impacted. In addition, effects of mitigation (removal/screening) of intrusive structures/features, as well as vegetation management within the Cedar Pass Developed Area are analyzed. Potential disturbance to wildlife and their habitat includes noise, lighting, increased human activity, ground disturbance, etc.

This alternative would generally preserve open space and associated natural systems in the Cedar Pass Developed Area, a negligible to minor benefit to wildlife and their habitat (please refer to discussion of wildlife habitat and open space areas presented under alternative A and in Chapter 3). At the same time minor, compatible modifications (e.g., trails) to the landscape, including open space areas, are allowed. With mitigation measures (Chapter 2), such actions within open space areas would likely result in negligible to minor, site-specific adverse impacts to wildlife from construction activity, permanent loss and possible fragmentation of small areas of habitat, and alteration of wildlife behavior. These effects would be of short- and long-term duration. When compared to the No Action alternative, alternative C represents a notably decreased risk to wildlife/habitat in natural and open space areas due to minimal and restrictive use of these areas.

Under this alternative, new development within the Cedar Pass Developed Area would occur primarily in areas which have been previously impacted (see Figure 2-3 for development sites). Therefore, no additional habitat loss or fragmentation is expected. However, construction and mitigation activities within development sites are expected to alter wildlife behavior, movement and distribution as a result of increased human activity, traffic, noise, etc. With mitigation measures (Chapter 2), adverse impacts to wildlife could be held to negligible to minor, temporary, and site-specific for the duration of projects. Compared to the No Action alternative, this alternative would offer fewer adverse impacts to wildlife as a result of its clustered development in previously impacted areas.

Under alternative C, the removal of incompatible features of the Cedar Pass Developed Area historic landscape would be considered. In addition, mitigation measures (screening) may be

utilized to reduce the intrusive nature of non-historic buildings that are retained. These actions would result in effects to wildlife and their habitat similar to those described under alternative B.

Impacts of removal of Siberian elms within the open space and Cedar Pass Lodge areas, as well as vegetation restoration actions associated with it, are similar to those presented in Alternative B.

Cumulative Impacts

Cumulative impacts to wildlife and their habitat under alternative C are similar to those described under the No Action alternative.

Conclusions

Alternative C could create minor to possibly major adverse impacts to wildlife and wildlife habitat resulting from potential Loop Road realignment, new development, vegetation management, and activities designed to mitigate intrusive structures within the Cedar Pass Developed Area cultural landscape. Minor benefits are also expected owing to the general preservation of open space areas. When compared to this alternative, the No Action alternative would likely result in an increased risk to wildlife and wildlife habitat as a result of the potential for random and unpredictable development possible without the guidance of specific management guidance for the Cedar Pass Developed Area. When effects of alternative C are considered, long-term, cumulative, adverse impacts to park wildlife and their habitat are not expected to exceed minor levels.

The implementation of alternative C would not result in impairment of wildlife resources within Badlands National Park.

SPECIAL STATUS SPECIES—THREATENED AND ENDANGERED SPECIES

Guiding Regulations and Policies

The federal Endangered Species Act (16 USC 1531 et seq.) requires that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered at the federal level. If it is believed that an action may adversely affect a listed species, consultation with the U.S. Fish and Wildlife Service (USFWS) is required to ensure that actions will not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat.

Methods of Impact Analysis for Species of Special Concern

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative includes potential activities that could potentially

affect special status species, the broad analysis contained in this EA is designed to aid in future planning efforts.

Communications with park staff and informal consultation with the USFWS (2004a, b) and the South Dakota Department of Game, Fish and Parks (2004a, b; appendix D) were conducted to identify the presence of special status species within the project areas (Cedar Pass Developed Area and Pinnacles area). These efforts were designed to determine which, if any, special status species inhabit the areas likely to be affected by future development and the potential impacts to those species.

Information from these sources resulted in the determination that no special status species are know to exist within the Cedar Pass Developed Area, a focal point for all alternatives. At the same time, it was found that one special status species (swift fox [*Vulpes velox*] [state threatened species]) has been observed in the Pinnacles area, a site proposed for future development under alternative B.

The black-footed ferret (*Mustela nigripes*), not known to currently exist within the Pinnacles area, is often found in association with prairie dog colonies and is listed by both the State and Federal governments as endangered. However, on NPS lands, the black-footed ferret is considered threatened for management purposes (USFWS 2004b; see "Species of Special Concern" section in chapter 3). The black-footed ferret is also addressed in this analysis.

The programmatic analysis contained within this EA is based on the best professional judgment of NPS staff from Badlands National Park, the U.S. Fish and Wildlife Service, SDGFP, and available literature.

As defined under the Endangered Species Act, effects to special status species are evaluated analyzing activities that could result in a "take" or cause harm to a species, including harassment. These potential effects are limited to those actions under alternative B which include future development at the Pinnacles area. Potential impacts to special status species or their habitats were evaluated based on species presence and the potential effects of actions related to future development in this area. Conditions that exist under the no-action alternative are used as a baseline against which the actions of alternative B are compared.

The area analyzed for impacts to special status species is the Pinnacles area (figure 1-2). This area would be used as a site of future development under alternative B. Several special status species have been observed in an around this area (see above).

Special Status Species Impact Threshold Definitions

The Endangered Species Act defines the terminology used to assess impacts to federally listed (versus state listed species) species as follow:

No effect: When a proposed action would not affect a listed species or designated critical habitat.

May affect/not likely to adversely affect: Effects on special status species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or are completely beneficial.

May affect/likely to adversely affect: When an adverse effect to a listed species may occur as a direct or indirect result of proposed action and the effect either is not discountable or is completely beneficial.

Is likely to jeopardize proposed species/adversely modify proposed critical habitat (impairment): The appropriate conclusion when the NPS or the U.S. Fish and Wildlife Service identifies situations in which the proposal could jeopardize the continued existence of a proposed species or adversely modify critical habitat to a species within or outside park boundaries.

The terminology used to assess impacts to state listed species is as follows:

Negligible: Actions result in no observable or measurable impacts to native wildlife species, their habitats, or the natural processes sustaining them and would be of short duration, localized, and well within natural population fluctuations.

Minor: Actions would result in detectable impacts, but they would not be expected to result in substantial populations fluctuations and would not be expected to have any measurable, long-term effects on native species, their habitats, or the natural processes sustaining them. Long-term characteristics would remain stable and viable, though occasional responses to disturbance by some individuals could be expected but without interference to feeding, reproduction or other factors affecting population levels.

Moderate: Impacts on species of concern, their habitats, or the natural processes sustaining them would be detectable, and they could be outside that of natural variability for short period of time. Key ecosystem processes may experience disruptions that would be outside the natural range of fluctuation (but would return to natural conditions). Sufficient habitat would remain functional to maintain viability of native wildlife populations.

Major: An action would result in detectable impacts on native wildlife, their habitats, or the natural processes sustaining them. Key ecosystem processes might be disrupted permanently. Adverse responses to disturbance by some individuals would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a long-term decrease in population numbers and genetic variability. Loss of habitat might affect the viability of at least some native species.

Impairment: Some of the major impacts described above might be an impairment of park resource if their severity, duration and timing result in the in the elimination of a native species or significant population declines in a native species, or they

precluded the park's ability to meet recovery objectives for listed species. In addition, these major adverse impacts to park resources and values would

- contribute to deterioration of the park's wildlife resources and values to the extent that the park's purpose could not be fulfilled as established in its enabling legislation;
- affect resources key to the park's natural or cultural integrity or opportunities for enjoyment; or
- affect the resource whose conservation is identified as a goal in the park's general management plan (NPS, in preparation) or other park planning documents for Badlands National Park.

Environmental Consequences

Alternative A—No Action

The no-action alternative proposes no development within the Pinnacles area related to the management of the Cedar Pass Developed Area cultural landscape. Consequently, no effects to special status species are anticipated. Such effects are similar to that realized under alternative C. When compared to alternative B, alternatives A and C represent a benefit to special status species resulting from the absence of development in the Pinnacles area.

The implementation of the no-action alternative would not result in impairment of special status species within Badlands National Park.

Alternative B—Preservation

Alternative B focuses on preservation of the NRHP-eligible cultural landscape at the Cedar Pass Developed Area. The alternative allows for only minor changes within the Cedar Pass Developed Area to meet identified facility and operational needs. Instead, new development would occur in the Pinnacles area, located approximately 20 miles to the northwest of the Cedar Pass Developed Area (figures 1-2). It is estimated that approximately 5-10 acres may be required to provide for needed facilities that would not be constructed at the Cedar Pass Developed Area.

The general Pinnacles area is known to be used by the swift fox, a state threatened species. The black-footed ferret is listed by both the state and federal governments as endangered. For management purposes, it is considered "threatened" on NPS lands (see Chapter 3, "Special Status Species"). While not known to currently exist within the Pinnacles area, the black-footed ferret is often found in association with prairie dog colonies, one of which exists at the Pinnacles site.

Analysis

Analysis of impacts to special status species under this alternative is related to potential loss of habitat, disruption of wildlife corridors, and disturbance caused by new

construction/development activities within the Pinnacles area (noise, lighting, human activity, ground disturbance).

Federally-listed wildlife species

Black-footed Ferret (federal endangered [considered "threatened" within NPS lands]): The black-footed ferret, not known to currently utilize the Pinnacles area, may be indirectly impacted by future development as a result of the presence of the black-tailed prairie dog in the area. Initially listed as endangered in 1967, black-footed ferrets are typically associated with prairie dog colonies, feeding primarily on prairie dogs and relying on their burrows for shelter, family rearing and escape from predators. It is believed that they cannot survive for extended periods outside of prairie dog colonies (Licht 1997) (NPS, in preparation: 82).

Badlands National Park and the Conata Basin area of Buffalo Gap National Grassland have been designated as reintroduction sites (USFWS et al. 1994)(see "Special Status Species—Threatened, Endangered or Candidate Species" section in chapter 3 for detail). The park's reintroduced black-footed ferret population is designated a nonessential experimental population under the Endangered Species Act which provides more management flexibility (NPS, in preparation: 83).

Reintroduction efforts between 1994 and 1999 resulted in the dispersal of the reintroduced ferret population outward from release sites to smaller adjacent prairie dog colonies. This has resulted in an increase in prairie dog colonies confirmed to be occupied by ferrets. The population reached a high in 2000 with a minimum of 33 individuals but then declined to an estimated 14 individuals in 2001. It is believed that additional monitoring is needed to determine "if this decrease is due to the inability of the park's fragmented prairie dog habitat to support a viable ferret population, the dispersal of the ferrets to lower quality habitat, survey detection problems, disease in the ferret population, or an increase in predation on ferrets" (NPS, in preparation: 83). The ferret population is currently concentrated in the north unit in Kocher Flats and the Roberts Prairie Dog town area (approximately four miles to the west/northwest the Pinnacles area).

As the black-footed ferret population in the park currently has no direct association with the Pinnacles area prairie dog colony, it is not dependent on it for survival. However, if future reintroduction efforts involve this colony, its stability would likely be important. Consequently, the status of the prairie dog at the Pinnacles area has the potential to indirectly affect the black-footed ferret population within the park. As a result, black-footed ferrets may be affected but are not likely to be adversely affected under this alternative. Additional study and analysis will occur for specific project proposals, at which time a more detailed and formal evaluation of impacts to special status species will occur as required under the Endangered Species Act.

State-listed wildlife species

Swift fox (state threatened): Under alternative B, development in the Pinnacles area has the potential to affect swift fox reintroduction efforts and species viability in the Badlands ecosystem. The park works cooperatively with the South Dakota Department of Game, Fish and Parks, the Turner Endangered Species Fund, and South Dakota State University on reintroduction efforts. The Pinnacles area prairie dog colony was the site of a release of the swift

fox in 2003, with another release possible in the fall of 2004 (Kenner, pers. comm. 2004). Three litters have been documented as a result of these efforts. Future development in this area has the potential to result in direct and adverse impacts to the swift fox as a result of habitat loss/fragmentation (long-term), construction activity (short-term) and generally increased human presence (long-term). If reintroduction efforts are continued in this area, the swift fox populations may experience long-term, localized adverse impacts ranging from minor to major under this alternative. Additional study and analysis will be required for specific projects in the future, at which time a more detailed and formal evaluation of impacts to special status species will occur.

Cumulative Impacts

Wildlife populations, including those species considered to have special status (threatened, endangered), and their habitats within the park have been altered over the years by human activity. This is particularly true for developed areas of the park, including the Cedar Pass Developed Area and the Pinnacles area. The future realignment of the Loop Road may potentially contribute to cumulative impacts to special status species in and around the park through loss of habitat and habitat fragmentation. The construction of the Mni Wiconi water project and the DM&E railroad, both outside the park, could result in cumulative adverse effects on behavior, distribution and movements of wildlife (NPS, in preparation: 118), including special status species. Prescribed burns in and outside the park also have the ability to influence wildlife habitat over time.

Once found throughout South Dakota, the black-footed ferret population has declined to near extinction. This decline has been attributed to habitat conversion for agriculture, extensive efforts to control prairie dogs that compete with livestock for forage, and sylvatic plague, a disease that has killed large numbers of prairie dogs. These three factors also fragmented prairie dog colonies on which the black-foot ferret relies. In addition, the removal of large carnivores (bears, wolves) from the Badlands area, likely increased predation of coyotes (their main predator) on ferrets (NPS in preparation: 82).

Badlands National Park and the Conata Basin area of Buffalo Gap National Grassland have been designated as reintroduction sites (USFWS et al. 1994). Between 1994 and 1999, an average of 35 animals were released each year. Successful reproduction of ferrets has been detected every year and the population has begun to disperse outward from release sites to smaller adjacent prairie dog colonies. This has resulted in an increase in prairie dog colonies confirmed to be occupied by ferrets. The population reached a high in 2000 with a minimum of 33 individuals but then declined to an estimated 14 individuals in 2001. The ferret population is currently concentrated in the north unit in Kocher Flats and the Roberts area (approximately a mile to the northwest of the Pinnacles area). Future activities or development within the general park area (inside and outside) which results in increased habitat conversion for agriculture, increased human controls of prairie dogs or increased prairie dog mortality from sylvatic plague could result in adverse cumulative impacts to black-footed ferrets populations within the park.

Conclusions

The following impacts are possible to special status species under alternative B:

- under federal regulations, the black-footed ferret may be affected but is not likely to be adversely affected as a result of future development within the Pinnacles area
- under state regulations, the swift fox would likely experience minor to major adverse impacts as a result of future development at the Pinnacles area

When compared to other alternatives, alternative B would result in an increase in potential adverse impacts to special status species as a result of its potential development in the Pinnacles area. Alternatives A and C propose no new development within the Pinnacles area and would, therefore, not involve the potentially lengthy and comprehensive consultation with the USFWS that would be required under alternative B prior to proposed development in this area.

Future projects that may affect special status species would undergo specific analysis at the time of the proposal to ensure compliance with the Endangered Species Act. As a result of comprehensive consultation with the USFWS regarding special status species that would be required for future development to occur in this area, it is not believed that alternative B would result in impairment of special status species within Badlands National Park.

Alternative C—Rehabilitation (Preferred Alternative)

Alternative C proposes no development within the Pinnacles area related to the management of the Cedar Pass Developed Area cultural landscape. Consequently, no effects to special status species are anticipated. Such effects are similar to those realized under the no-action alternative. When compared to alternative B, both alternatives A and C represent a benefit to special status species resulting from the absence of development in the Pinnacles area.

The implementation of the alternative C would not result in impairment of special status species within Badlands National Park.

PALEONTOLOGICAL RESOURCES

Under all alternatives, the potential to affect paleontological resources exists in that some level of ground disturbance would occur. It is known that the fossil-rich Brule (Cedar Pass Developed Area) and the Brule and Sharps Formations (Pinnacles area) underlie the study areas. Consequently, ground disturbance would be expected to potentially disturb paleontological resources in these areas.

Following is a summary of NPS regulations and policies related to paleontological resources, as well as a description of the methods used to analyze potential impacts to these resources.

Guiding Regulations and Policies

Federal actions that have the potential to affect paleontological resources are subject to guiding laws, regulations and policies designed to aid in preservation of the resource. These include:

- NPS regulation 36 CFR 2.1 prohibits the destruction or disturbance of mineral, cave and paleontological specimens in park units, and prohibits collection of paleontological resources except for scientific purposes.
- Section 4.8.1 of the *NPS Management Policies* (NPS 2001) charges the NPS with allowing natural geological process to proceed unimpeded. Section 4.8.2 requires the NPS to protect geologic features from adverse effects of human activity. Section 4.8.2.1 encourages scientific paleontological research and directs that locations of such resources be protected.

In addition, Badlands National Park has summarized its intent to further the protection, study and management of park resources with the following strategies for paleontological resources. To ensure the protection of this nonrenewable resources, inventory and monitoring programs will be expanded, paleontological resources will be managed and studied in their geologic context, park staff will partner with and encourage others to conduct paleontological research within the park, additional interpretive/educational visitor programs will be developed, collected fossils will be managed in accordance with the park's collection management plan, and fossils exhibits will be improved (NPS, in preparation: 13-14).

Methods of Impact Analysis for Paleontological Resources

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect paleontological resources, the broad analysis contained in this EA is designed to aid in future planning efforts.

A review of reference materials regarding paleontological resources identified within Badlands National Park, as well as communications with NPS staff, were conducted to identify and evaluate potential impacts to the resource located within the study areas. The Cedar Pass Developed Area and Pinnacles area are known to be underlain with fossil-rich deposits (Benton, pers. comm. 2004) (see chapter 3).

The area included in the impact analysis for paleontological resources includes the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B) (figure 1-2).

Paleontological Resources Impact Threshold Definitions

Negligible: Impacts to park paleontological resources are not detectable based on standard scientific methodologies.

Minor: Low probability of impact because either (1) the activity would occur in an area not known to contain paleontological resources and the volume of disturbance would be negligible, or (2) the activity would occur in an area containing paleontological resources but the volume of disturbance would be nearly indiscernible. Monitoring would likely detect changes or loss of resources, and the loss of associated contextual information would be minimal.

Moderate: Moderate probability of impact because either (1) the activity would occur in an area not known to contain paleontological resources and the volume of disturbance would be large, or (2) the activity would occur in an area containing paleontological resources but the volume of disturbance would be small. Monitoring would identify most affected paleontological resources features, but some resources and/or associated contextual information would be lost.

Major: High probability of impact because the activity would occur in an area containing paleontological resources and the volume of disturbance would be large. Even with monitoring, many features and/or associated contextual information would likely be lost.

Impairment: A major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Badlands National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning document.

Environmental Consequences

Impacts Common to All Alternatives

If and when the Badlands Loop Scenic Byway (Loop Road) fails at Cedar Pass, route realignment and construction of the Loop Road could affect the portion of the road included within the northern extent of the Cedar Pass Developed Area (figure 1-3). Route realignment options are unknown at this time; however, road construction activities in this area of the Cedar Pass Developed Area would have the potential to affect paleontological resources in construction, staging and access areas. Such impacts would result from road construction activities (excavation) and the associated loss of contextual integrity of the resource within the chosen alignment given the fossil-rich layers known to underlie the areas currently being reviewed (NPS, in preparation). Through the use of mandatory mitigation measures (pre-construction surveys, monitoring [chapter 2]) the park would likely be able to prevent impacts to paleontological resources from becoming major in intensity.

Alternative A—No Action

Under the no-action alternative, the NPS would continue to manage and develop the Cedar Pass Developed Area in the current (2004) manner, without a management guidance as provided in the draft CLR under alternatives A and B. Implementation of this alternative would include new

development (construction, landscape alterations) as needed throughout the Cedar Pass Developed Area (figure 2-1). Development could potentially occur within open space areas that include natural systems landscape features (drainages, vegetation, Badlands formations, wildlife) (figure 2-1).

Analysis

Potential impacts to paleontological resources under the no-action alternative would result from ground disturbance (new construction development, structure and vegetation removal, other landscape alterations).

Open space areas are defined within the CLR as one of ten character areas and, along with natural systems (vegetation and topography, including badlands formations), are specifically preserved under both action alternatives. Under the no-action alternative which includes no specific preservation efforts related to these areas, there is a greater possibility of impact to open space and natural (undeveloped) areas resulting from a lack of specific management guidance for the Cedar Pass Developed Area. Due to the potential for development anywhere in the landscape, this would result in the greatest risk to paleontological resources of all alternatives within the Cedar Pass Developed Area. The risk level derives from the potential for ground disturbance in both disturbed and undisturbed areas of the study area (for example, new construction, structure and vegetation removal, structure modifications, road work, parking alterations). Use of mandatory mitigation measures (chapter 2) would likely hold permanent, site-specific adverse impacts to paleontological resources to the negligible to minor level. When compared to the action alternatives, the no-action alternative would result in the greatest level of risk to paleontological resources within the Cedar Pass Developed Area as a result of potential development within open space areas. However, it should be noted that under alternative B, significant risks to these resources are transferred from the Cedar Pass Developed Area to the Pinnacles area.

Under the no-action alternative, the potential for new development and associated ground disturbance in all areas of the Cedar Pass Developed Area cultural landscape is more likely than that under the other two alternatives. As a result, this alternative would likely result in the greatest amount of ground disturbance in both disturbed and undisturbed areas within the Cedar Pass Developed Area when compared to the action alternatives. Buried, unidentified paleontological resources would be at the greatest risk from ground disturbance. The use of mandatory mitigation measures (for example, pre-construction surveys, presence of a cultural resource specialist during such ground disturbing activities) would likely reduce permanent, site-specific adverse impacts to paleontological resources to no greater than minor (see the "Mitigation Measures" section in chapter 2). As a result of new development, the no-action alternative would create the greatest risk to paleontological resources within the Cedar Pass Developed Area when compared to the two action alternatives.

Under the no-action alternative, vegetation management is limited to the removal of invasive Siberian elms in the open space areas of the Cedar Pass Developed Area. Tree removal would occur through cutting and application of herbicides to the stump to prevent regrowth (Prosser, pers. comm. 2004). Where trees are removed, native prairie grassland species would be restored.

As no ground disturbance would occur, this action would result in negligible impacts to paleontological resources. When compared to ground disturbance associated with vegetation management under the two action alternatives, the no-action alternative (no ground disturbance) is believed to be beneficial for paleontological resources.

Cumulative Impacts

Cumulative impacts to paleontological resources can include total or partial resource loss due to development impacts, erosional processes, and illegal collecting. The following on-going and future actions within the park have the potential to result in cumulative loss of, or impacts to, paleontological resources: construction of the Lakota Heritage and Education Center, possible expansion of the Sage Creek campground, realignment of the Loop Road, gunnery range clean-up (south unit), park maintenance activities, increased access theft/vandalism. Actions outside the park which could adversely affect paleontological resources over time include the construction of transportation and utility facilities, increased use of adjacent National Grasslands, and illegal fossil collecting on private lands (NPS, in preparation: 132), all of which may have already contributed to regional impacts to paleontological resources.

Conclusions

The no-action alternative could result in minor to moderate adverse impacts to paleontological resources within the Cedar Pass Developed Area resulting from ground disturbance associated with new development (particularly within open space areas), landscape alterations, and future Loop Road realignment. When compared to the two action alternatives, the no-action alternative has the potential to result in more ground disturbance throughout the Cedar Pass Developed Area, particularly within undeveloped, open space areas. However, the no-action alternative would result in no increased risks to paleontological resources within the Pinnacles area as is the case under alternative B.

Paleontological resources would not be impaired as a result of the implementation of the no-action alternative.

Alternative B—Preservation

Designed to protect the integrity of the NRHP-eligible cultural landscape, alternative B proposes no new development/construction within the Cedar Pass Developed Area. Only minor changes to the area to meet facility and operational needs would occur. Open space areas and natural systems (vegetation, topography) would be preserved within the Cedar Pass Developed Area. Nonnative species, including Siberian elm, would be removed from the Cedar Pass Lodge and open space areas. Intrusive, nonhistoric structures may be removed after their useful life. This proposal would greatly minimize ground-disturbing activities that have the potential to impact paleontological resources within the Cedar Pass Developed Area but would increase the risk to the resource at the Pinnacles area.

Park facility needs would be met through new development at the Pinnacles area, located approximately 20 miles to the northwest (figure 1-2). It is estimated that approximately 5-10

acres of land in the Pinnacles area will be needed to fulfill future park development needs (figures 1-2 and 2-2).

Analysis

Analysis of potential impacts to paleontological resources under alternative B is primarily related to new construction (ground disturbance), particularly at the Pinnacles area, and minor landscape modifications (vegetation management, structure removal, open space preservation) within the Cedar Pass Developed Area.

Under alternative B, existing open space elements and natural systems (vegetation, topography) within the Cedar Pass Developed Area would be retained and protected, promoting the contextual integrity and protection of paleontological resources in these areas. As no development would occur in these areas, the resulting lack of ground disturbance would provide a minor, site-specific, long-term benefit to paleontological resources within these open space areas. When compared to the no-action alternative, alternative B offers greater protection for paleontological resources within natural systems/open space areas of the Cedar Pass Developed Area cultural landscape.

Under alternative B, no new development (construction) would occur within the Cedar Pass Developed Area. This resulting lack of ground disturbance is considered a site-specific, long-term, negligible to minor benefit to paleontological resources at this location. When compared to alternative A (and alternative C), implementation of this alternative offers increased benefit to paleontological resources within the Cedar Pass Developed Area.

At the same time, new facility and operational needs under this alternative would be provided at the Pinnacles area (20 miles to the northwest of the Cedar Pass Developed Area, figure 1-2). Development needs may require the use of 5-10 acres at the Pinnacles area, known to be underlain by the fossil-rich Brule and Sharps Formations (see chapter 3). Site-specific data on surface exposure and depths of these formations at this location are unknown (Benton, pers. comm. 2004). Development could include new housing, RV sites for researchers, staff offices, utilities, and parking. Construction-related ground disturbance has the potential to adversely affect paleontological resources, particularly those buried resources that have not been identified or evaluated. Through the use of mandatory mitigation measures (monitoring [see chapter 2]), impacts would likely be reduced to site-specific and minor in intensity. Compared to the no-action alternative under which no development would occur at the Pinnacles area, this alternative would potentially result in considerably increased risks to paleontological resources in that area.

Under this alternative, structures and features considered incompatible and noncontributing to the cultural landscape at the Cedar Pass Developed Area may be removed after their useful life. Such actions would occur in previously impacted areas and would result in only minor amounts of ground disturbance. The use of mandatory mitigation measures (see chapter 2) would likely hold site-specific adverse impacts to paleontological resources to the negligible to minor level. No mitigation/removal of intrusive structures or associated impacts would occur under the no-action alternative.

The removal and replacement of invasive Siberian elms in the Lodge and open space areas, as well as the maintenance and in-kind replacement of contributing historic site foundation plantings would result in minor ground disturbance within the Cedar Pass Developed Area. Such activity has the potential to permanently adversely affect archeological resources, particularly buried resources. Historic plant maintenance/replacement activities would involve minor ground disturbance and would occur in previously disturbed areas (around structures). Elm removal (cutting, herbicide application) will involve no ground disturbance. Elms would be replaced in the Lodge area with noninvasive, deciduous trees and would involve minor ground disturbance. In open space areas, native prairie grasslands would be restored with little ground disturbance expected. Vegetation management activities under this alternative would result in a minor amount of ground disturbance, considered a negligible to minor impact to paleontological resources if mandatory mitigation measures are used (chapter 2). When compared to the no-action alternative, under which no ground disturbance is associated with Siberian elm removal, this alternative may result in slightly increased risks to paleontological resources within the Cedar Pass Developed Area.

Cumulative Impacts

Cumulative impacts to paleontological resources of alternative B are similar to those described under the no-action alternative.

Conclusions

Under alternative B, minor adverse impacts to paleontological resources from new development would occur in the Pinnacles area. At the same time, negligible to minor benefits to paleontological resources would be realized within the Cedar Pass Developed Area as a result of no new development and open space/natural systems preservation. Negligible to moderate adverse impacts to paleontological resources are possible at the Cedar Pass Developed Area related to mitigation/removal of intrusive structures, vegetation management activities, and future Loop Road realignment. When compared to alternative A, alternative B would result in a decreased level of ground disturbance and potential impacts to paleontological resources within the Cedar Pass Developed Area, while notably increasing risks to the resource at the Pinnacles area.

Implementation of alternative B will not impair paleontological resources within Badlands National Park.

Alternative C—Rehabilitation (Preferred Alternative)

This alternative proposes the rehabilitation of the Cedar Pass Developed Area cultural landscape for limited new uses. To fill critical park needs, new development in defined and distinct areas (development sites) would be allowed within the Cedar Pass Developed Area (see figure 2-3). Where possible, new structures would be located where buildings had been previously removed. Intrusive, nonhistoric elements (structures) of the landscape could be mitigated or removed after their useful life. Historic landscape planting patterns/designs would be reestablished, where possible. Siberian elms would be removed from open space and Lodge areas. Natural systems

(vegetation, topography) and open space areas would be generally preserved with only minor development allowed within them. Any new major roads or circulation alterations would be associated with new development.

Analysis

Under alternative C, potential effects to paleontological resources within the Cedar Pass Developed Area are related to ground disturbance (new construction/development, vegetation management, intrusive structure removal).

Alternative C includes the general preservation of open space areas, including natural systems, a negligible to minor, long-term, localized benefit to paleontological resources within the open space areas of the Cedar Pass Developed Area. Minor development within these areas that does not jeopardize the historic landscape's character would be allowed (for example, trails/paths). Minor development would likely involve ground disturbance and the potential to adversely impact buried, undocumented paleontological resources, resulting in permanent loss of contextual resource data. Use of mandatory mitigation measures described in chapter 2 would likely hold these potential adverse impacts to site-specific and negligible to minor in intensity. When compared to alternative C, alternative A would result in a greater degree of risk to paleontological resources within these natural, open space areas of the Cedar Pass Developed Area.

Under this alternative, new construction (new structures or additions to existing ones) within the Cedar Pass Developed Area would result in ground disturbance. While much of this activity would occur in areas already impacted by earlier development (see figure 2-3 for development sites), any activity involving ground disturbance has the potential to adversely affect buried/unrecorded paleontological resources. However, the use of mandatory mitigation measures (survey, monitoring [see chapter 2]) would likely ensure that potential site-specific adverse impacts to paleontological resources would reach no greater than minor in intensity. Comparatively, the no-action alternative would result in similar risks to paleontological resources within the Cedar Pass Developed Area.

This alternative proposes mitigation measures (screening, removal) to reduce the intrusive nature of nonhistoric buildings within the Cedar Pass Developed Area cultural landscape. This effort could result in minor ground disturbance with potential adverse impacts to paleontological resources, particularly those buried and unidentified. Effects of these actions are similar to those described under alternative B. The no-action alternative includes no removal or mitigation of intrusive structures.

This alternative also proposes the removal/replacement of Siberian elm in Lodge and open space areas and the maintenance of building foundation plantings within the Cedar Pass Developed Area. Impacts of these actions are similar to those described under alternative B.

In addition, this alternative includes the reestablishment of original historic planting designs, where possible, for the Ben Reifel Visitor Center, Cedar Pass Lodge, and residential, and campground areas of the Cedar Pass Developed Area. These efforts will result in ground

disturbance that has the potential to adversely impact buried paleontological resources. However, it should be noted that this ground disturbance would occur in previously impacted areas. With adherence to mandatory mitigation measures (chapter 2), potential adverse effects to paleontological resources would be held to site-specific and negligible to minor in intensity. The no-action alternative does not include the reestablishment of historic plantings within the Cedar Pass Developed Area.

Cumulative Impacts

Cumulative impacts to paleontological resources of alternative C are similar to those described under the no-action alternative.

Conclusions

Under alternative C, ground disturbance from new construction, intrusive structure removal, vegetation management activities, and the future realignment of the Loop Road has the potential to result in negligible to moderate adverse impacts to paleontological resources within the Cedar Pass Developed Area. In addition, negligible to minor benefits to paleontological resources are possible as a result of the general preservation of open space areas within the cultural landscape. The no-action alternative includes similar types of adverse effects but does not include the benefit to paleontological resources related to open space preservation.

Implementation of alternative C will not impair paleontological resources within Badlands National Park.

VISITOR EXPERIENCE

The Cedar Pass Developed Area currently functions as the focal point of visitor contact, services and information within the park. Alterations to it, possible under all alternatives, would potentially affect the visitor experiences in the future.

Following is a summary of NPS regulations and policies related to the provision and enhancement of visitor experiences and opportunities, as well as a description of the methods used to analyze potential impacts to them.

Guiding Regulations and Policies

The 1916 Organic Act requires the NPS to ensure its natural and cultural resources are not impaired, but it also requires parks “to provide for the enjoyment of” these resources. *NPS Management Policies* (NPS 2001) state that the enjoyment of park resources and values by the people of the U.S. is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. Because many forms of recreation can take place outside a national park setting, the NPS will therefore seek to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in a particular unit, and defer to other agencies, private industry, and nongovernmental organizations to meet the broader spectrum of

recreational needs and demands that are not dependent on a national park setting. Among other things, the NPS seeks to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in a particular unit. However, the NPS will not allow visitors to conduct activities that

- would impair park resources or values
- would create an unsafe or unhealthful environment for other visitors or employees
- are contrary to the purposes for which the park was established
- would unreasonably interfere with the atmosphere of peace and tranquility, or the nature soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; NPS interpretive, visitor service, administrative, or other activities; NPS concessionaire operations; or other existing appropriate park uses

Methods of Impact Analysis for Visitor Experience

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative, if implemented in the future, contains activities that could potentially affect visitor experience, the broad analysis contained in this EA is designed to aid in future planning efforts.

The draft General Management Plan for Badlands National Park (NPS, in preparation) focuses those visitor issues related to access, availability of information, and range and enjoyment of visitor activities. A "Long Range Interpretive Plan" prepared for the park (NPS 1999) outlines actions to inform and educate visitors about the park in an understandable and enjoyable manner. A review of relevant park planning and environmental documents related to visitor experience and a recent visitor use survey (Simmons and Gramman 2002) was conducted for this analysis.

The area included within this EA analysis includes the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B) (figure 1-2).

Visitor Experience Impact Threshold Definitions

Negligible: The effect would be undetectable by visitors or would be barely perceptible to most visitors; it would have no discernible effect.

Minor: The action might result in a slightly detectable effect that would result in little detraction or improvement in the quality of the visitor experience. There would not be an overall effect on the visitor experience.

Moderate: There would be a change in the experiences of a large number of visitors, resulting in a noticeable decrease or improvement in the quality of the experience. A decrease in quality would be indicated by a change in the frustration level or in the inconvenience for a period of time.

Major: A substantial improvement or a severe drop in the quality of many peoples' experience would result from an action such as the addition or elimination of a recreation opportunity or a permanent change in access to a popular area that would be clearly detectable. A substantial, highly noticeable influence could have an appreciable effect on the visitor experience by permanently altering access to and the availability of various aspects of the visitor experience.

Environmental Consequences

Impacts Common to All Alternatives

If and when the Loop Road fails, the redesign of the access to the Cedar Pass Developed Area via this route will likely be altered (NPS, in preparation). This could include the portion of the Loop Road included in the Cedar Pass Developed Area cultural landscape, determined to be an integral part of its Mission 66 Design (John Milner Associates 2004; figures 1-2 and 1-3). A future realignment route could create a degree of disconnection between the Cedar Pass Developed Area/visitor center and the original Loop Road that currently runs immediately adjacent to these visitor facilities (figures 1-2 and 1-3). The future realignment of the road could result in effects of unknown type (adverse or beneficial) and intensity to the visitor experience. Beneficial effects to the visitor experience could result from the integration of Mission 66 concepts into the design of the realignment route (for example, use of the visitor center to orient visitors to the park). Adverse impacts are possible if the realignment route results in a disconnection of the roadway from the focal point of the visitor experience (Cedar Pass Developed Area). When the realignment occurs, a more definitive statement of effect to visitor experience will be possible.

Alternative A—No Action

Under alternative A, the park would continue to manage and develop the Cedar Pass Developed Area (the focal point of visitor contact for the park) in the current (2004) manner. The NRHP-eligible Ben Reifel Visitor Center and Cedar Pass Developed Area cultural landscape would be managed as historic resources, although no specific management guidance would direct future development/use of the area, as is the case under alternatives B and C. Possible development within the cultural landscape (new construction, structure removal, circulation alterations) would result in effects to the visitor experience (for example, views, provision of facilities/services).

Analysis

Impact analysis for Visitor Experience under alternative A is related to the ability to provide visitor services and facilities, and the preservation of the cultural landscape and scenic views related to the Cedar Pass Developed Area.

Several views from the Cedar Pass Developed Area cultural landscape contribute to its NRHP eligibility (figure 3-2) and enhancement of the visitor experience. Under the no-action alternative, there is a greater likelihood that scenic views could be affected into and out of the

Cedar Pass Developed Area by development. Consequently, scenic views could be compromised, resulting in localized, long-term, minor to moderate adverse impacts to the visitor experience in the area. When compared to the two action alternatives that specifically include the preservation of open spaces areas (scenic views), the no-action alternative would have the potential for more negative effects on the ability of visitors to experience existing scenic views that contribute to the historic nature of the Cedar Pass Developed Area.

As with all alternatives, the primary visitor contact point would remain at the Cedar Pass Developed Area, considered eligible for the NRHP as a cultural landscape (appendix A). This alternative includes no specific management guidance related to the historic nature of the area. Rather, future developments and other landscape modifications would undergo required NHPA (Section 106) review, typically on a project-by-project basis. The lack of management guidance under alternative A makes it more likely than under the action alternatives that incremental loss of integrity and context of the historic landscape would occur (piecemeal development in open space areas, evaluation/demolition/replacement of contributing landscape features). As a result of the potential loss of historic context and integrity of this important cultural landscape, management of the Cedar Pass Developed Area under this alternative has the potential to create localized, long-term, minor adverse impact to the visitor experience. This derives from the potential for the loss or eventually compromised nature of landscape features dating to the period of significance (1928-1966) and the effects this would have on visitors' ability to understand and appreciate the historic development of the park. When compared to alternatives B and C under which CLR guidance focuses on the historic integrity of the Cedar Pass Developed Area, the no-action alternative could potentially result in a decrease in the quality of visitor experience.

Under the no-action alternative, new development necessary to provide for future visitor facilities and services would continue within the Cedar Pass Developed Area. Visitors have indicated that facilities and services offered within the Cedar Pass Developed Area are "very important" or "extremely important" to them and contribute to their high visitation to this area. Approximately 25% of all visitors to the park visit the Ben Reifel Visitor Center located within the Cedar Pass Developed Area (Simmons and Gramann 2001). Under this alternative, buildings could be altered, removed or added, as needed; circulation routes would be altered to address pedestrian/vehicle conflicts. Aside from minor adverse effects on the visitor experience related to enjoyment and understanding of the historic landscape (see above discussion), this flexibility could result in a minor to moderate benefit for visitors as a result of the park's ability to provide desired services and facilities. Regarding the provision of visitor facilities and services, the no-action alternative would provide the highest degree of flexibility when compared to the two action alternatives, a benefit to visitor experience.

Cumulative Impacts

The draft General Management Plan's preferred alternative proposes a variety of actions that would affect the visitor experience at Badlands National Park (NPS, in preparation). These include expanded interpretative/educational opportunities; increased camping, hiking and picnicking areas; reductions in off-road use; additional visitor contact stations; expanded trail and road access, and improved driving/sightseeing experiences (NPS, in preparation: 141-145). The designation of the Crazy Horse Scenic Byway would likely increase traffic in and visitation

to the Cedar Pass Developed Area though the future realignment of the Loop Road would likely influence this. Future construction of the Lakota Heritage and Education Center (south unit) and the potential development of an additional visitor center at the Minuteman Missile National Historic Site (I-90 corridor) would provide additional visitor information. Collectively, these actions could produce long-term major benefits related to the visitor experience (NPS, in preparation: 143). Several draft general management plan proposals other than those included in the preferred alternative could also affect visitor experience within Badlands National Park (NPS, in preparation).

Conclusions

Under this alternative, minor to moderate adverse impacts to the visitor experience would be expected. These would result from the possible loss of scenic views over time and the potential for incremental loss of historic character of the cultural landscape due to the lack of management guidance. Conversely, this alternative would likely result in minor to moderate benefits to visitor experience in its ability to provide needed visitor services and facilities, a benefit similar to that realized under alternative C. When compared to alternative B (no new development), the no-action alternative provides a significantly greater degree of flexibility in the provision of these visitor services/facilities. However, in so doing, it is possible that the historic integrity of the cultural landscape could be jeopardized from the lack of management guidance, creating adverse impacts to the visitor experience when compared to the two action alternatives.

Alternative B—Preservation

Alternative B focuses on the preservation of the Cedar Pass Developed Area cultural landscape and its contributing historic features. No new development would occur and only minor changes within the landscape to meet identified facility and operational needs would be allowed. Contributing historic and cultural landscape features would be identified, retained and preserved. Maintenance and repairs to historic features would be performed when necessary by staff or contractors with a moderate level of historic preservation expertise. Deteriorated features would be stabilized/protected. Intrusive, nonhistoric structures may be removed after their useful life. Open space areas and associated natural systems (vegetation, topography) would be preserved and remain undeveloped.

As no new development would occur at the Cedar Pass Developed Area under this alternative, development would take place in the Pinnacles area, located approximately 20 miles to the northwest of the Cedar Pass Developed Area (figures 1-2 and 2-2). Types and locations of future development are unknown at this time but could include office/administrative space, staff housing, RV sites for researchers, storage space. Though there are no specific plans at this time, additional visitor contact services/facilities could potentially be located within the Pinnacles area in the future.

Analysis

Impact analysis for visitor experience under alternative B is related to the park's future ability to provide adequate visitor services and facilities, and the preservation of the cultural landscape and scenic views related to the Cedar Pass Developed Area.

The general lack of development within the Cedar Pass Developed Area under this alternative would be instrumental in the preservation of scenic views from and into the area. This is considered a minor benefit to the visitor experience. Similar benefits would be realized under alternative C. When compared to the no-action alternative (no management guidance for development), alternative B would result in notably increased protection of open spaces and concomitant protection of scenic views in and out of the Cedar Pass Developed Area.

As with all alternatives, the primary visitor contact point would remain at Cedar Pass Developed Area cultural landscape. Visitation rates to this area are high and most visitors consider the area to be a "very important" or "extremely important" part of their park experience (Simmons and Gramann 2001; see the "Visitor Experience" section in chapter 3). Under this alternative, the treatment for the historic landscape is that of preservation, with only minor alterations to the Cedar Pass Developed Area recommended. Only minor alterations necessary to retain the historic integrity of the historic landscape would occur; no new development is planned. Visitors to the area would have an opportunity to experience a relatively intact example of the NPS Mission 66 NPS design (Cedar Pass Developed Area), the NPS Modern architectural character of the Ben Reifel Visitor Center, and other historic elements of the NRHP-eligible cultural landscape related to the period of significance (1928-1966)(see John Milner Associates 2004). It is likely that many visitors are unaware of the historic nature and significance of the Cedar Pass Developed Area as it has just recently undergone extensive historical research leading to its eligibility for the NRHP (appendix A). The opportunity for visitors to experience this significant historic landscape represents a minor to moderate, long-time benefit to the visitor experience. Future park efforts to enhance educational and informational opportunities regarding the historic landscape and its history would increase these benefits further. Due to the preservation efforts related to the historic landscape at the Cedar Pass Developed Area under alternative B, the visitor experience would be notably improved when compared to the no-action alternative.

Under this alternative, no new development would occur within the Cedar Pass Developed Area, significantly limiting opportunities for the park to provide additional or improved visitor facilities and services within this primary visitor contact site. The Cedar Pass Developed Area is one of the most frequently visited areas of the park and includes the Ben Reifel Visitor Center, the Cedar Pass Lodge restaurant/gift shop and cabins, a campground, restrooms, and picnic areas. In a visitor survey, this area rated as either "very important" or "extremely important" to visitors (Simmons and Gramann 2001). Future limitations in providing visitor services and facilities at Cedar Pass Developed Area could result in long-term, localized, minor to moderate adverse impacts to the visitor experience. This effect could intensify over time should visitation rates increase and existing facilities come to the end of their useful lives. When compared to the no-action alternative, this alternative would result in decreased flexibility to provide for increasing and improved visitor facilities and services within the Cedar Pass Development Area, a detriment to visitor experience in this area.

If this alternative were selected, it is possible that some of these visitor services/facilities may be provided at the Pinnacles area, though types and numbers are unknown at this time. This uncertainty, coupled with the fact that draft general management plan proposes future visitor services/facilities at a variety of places throughout the park (NPS, in preparation), results in the conclusion that effects of alternative B on visitor experience are largely unknown and are discussed below in general terms.

The Pinnacles entrance is the second most-used of the five official park entrances (the northeast entrance which leads to the Cedar Pass Developed Area is the most frequently used entrance). At this time, the only visitor services located at the Pinnacles area are two self-service entrance stations. This access point marks the western end of the Badlands Loop Scenic Byway. The Loop Road, with its numerous pullouts, overlooks, and fossil exhibit areas, is heavily traveled by park visitors, particularly during the summer season (Figure 3-5)(see the "Visitor Experience" section in chapter 3). According to NPS data regarding visitation, more than 90% of park visitors travel the Loop Road. Visitors have indicated a significant interest in visiting features around the Pinnacles entrance such as the Roberts Prairie Dog Town and Pinnacles Overlook, located within a mile of this access point (Simmons and Gramann 2001). Locating additional visitor facilities in the Pinnacles area could be beneficial to the many people using this entrance, as it would notably improve the amount and type of visitor information, services and facilities currently available in an area where several popular visitor attractions exist. Additional analysis related to effects to visitor experience will be necessary at the time these future off-site proposals are made. Effects (beneficial or adverse) of off-site (Pinnacles area) provision of visitor services/facilities would likely be long-term and local to regional in scale. Neither the no-action alternative nor alternative B include any use of the Pinnacles area.

Cumulative Impacts

Cumulative impacts to the visitor experience of alternative B are similar to those described under the no-action alternative.

Conclusions

Under alternative B, minor to moderate benefits to the visitor experience would be realized from the preservation of scenic views into and out of the Cedar Pass Developed Area, as well as the preservation of the historic landscape. The inability to provide for new development/improvements (visitor services/facilities) within the Cedar Pass Developed Area under this alternative and its potential to limit future visitor opportunities could result in minor to moderate adverse impacts to the visitor experience. Effects to the visitor experience related to provision of visitor services/facilities at the Pinnacles area (versus Cedar Pass Developed Area) are unknown at this time but could result in benefits to those interested in popular park features located in the general area (Pinnacles Overlook, Roberts Prairie Dog Town) and to the many park visitors that use the Pinnacles entrance. Providing additional visitor amenities at the Pinnacles entrance area (the second most-used park entrance) in the future would result in a notable improvement over the amount and type of visitor information and services and facilities currently available. Compared to the no-action alternative where many future visitor services would be met at the Cedar Pass Developed Area, alternative B restricts future visitor-related

improvements within the Developed Area, while potentially improving such services/facilities at the Pinnacles entrance.

Alternative C—Rehabilitation (Preferred Alternative)

Alternative C focuses on the rehabilitation of the Cedar Pass Developed Area cultural landscape through preservation of contributing historic features and landscape integrity, while improving the utility or function of the landscape through rehabilitation. Adaptive uses of existing structures are integral to this proposal. New, compatible uses would be allowed; however, their design would differ from the existing historic resources. New development would be limited to critical park needs and would occur within defined and distinct development sites (figure 2-3). Where appropriate, new development would occur in areas where other intrusive, nonhistoric structures have been removed. Some existing, noncontributing structures compatible with the cultural landscape would be retained/used. Open space areas, including natural systems (drainages, vegetation, Badlands formations, wildlife), would generally be preserved. Existing historic foundation plantings would be maintained and historic planting designs related to the Mission 66 period would be reestablished, where possible, around the visitor center, the residential area, the lodge and the campground (figure 2-3). Interpretive information would be provided visitors through additional programming and interpretive trails.

Analysis

Impact analysis for visitor experience under alternative C focuses on the primary provision of visitor services and facilities at the Cedar Pass Developed Area through the rehabilitation of the cultural landscape, preservation of scenic views, and the provision of additional interpretive services.

Effects related to the preservation of open space (scenic views) under this alterative are similar to that described for alternative B.

As with all alternatives, the primary visitor contact point in the park would remain at the Cedar Pass Developed Area. This alternative includes the rehabilitation of a variety of cultural landscape features which could effect the visitor experience. Designers, staff and contractors involved in the rehabilitation of these structures would have high levels of historic preservation expertise. Visitors would be provided opportunities to experience a relatively intact example of the NPS Mission 66 NPS design at the Cedar Pass Developed Area with its complementary alterations, the NPS Modern architectural character of the Visitor Center, and other historic elements of the landscape related to its period of significance (1928-1966) (John Milner Associates 2004). Benefits to the visitor experience under alternative C are similar to those provided under alternative B and represent an improvement over the effects realized under the no-action alternative.

Under this alternative, limited, compatible, new development would occur within the Cedar Pass Developed Area within defined development sites, affording opportunities to provide for future visitor facilities and services (improvements to lodge, visitor center, campground). The ability and flexibility to respond to changing visitor needs through time, while retaining the historic

nature of the Cedar Pass Developed Area as the primary visitor experience focal point, would likely result in minor to moderate, long-term, site-specific benefits to visitor experience. Compared to this alternative, the no-action alternative offers similar benefits to visitor experience related to flexibility in the future provision of visitor services.

New interpretive materials and presentation are included under alternative C. Additional interpretive materials would be associated with programming for a future multi-use facility and a loop trail, both located within the Cedar Pass Developed Area. Interpretive materials could be used to promote education and understanding of a variety of important aspects of the park and the Cedar Pass Developed Area (such as natural and cultural resources). This proposal is considered a minor, localized, long-term benefit to the visitor experience, and one not realized under the other two alternatives.

Cumulative Impacts

Cumulative impacts to the visitor experience of alternative C are similar to those described under the no-action alternative.

Conclusions

Rehabilitation of the historic landscape at Cedar Pass Developed Area under this alternative would provide a variety of benefits to the visitors' park experiences. Minor to moderate benefits would result from new adaptive improvements (rehabilitation) to the landscape, preservation of scenic view, flexibility in providing additional visitor services and facilities in the future, and the addition of interpretive materials. In comparison, the no-action alternative would allow an even greater degree of flexibility in providing services/facilities though, in so doing, the historic integrity of the cultural landscape could be compromised as a result of the lack of management guidance. In contrast to alternative B under which flexibility to provide future services and facilities within the Cedar Pass Developed Area would be more limited, the visitor experience under alternative C would be enhanced.

PARK OPERATIONS

Park operations for Badlands National Park are currently concentrated within the Cedar Pass Developed Area. Alternatives analyzed have varying effects on park operations, including the transfer of some facilities and functions to the Pinnacles area (alternative B). This analysis is focused on the ability of the park to adequately and efficiently provide for functions that ensure efficient park operation (for example, maintenance/repair of facilities/systems, administration, staff housing) over the next 10-15 years. Discussions with park staff have helped form the foundation of the analysis (Mills, pers. comm. 2004; Dorsey, pers. comm. 2004).

Guiding Regulations and Policies

For this EA, maintenance and repair activities are considered a part of park operations. Routine maintenance/repair activities within an NRHP-eligible cultural landscape (Cedar Pass Developed Area) may require adjustments in the ways these activities are performed to ensure the

landscape's historic integrity is not compromised. Many routine maintenance/repair activities performed within the cultural landscape are exempted from further Section 106 (NHPA) review in the 1995 Programmatic Agreement among the NPS, the Advisory Council on Historic Preservation, and the National Conference of SHPOs, provided that:

1. the undertakings are based upon information adequate to identify and evaluate affected cultural resources
2. the NPS finds that their effects on cultural resources in or eligible for the National Register will not be adverse based on criteria in 36 CFR 800
3. that decisions regarding these undertakings are made and carried out in conformity with applicable policies, guidelines, and standards…and are documented using the form for "Assessment of Actions Having an Effect on Cultural Resources" or another appropriate format (NPS 1995)

"Preservation maintenance" activities considered exempt under the 1995 Programmatic Agreement are defined as:

- *Housekeeping***:** the removal of undesirable deposits of soil in ways that minimize harm to the surfaces treated, repeated at short intervals so that the gentlest and least radical methods can be used.
- *Routine maintenance***:** usually consists of service activities such as tightening, adjusting, oiling, pruning.
- *Cyclic maintenance***:** maintenance performed less frequently than annually; usually involves replacement or at least mending of material.
- *Stabilization***:** action to render an unsafe, damaged, or deteriorated property stable while retaining its present form (NPS 1998).

Methods of Impact Analysis for Park Operations

Because analysis for this EA is programmatic in nature, impacts presented here are generalized by type. It is assumed that additional analysis will be conducted when future site-specific projects are proposed. As each alternative contains activities that could potentially affect park operations, the broad analysis contained in this EA is designed to aid in future planning efforts.

Facilities/functions related to park operations are concentrated within the Cedar Pass Developed Area and include, among others, the following: park administration facilities, park maintenance operations, staff/concessionaire housing, campground, Cedar Pass Lodge and cabins, fire response, resource management, curatorial facilities, and associated infrastructure (roads, utilities). Where they relate to the visitor experience, visitor services/facilities are addressed above (in the "Visitor Experience" section).

The Pinnacles area, the designated site for new development under alternative B, includes the following park operations/facilities: a ranger station (infrequently-staffed with no public contact responsibilities), two self-service entrance booths, park law enforcement offices; a radio repeater tower, and several other associated outbuildings/structures.

The area analyzed for impacts to park operations include the Cedar Pass Developed Area (all alternatives) and the Pinnacles area (alternative B) (figure 1-2).

Park Operations Impact Threshold Definitions

Negligible: Park operations would not be affected or the effect would be at low levels of detection.

Minor: The effect would be detectable, but would be of a magnitude that it would not have an appreciable adverse or beneficial effect on parks operations.

Moderate: The effect would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public.

Major: The effect would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public and would be markedly different from existing operations.

Environmental Consequences

Impacts Common to All Alternatives

Under all alternatives, work to ensure accessibility, health and safety, environmental and limited energy efficiency within the historic landscape would be allowed. The provision of an accessible, healthful and safe working environment, as well as enhancement of energy efficiency measures within the Cedar Pass Developed Area, would provide negligible to minor, long-term and localized benefits to park operations. This is realized through improved staff efficiency and accessibility, visitor and staff safety, and energy (and related financial) savings within the Cedar Pass Developed Area.

Alternative A—No Action

Under the no-action alternative, as under all alternatives, the Cedar Pass Developed Area would remain the focal point for park operations. The cultural landscape would be managed as a historic resource and modifications to it would be evaluated under Section 106 of the NHPA to ensure its integrity is not jeopardized by future actions. However, no related management guidance would be used to guide how park operations continue to be provided currently or in the future, as would be the case under action alternatives. Changes within the Cedar Pass Developed Area to ensure proper functioning of park operations would be allowed, provided they do not compromise the landscape's integrity. Accordingly, structures and circulation elements within the Cedar Pass Developed Area would be added, removed or altered to meet park operations needs. Design of new features and systems, as well as routine repair and maintenance activities, would be undertaken by staff or contractors without training, education, and/or experience in preservation technology.

Analysis

Analysis of effects on park operations is focused on the effects of new development and improvements within the Cedar Pass Developed Area, issues of historic preservation related to development, and routine maintenance and management activities related to the historic landscape. Evaluation of effects relates to the issue of efficiency in the performance of necessary operations related to the park's functioning.

Under this alternative, development/improvements within the Cedar Pass Developed Area related to park operations (housing, staff administration, operations/maintenance activities) would continue to be provided as long as they were compatible with the historic landscape. This would occur through additions, demolitions and/or alterations of landscape facilities. The no-action alternative would allow the continued concentration of park operations within its traditional area. New development (construction) could result in short-term, site-specific, minor adverse impacts to park operations during the construction period. In the long-term, the continued concentration of park operations in the Cedar Pass Develop Area would mitigate this, resulting in minor to moderate benefits in its contribution to productivity and efficiency.

New development and other modifications (other than routine maintenance/repair) to the Cedar Pass Developed Area historic landscape under this alternative would be sited, designed, and constructed by staff and consultants without historic preservation expertise. Still, compliance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (NPS 1996) is assumed to ensure that the integrity of the historic landscape would not be jeopardized (see "Assumptions Related to Cultural Resources" above). As many park staff/contractors may be unfamiliar with historic preservation techniques and concepts, a minimal amount of effort would be required on their part to ensure that future proposals do not jeopardize the integrity of the historic landscape under Section 106 of the NHPA (see the "Guiding Regulations and Policies" section under "Cultural Resources" above). As a result of the likely additional commitment of time and possibly finances required by staff and/or consultants to ensure future projects are compatible with the historic landscape, long-term, negligible to minor adverse impacts to park operations are possible under this alternative. When compared to the action alternatives, the no-action alternative, while still in compliance with historic preservation mandates, would result in the least impact to park operations related to historic preservation issues as a result of the nominal use of historic preservation specialists for landscape modifications.

Under the no-action alternative, routine repair and maintenance of contributing elements of the historic landscape would be undertaken by staff or contractors without training, education, and/or experienced in preservation technology. Still, compliance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (NPS 1996) is assumed to ensure that the integrity of the historic landscape would not be jeopardized (see "Assumptions Related to Cultural Resources" above). As many park staff/contractors may be unfamiliar with working with historic preservation techniques and materials for day-to-day maintenance/repair activities, a minimal amount of training may be required to ensure efficiency and timeliness in these efforts. Limited training would be necessary to ensure that these actions would not result in long-term, adverse impacts to park operations. As

a result of the commitment of staff time for training in historic preservation methods related to routine maintenance/repair activities, park operations could, in the short-term, experience negligible to minor adverse impacts, decreasing in intensity as workers become trained in basic preservation maintenance methods.

Cumulative Impacts

In general, increasing public visitation, resource protection and management efforts, the provision of appropriate and adequate visitor services, and staffing needs have taxed park budgets. Park operations can be adversely and cumulatively affected by such budget reductions.

The current expansion/rehabilitation of the Ben Reifel Visitor Center (additional administrative offices and visitor services) and recent construction of the fire cache, the museum storage building, and the resource management building provides a negligible to minor cumulative benefit to park operations. This is realized through the enhancement of the park's ability to supply coordinated services (fire fighting) and centralized and adequate resource management (curatorial storage of museum objects, natural resource management building), all of which positively affect park operations over the long-term.

Conclusions

The no-action alternative would result in minor to moderate benefits to park operations in its flexibility to provide for the proper functioning of park operations in an efficient and timely manner. Minor benefits to park operations are also expected through activities to ensure accessibility, health and safety, and energy efficiency. Short-term, minor adverse impacts can be expected as a result of disruptions of park operations related to new construction and improvements, consideration of historic preservation concepts in planning/development within the cultural landscape, and initial training in historic preservation techniques related to repair/maintenance of the historic landscape. The no-action alternative would allow for greater flexibility and ability to provide services and facilities within the Cedar Pass Developed Area related to park operations, without the potential of moving some operations off site (Pinnacles area) and possibly creating inefficiencies for park operations as could be the case under alternative B. The no-action alternative could potentially result in increased flexibility for park operations as a result of the lack of specific management guidance (CLR) that dictates development locations as is the case under alternative C.

Alternative B—Preservation

Alternative B focuses on preservation of the NRHP-eligible cultural landscape at the Cedar Pass Developed Area, allowing for only minor changes within it to meet identified facility and operational needs. No new development would occur. Maintenance and repairs to historic features would be performed when necessary; deteriorated features would be stabilized/protected. Contractors and staff with moderate levels of historic preservation expertise would be used for any modifications made to the historic landscape. Nonhistoric structures that are intrusive to the historic landscape of the Cedar Pass Developed Area may be removed after their useful life. Open space areas would remain undeveloped. A few compatible structures that

post-date the historic landscape's period of significance (1928-1966) may be retained and used. Historic cultural landscape plantings would be preserved and maintained. New development needs related to park operations (housing, administration, operations/maintenance) would be provided in the Pinnacles area, located approximately 20 miles to the northwest of the Cedar Pass Developed Area, the traditional focus of park operations (figures 1-2 and 2-2).

Analysis

Potential impacts to park operations analyzed under this alternative are related to the possible transfer of some park operations/functions to the Pinnacles area from the Cedar Pass Developed Area; issues of historic preservation related to landscape modifications; routine maintenance/repair of the historic landscape elements; vegetation management within the Cedar Pass Developed Area; and the continued use of compatible, noncontributing features of that landscape. Evaluation of effects relates to the issue of efficiency in the performance of necessary operations related to the park's functioning.

Under this alternative, new development requirements related to park operations (housing, staff administration, operations/maintenance activities) would be provided at the Pinnacles area, approximately 20 miles to the northwest of the Cedar Pass Developed Area. This could result in a certain number of park operations and facilities that have been or would have been appropriately located within the Cedar Pass Developed Area being physically disconnected from the Cedar Pass Developed Area in the future. This potential physical disconnection could also hamper the ability to provide routine maintenance and inspection of new off-site structures. The intensity of the impact depends on the facilities and services related to park operations that are moved to the Pinnacles area (unknown at this time). This action has the potential to result in long-term impacts, possibly adverse, of unknown intensity, to park operations. Potential impacts would be adverse if inefficiencies regarding time and productivity related to park operations resulted from the physical disconnection from the Cedar Pass Developed Area. In addition, an increase in the numbers of structures requiring maintenance and annual inspection/repair would also have a negative impact on park operations.

New development at the Pinnacles area would result in short-term, possibly localized, negligible to minor adverse impacts to existing park operations for the duration of the construction period. Depending on the nature of functions moved to the Pinnacles area, alternative B may result in a decrease in the efficiency of park operations when compared to alternative A.

Modifications (other than routine maintenance/repair) to the Cedar Pass Developed Area historic landscape under this alternative would be conducted by staff and consultants with moderate levels of historic preservation expertise. This work could include implementation of preservation measures for structures within the landscape, the in-kind replacement of severely deteriorated historic features that are vital to the site's historic character, or limited mitigation measures (including removal) designed to reduce their intrusion on the historic character of the cultural landscape. The use of staff and consultants with a moderate level of historic preservation would result in long-term, minor adverse impacts to park operations resulting from higher financial and time commitments. When compared to the no-action alternative, alternative B could result in an

increased impact to park operations resulting from the potential for additional time/financial commitments related to historic preservation issues.

The treatment method of the historic landscape under this alternative is that of preservation defined as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property" (NPS 1996: 19). Under this alternative, a moderate level of historic preservation expertise would be required for routine maintenance activities that have the potential to affect the integrity of the historic landscape. As many workers may be unfamiliar with working under historic preservation guidelines for day-to-day maintenance/repair activities, a certain amount of training to ensure efficiency, timeliness and quality in maintenance efforts may be necessary. Additional historic preservation training that may be required to adequately accomplish routine maintenance/repair activities under alternative B could result in minor, short-term impacts to park operations. As workers become trained in preservation maintenance methods, adverse impacts related to routine maintenance and repair activities would be reduced.

Under alternative B, a few compatible structures that post-date the landscape's period of significance (1928-1966) (seasonal apartment building) within the Cedar Pass Developed Area would be retained and used. Their continued use may help to avoid the future need to find/create more space/facilities elsewhere within the park (Pinnacles area). This is a negligible to minor, long-term, localized benefit in its potential to provide financial savings, retain some existing park operations/functions in traditional locales, and avoid disruption of park operations within the Cedar Pass Developed Area. Comparatively, the no-action alternative proposes no reuse of compatible, noncontributing structures, though such reuse is possible and likely.

Under alternative B, the historic plantings that contribute to the NRHP-eligibility of the Cedar Pass Developed Area cultural landscape would be preserved and maintained. When necessary, the plantings would be replaced with in-kind vegetation. The preservation and maintenance of this vegetation would likely result in negligible effects to park operations related to maintenance time involved. No new vegetation management activities specific to historic foundation plantings are included as part of the no-action alternative.

Cumulative Impacts

Cumulative impacts related to park operations of alternative B are similar to those described under the no-action alternative.

Conclusions

Under alternative B, necessary new development that, under the other two alternatives, would have occurred within the Cedar Pass Developed Area, would occur at the Pinnacles area. As a result of the off-site development, facilities/functions that have been appropriately located within the Developed Area could be moved to the Pinnacles area in the future. This has the potential to adversely affect long-term efficiency and productivity of park operations to an unknown degree. New construction at the Pinnacles area will likely cause short-term, negligible to minor adverse impacts to park operations. Minor adverse impacts can be expected related to additional

time/financial commitments for the use of historic preservation specialists for landscape modifications within the Cedar Pass Developed Area, as well as for historic preservation training that related to routine maintenance activities. Park operations would experience negligible to minor benefits through the retention and use of several existing compatible landscape structures and features, as well as from activities to ensure accessibility, health and safety and energy efficiency. When compared to the no-action alternative, alternative B has a greater potential to adversely affect park operations, primarily as a result of the possible disconnection of park operations functions between the Pinnacles area and Cedar Pass Developed Area.

Alternative C—Rehabilitation (Preferred Alternative)

Alternative C focuses on the preservation and rehabilitation of contributing historic features and landscape integrity, while improving the utility or function of the landscape. Adaptive uses of existing structures are an integral component of the proposal. Existing park operation/functions would remain concentrated within the Cedar Pass Developed Area. New, compatible development would be limited to critical park needs and allowed within defined development sites (figure 2-3). In general, these development sites are areas that have been previously impacted by past development. Contractors and staff with high levels of historic preservation expertise would be used for any modifications made to the historic landscape. If compatible with the historic landscape, existing noncontributing structures would be retained/modified/used. Open space areas would generally remain undeveloped. Existing historic foundation plantings would be maintained and historic planting designs related to the Mission 66 period would be reestablished, where possible, around the Visitor Center, the residential area, the lodge and the campground (figure 2-3).

Analysis

Potential impacts to park operations analyzed under this alternative are related to new development within the Cedar Pass Developed Area, issues of historic preservation related to landscape modifications; routine maintenance/repair and vegetation management within the historic landscape; and the continued use of compatible, noncontributing features of that landscape. Evaluation of effects relates to the issue of efficiency in the performance of necessary operations related to the park's functioning.

Under this alternative, critical new space needs for park administration and operations would be provided within the existing Cedar Pass Developed Area through the following means: 1) new development; 2) the adaptive modification and reuse of existing structures; and 3) the replacement of noncontributing, incompatible structures with appropriate ones in the same locale. This would result in the continued concentration of appropriately located park operations equipment, facilities and administration at the Cedar Pass Developed Area. New development and structure modifications within the historic landscape would result in short-term, site-specific, minor adverse impacts to park operations during the construction period. In the long-term, the continued concentration of park operations appropriately located within the Cedar Pass Developed Area would mitigate this, resulting in a minor to moderate benefit in its contribution to productivity and efficiency. Comparatively, the no-action alternative offers similar but slightly

enhanced benefits to park operations in that the absence of management guidance dictating development locations may provide greater flexibility for efficiencies related to park operations.

In order to retain a high level of historic integrity, modifications to the cultural landscape under this alternative (new additions, rehabilitation of existing structures) would be undertaken by planners, designers and contractors with high levels of expertise in historic preservation concepts and techniques. This could include conducting expert levels of building exterior and interior evaluations to determine historic integrity, original design and construction techniques. These efforts could result in a long-term, minor to moderate adverse impact to park operations resulting from increased financial and time commitments required under this alternative. Alternative C, when compared to the no-action alternative, would likely result in an increased adverse impact to park operations resulting from the potential for additional time/financial commitments related to historic preservation issues.

The treatment method for the Cedar Pass Developed Area under alternative C is rehabilitation, defined as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values" (NPS 1996: 49). Under this alternative, staff and contractors with high levels of historic preservation experience would be used when routine maintenance and repair activities have the potential to affect the integrity of historic features or structures within the cultural landscape at Cedar Pass Developed Area. The need for the park to train and/or retain such workers to perform expert-level historic preservation work under alternative C could result in long-term, minor adverse impact to park operations. These would result from increased time and financial commitments and possible difficulty of training staff and retaining experts. Despite the need for higher levels of training, these impacts are similar to those realized under alternative B because many aspects of maintenance are routine and methodical in nature. Once trained, adverse impacts to park operations would not likely differ between action alternatives. Impacts to park operations related to maintenance are notably increased under alternative C when compared to the no-action alternative.

Under alternative C, some compatible elements of the Cedar Pass Developed Area cultural landscape (buildings, roads) that post-date the period of significance would be retained and used. Their continued use may help to avoid the future need to find/create more space elsewhere in already over-capacity structures or to construct new facilities. This is a minor to moderate, long-term, localized benefit to park operations in financial savings (decreased need for new structures), its retention of existing park functions in their current locales, and avoidance of disruption of park operations as a result of structure removal/replacement. Comparatively, the no-action alternative proposes no reuse of compatible, noncontributing structures, though such reuse is possible.

Under alternative C, the existing historic plantings that contribute to the NRHP eligibility of the Cedar Pass Developed Area cultural landscape would be preserved and maintained. In addition, historic planting designs would be reestablished around the visitor center and the Residential Area. Research will also be conducted to identify original planting design intent for the campground and Cedar Pass Lodge areas. In all cases, when plantings are replaced or reestablished, there will be an emphasis on the use of appropriate xeric plants that require less

water and general maintenance. In the short-term these research and reestablishment efforts could result in minor adverse impacts to park operations. However, they would ultimately be offset by a long-term, minor benefit in the reduction of vegetation maintenance time required. Comparatively, the no-action alternative includes no new vegetation management actions related to historic foundation plantings and would, therefore, incur neither adverse nor beneficial effects realized under alternative C.

Cumulative Impacts

Cumulative impacts related to park operations of alternative C are similar to those described under the no-action alternative.

Conclusions

Under alternative C, the ability to provide necessary new facilities within the Cedar Pass Developed Area would result in long-term minor benefits and short-term minor adverse impacts to park operations. The use of highly trained historic preservation specialists in the research, planning, design and construction of new landscape elements could result in minor to moderate adverse impacts to park operations related primarily to additional time and financial commitments. Routine maintenance operations within the cultural landscape may experience minor adverse impacts resulting from the need to train or retain experts with a high level of expertise. The retention/use of compatible, noncontributing landscape structures would result in a minor to moderate benefit to park operations. Vegetation management actions under Alternative C would likely result in minor adverse impacts in the short-term, offset by minor, long-term benefits for park operations. Activities to ensure accessibility, health and safety, and energy efficiency would result in minor benefits for park operations. Alternative C provides for flexibility associated with park operations within the Cedar Pass Developed Area but would also involve a notable increase in time and financial commitment related to historic preservation issues when compared to alternative A.



Chapter Five

Consultation and Coordination

CHAPTER 5
CONSULTATION AND COORDINATION

THE PUBLIC SCOPING PROCESS

Public scoping meetings for the Cedar Pass Developed Area Cultural Landscape Report Environmental Assessment were held in November of 2002. These scoping meetings represent early involvement of interested and affected public and are considered essential elements of the National Environmental Policy Act (NEPA) planning process.

Two public scoping meetings were held in the Badlands National Park area. News releases announcing the public meetings were sent to local and regional news media.

The locations for the two public scoping meetings were:

Kadoka, SD – November 20, 2002 (7 attendees)
Wall, SD – November 21, 2002 (2 attendees)

The meetings were designed to inform the public of the project to prepare a Cultural Landscape Report and Environmental Assessment for the Cedar Pass Developed Area in Badlands National Park, and to elicit public feedback regarding issues and management alternatives. A fact sheet related to the planning process was distributed at these meetings (appendix B).

The meetings began with a presentation by NPS staff to explain the project background, the Mission 66 initiative, and issues to be considered in the EA. Following the presentation, members of the public provided comments and concerns. These comments involved issues of current projects, shading, access, visitor experience, and light pollution. Summaries of these meetings, including public comments and concerns, are presented in appendix B.

AGENCY CONSULTATION

The following agencies were consulted during the preparation of this EA.

U.S. Fish and Wildlife Service

The Endangered Species Act of 1973 requires that each federal agency, in consultation with the Secretary of the Interior, ensure that proposed agency actions do not jeopardize the continued existence of a listed species or result in destruction or adverse impact to designated critical habitat.

Informal consultations with the service took place in February 2004 with a phone conversation between Total Quality NEPA staff and the U.S. Fish and Wildlife Service staff related to the Cedar Pass Developed Area and the planning process. A review of the agency's web site listings

of special status species for Jackson, Pennington and Shannon counties was conducted (http://southdakotafieldoffice.fws.gov/endsppbycounty.htm). The service will be provided a copy of this draft document for their review and determination of concurrence with EA findings.

South Dakota Department of Game, Fish and Parks

In 2004, consultation with the South Dakota Department of Game, Fish and Parks was initiated regarding state-listed threatened and endangered species located within or around the Cedar Pass Developed Area and the Pinnacles area. Communications with the South Dakota Department of Game, Fish and Parks regarding state-listed threatened and endangered species are included in appendix D. A review of the agency's web site listings for special status species was conducted (http://www.sdgfp.info/wildlife/diversity/tes.htm). The agency will be provided a copy of this draft document for review and determination of concurrence with EA findings.

South Dakota State Historic Preservation Officer

The South Dakota State Historic Preservation Officer was consulted in 2004 regarding the National Register of Historic Places (NRHP) eligibility of the Cedar Pass Developed Area cultural landscape. Related correspondence regarding the NRHP eligibility of the cultural landscape is provided in appendix A.

LIST OF PREPARERS

Name	Title	Education/Responsibility
Total Quality NEPA		
Kathryn Joyner	Senior Analyst	M.S. Archeology/Anthropology, B.S. Education Responsible for cultural resources, visitor experience, park operations, wildlife, special status species, paleontological resource analysis.
Cristina Rumbaitis-del Rio	Senior Analyst	PhD. Ecology and Evolutionary Biology, B.A. Earth and Environmental Sciences Responsible for vegetation analysis.

Heidi West	Principal	Ph.D. Environmental Science and Engineering, MA. Science Communications, M.S. Biology, B.S. Biology Responsible for technical document review.
Juanita Barboa	Technical Editor	B.S. Technical Communication Responsible for final editing/formatting.
John Milner Associates, Inc.		
Rob McGinnis, ASLA	Principal Landscape Architect	M.L.A. Landscape Architecture Responsible for Cultural Landscape Report, alternatives, graphics/mapping.

LIST OF RECIPIENTS

Following is the list of agencies and organizations that will receive a copy of this draft EA.

Federal Department and Agencies
U.S. Department of the Interior, Fish and Wildlife Service

Tribal Governments and Organizations
Rosebud Sioux Tribal Council, P.O. Box 430, Rosebud, SD 57570
Cheyenne River Sioux Tribe, P.O. Box 590, Eagle Butte, SD 57625
Standing Rock Sioux Tribal Council, P.O. Box D, Fort Yates, ND 58538
Oglala Sioux Tribal Council, P.O. Box H, Pine Ridge, SD 57770

State of South Dakota
South Dakota Department of Game, Fish and Parks
Office of the South Dakota State Preservation Officer

Local Governments
Jackson County, SD
Pennington County, SD
Shannon County, SD
Mayor of Wall, SD
Mayor of Interior, SD



References

REFERENCES CITED

Augustana College Archeology Lab. 1998. Site 39JK227 Documentation.

Beaubien, Paul, 1953 *Preliminary report of Archeological Reconnaissance, Badlands National Monument*. NPS, Midwest Region, Omaha.

Benton, R.C., Evanoff, E., Herbel, C. and Terry, D.O., Jr. 2001. "Baseline mapping of fossil bone beds at Badlands National Park; A First in Park History." In Santucci, V.L. and McClelland, L. (eds.), *Proceedings of the 6th Fossil Resource Conference: National Park Service Geological Resources Division Technical Report*, NPS/NRGRD/GRDTR-01/01, p. 85-94.

Benton, Rachel (NPS), 2004. Personal communication regarding underlying bedrock within the Cedar Pass and Pinnacles study areas.

Bjork, P.R., 1994, 1995, 1996. *Annual Reports for Summer Field Excavations of the Pig Dig at Badlands National Park*. On file with the Badlands National Park Library.

Carbyn, L., S. Brechtel, D. Hjertaas, and C. Mamo. 1993. *An Update on the Swift Fox Reintroduction Program in Canada*. Natural History Occasional Paper, 19. Alberta, Canada: Provincial Museum of Alberta.

Clark, J., J.R. Beerbower, and K.K. Kietzke. 1967. "Oligocene Sedimentation, Stratigraphy, Paleocology and Paleoclimatology in the Big Badlands of South Dakota," *Fieldiana: Geology Memoirs*. Vol. 5, Field Museum of Natural History, 158 pp.

DiBenedetto, J.N. 1997. "Preliminary Investigation of the Stratigraphy, Fauna and Taphonomy of the Brian Maebius Site, Tyree Basin, Badlands National Park, South Dakota." Final Report for Geologist in the Parks Internship. On file, Badlands National Park Library, 32 pp.

1998. "An Oligocene Tree Stump from Badlands National Park, Scenic Member of the Brule Formation, Interior, South Dakota." *Abstracts with Programs, the 5th Conference on Fossil Resources: Partners Preserving our Past, Planning our Future*. p. 14.

1999. "Continuing Investigation of the Stratigraphy, Fauna and Taphonomy of the Brian Maebius Site, Tyree Basin, Badlands National Park, South Dakota, Challenge Cost Share Final Report." On file in the Badlands National Park Library. 28 pp.

Dorsey, Ronald (NPS). 2004. Personal communication regarding Badlands National Park operations.

Gries, John Paul. 1998. *Roadside Geology of South Dakota*, 2nd ed., Missoula, Montana: Mountain Press Publishing Company.

Hauk, J.K. 1993. *Badlands: Its Life and Landscape*. Badlands Natural History Association, 8th Ed.

Herbel, C.L. 1997, 1998. "Annual Reports for the field excavation, lab preparation and curation of fossils collected from the Pig Dig." On file with the Badlands National Park Library.

John Milner Associates Inc. 2004. *The Cedar Pass Developed Area, Badlands National Park, Cultural Landscape Report (90% Draft).* Charlottesville VA.

Johnson, Ann. 1987a. "Archeological Inventory in Residence Area." Rocky Mountain Region Archeological Project Report. On file, SD Archeological Research Center.

1987b. "Archeological Inventory in the Concession Cabin Area." Rocky Mountain Region Archeological Project Report. On file, SD Archeological Research Center.

Jones, B. 1991. "Archeological Inventory and Evaluation along Loop Road Segment 10-2, Badlands National Park, South Dakota."

1999. "Archeological Inventory of two Proposed Construction Locations, Badlands National Park, SD."

2000. *Archaeological Overview and Assessment*. NPS Midwest Archeological Center, pp. 1-10.

Kenner, Brian (NPS--Chief of Natural Resources, Badlands National Park). 2004. Personal communication regarding wildlife and vegetation issues at the Pinnacles Entrance area.

Kirk Associates, LLC. 2004. Cedar Pass Developed Area: Cultural Landscape Value Analysis Draft Report, May 20, 2004. Table entitled: "Cedar Pass Developed Area, Badlands National Park, South Dakota, Cultural Landscape Report, Value Analysis Workshop," p. 67. Grosse Point Park, MI.

Kotliar, Natasha B., Bruce W. Baker, April D. Whicker, and Glenn Plumb. 1999. "A Critical Review of the Assumptions about the Prairie Dog as a Keystone Species." *Environmental Management.* 24 (2).

Licht, D.S. 1997. *Ecology and Economics of the Great Plains.* Lincoln, NE: University of Nebraska Press.

Miller, Paul. 2002. *Construction Excavation Monitoring for Cultural Resources at the Badlands National Park Administrative Site, Jackson County, SD.* Quality Service Report #011002.

Mills, Marianne (NPS—Chief of Resource Education, Badlands National Park). 2004. Personal communication regarding study area conditions within the Cedar Pass and Pinnacles study areas (cultural resources, visitor experience, wildlife, vegetation, park operations).

National Park Service (NPS). n.d. "What is Mission 66," document on file at Badlands National Park, Mission 66 file, National Archives—Plains, Kansas City, MO.

in preparation. *Draft General Management Plan and Environmental Impact Statement, Badlands National Park*. 7/03.

1974. *Archeological Survey, Cedar Pass Area, Badlands National Monument.* Midwest Letter Report, October 23, 1974.

1976. *Environmental Assessment: Development Concept Plan, Badlands National Monument, Cedar Pass*. 1/1976.

1982. *Final Environmental Impact Statement for the Master Plan and Development Concept Plan, Cedar Pass, Badlands National Park.* Denver Service Center.

1985. *Badlands South Unit: General Management Plan Revision, Draft Development Concept Plan/Environmental Assessment*. Denver Service Center.

1994. *Protecting Cultural Landscapes—Planning, Treatment and Management of Historic Landscapes.* Preservation Briefs. Charles A. Birnbaum, on-line resource available at http://www2.cr.nps.gov/tps/briefs/brief36.htm.

1995. Programmatic Agreement among the National Park Service (USDI), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.

1996. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.* Charles A. Birnbaum, ed., Washington D.C.: U.S. Department of the Interior.

1998. *Cultural Resource Management Guideline*. NPS-28.

1999. *Long-Range Interpretive Plan: Badlands National Park*. On file at Badlands National Park, South Dakota.

2000. *Badlands National Park Archeological Overview and Assessment.* Revised 6/2000. Prepared by Marianne Mills, Badlands National Park, South Dakota.

2001. *NPS Management Policies 2001*. U.S. Department of the Interior, National Park Service. Washington D.C. 137 pp.

2002. *Environmental Assessment: Site Development for new Fire Cache, Resource Management Storage Building, and Museum Storage Building at Cedar Pass Developed Area.* Badlands National Park, Jackson County, South Dakota. August 20, 2002.

2003a. *Integrated Weed Management Plan, Badlands National Park.* On file at Badlands National Park.

2003b. *Castle Trail Complex Demonstration Transportation System Plan.* Badlands National Park. NPS, Denver Service Center.

2004a. *Conservation Planning, Environmental Impact Analysis, and Decision Making, Director's Order #12.*

2004b. Handbook to Director's Order 12: Conservation Planning, Environmental Impact Analysis and Decision-Making (preliminary draft), June 2004.

2004c. *Environmental Assessment for the Fire Management Plan, Badlands National Park, Jackson, Pennington, and Shannon Counties, South Dakota*.

2004d. *Fossil Hunters* (online). National Park Service. Available at http://www.nps.gov/badl/exp/home.htm.

Prosser, C. 2004. Personal Communication. Exotic Plant Management Team Liaison, Theodore Roosevelt National Park.

Raymond, W.H. and R. U. King. 1976. *Geologic Map of the Badlands National Monument and Vicinity, West Central South Dakota*. U.S. Department of Interior, Geological Survey Map I-934.

SARC (State Archeological Research Center). 1997. *An Intensive Cultural Resources Inventory of the Proposed Cliff Shelf Nature Trail Renovation Project, Near Cedar Pass in Badlands National Park, Jackson County, SD*. Prepared by Roger Williams.

Simmons, Todd and James H. Gramann. 2000. *Badlands National Park Visitor Study, Summer 2000*. Visitor Services Project Report 123.

Smith, B.E., D.M. Browning, E.N. Taylor, R.S. Ferguson, and K. Yturralde. 1998. *Herpetofaunal Surveys of the Fall River Ranger District, U.S. Forest Service, Southwestern South Dakota, and Badlands National Park.* Report submitted to the Northern Prairie Wildlife Research Center, US Geological Survey, US Department of the Interior.

South Dakota Department of Game, Fish and Parks (SDGFP). 2004a, Letter of consultation (received 4/18/04) regarding species of special concern related to the Cedar Pass Developed Area Cultural Landscape Report.

2004b. On-line resource, Threatened, Endangered, and Candidate Species of South Dakota. http://www.sdgfp.info/Wildlife/Diversity/index.htm.

South Dakota Historical Society. 2002. "Determination of eligibility, 39JK251 (Millard's Dan Hall)."

2004. On-line resources related to the Prehistory/History of South Dakota. http://www.sdhistory.org.

Stevens, K.K. 1995. "An Orellan Fossil Site in the Scenic Member of the Brule Formation. White River Group, South Dakota." In: *Abstracts with Programs, Geological Society of America Meetings, North-Central and South-Central Sections*. 88 pp.

1996a. "Taphonomy of an Orellan (Early Oligocene) Fossil Assemblage in the Scenic Member, Brule Formation, White River Group, Badlands National Park, South Dakota." In: *Abstracts with Programs Geological Society of America, Rocky Mountain Section.* 28:4:39.

1996b. "Taphonomy of Early Oligocene (Orellan) Vertebrate Assemblage in the Scenic Member, Brule Formation, White River Group, Badlands National Park, South Dakota." Unpublished Masters thesis, South Dakota School of Mines and Technology, Rapid City. 103 pp.

Taylor, Dee. 1961. *Salvage Archeology In Badlands National Monument*. Manuscript submitted to NPS, Midwest Region, Omaha.

Terry, D.O. 1996a. "Stratigraphic and Paleopedologic Analysis of Depositional Sequences within the Pig Wallow Site, Badlands National Park." Final Report for NRPP Grant on file in the Badlands National Park Library, 164 pp.

1996b. "Stratigraphy, Paleopedology and Depositional Environment of the Conata Picnic Ground Bone Bed (Orellan), Brule Formation, Badlands National Park, South Dakota". In: *Abstracts with Programs, Geological Society of America Meetings, Rocky Mountain Section*, 28:4:40.

1998. "Stratigraphy, depositional environments, and fossil resources of the Chadron Formation in the South Unit of Badlands National Park, South Dakota." pp. 127-128. In J.E. Martin, J. Hoganson and R.C. Benton (eds.), *Partners Preserving our Past, Planning our Future*. Proceedings for the Fifth Conference on Fossil Resources, Dakotaterra Volume.

U.S. Department of Agriculture (USDA), Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. 2000. *Fire Effects Information System.* (Online). Available at http://www.fs.fed.us/database/feis/ [accessed 12/13/03].

USFWS. 2004a. Phone consultation between Charlene Bessken (USFWS) and Kathie Joyner (Total Quality NEPA) related to threatened and endangered species associated with the Cedar Pass developed area Cultural Landscape Report.

2004b. On-line resource related to federally listed species, by county. http://southdakotafieldoffice.fws.gov/endangered_species.htm

USFWS, USDI, USFS. 1994. *Final EIS: Black-footed Ferret Reintroduction: Conata Basin/Badlands, South Dakota.* Pierre, SD: South Dakota Ecological Services Office.

USGS-NPS. 1999. Vegetation Mapping Program. *Technical Memorandum No. 8260-00-02, Badlands National Park, South Dakota, National Park Service*. November 1999.

Whisenant, S. 1987a. "Effects of fire on mixed-grass plant communities in Badlands National Park." Annotated Bibliography. 96 pp.

Whisenant, S. 1987b. "Effects of fire on mixed-grass plant communities in Badlands National Park." Final Progress report. 21 pp.

Will-Wolf, S. 1998. "Annotated list of lichens species in Badlands National Park." Unpublished report.



Appendix A

APPENDIX A

Letter of Concurrence from South Dakota State Historic Preservation Officer Regarding Eligibility of the Cedar Pass Developed Area Cultural Landscape for the National Register of Historic Places

Consensus Determination of Eligibility
Badlands National Park

Name of Property: Cedar Pass Developed Area

Location: Interior, South Dakota

County: Jackson, Shannon, and Pennington Counties

This Consensus Determination Evaluates:	YES	NO	N/A
Structure(s)			
Cultural Landscape(s)	X		
Archeology			

	Eligible	Not Eligible
Eligibility Determination:	X	

State/Federal Agency Certification:
As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for consensus determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR 60. In my opinion the property [~~X~~] meets [ ] does not meet the National Register Criteria. I recommend that this property be considered significant [~~X~~] nationally [ ] statewide [ ] locally.

Jaya D. Voyt — 07-15-2004

State Historic Preservation Officer — Date

State Agency

National Park Service Certification:
In my opinion, the property, including all contributing structures and landscape features, tangible and intangible, [ ] meets [ ] does not meet the National Register criteria

Superintendent, Badlands National Park — Date



Appendix B

APPENDIX B

Summaries of Public Scoping Meetings
Kadoka, SD – November 20, 2002
Wall, SD – November 21, 2002

Cultural Landscape Report

Cultural Landscape Report/Environmental Analysis (CLR/EA) project

Thanks for attending this public meeting – we appreciate your questions and suggestions.

A Cultural Landscape Report, or "CLR," is being prepared for the Cedar Pass developed area. The CLR will describe the history of the Cedar Pass area development, will assess the integrity of the historically significant development, and will provide guidance and recommendations for future managment of the developed area. The CLR will address the area around the Ben Riefel Visitor Center, the administrative and staff offices, employee housing, maintenance facility, Cedar Pass Lodge and cabins, and the campground. This area is the primary developed area in Badlands National Park and encompasses about 100 acres in total area.

What is a Cultural Landscape Report?

A *Cultural Landscape Report*, or "CLR," is a document (and a process of analysis) used by the National Park Service to document historical landscapes. The CLR has three goals:

1) to document and record a chronological history of how a landscape developed and evolved over time;
2) to analyze whether the landscape is eligible for listing on the National Register of Historic Places (i.e., is it historically significant and are the features from the period of significance still intact?); and
3) to provide guidance and recommendations to park mangers on how to treat the landscape so it remains intact.

The typical contents of a CLR are shown on the next page.

The Ben Reifel Visitor Center structure was determined eligible for the National Register of Historic Places in March 2002 for its association with the National Park Service (NPS) Mission 66 program from 1958-1966. "Mission 66" was a funding initiative passed by Congress in 1956 to provide for a massive upgrade of NPS facilities across the Nation. At that time, many parks--including Badlands National Park--had not received any funidng for substantial facility upgrades since their facilities were first built in the 1920s-30s. These older facilities were seriously stressed as visitation to National Parks increased dramatically after World War II. In a 1955 poll, over two thirds of visitors to national parks voiced complaints, particularly about overcrowding and a need for overnight accomodations. The NPS was in desperate need of funds to finance basic maintenance and to protect resources from overuse.

The Mission 66 program is significant for introducing modern architecture into the parks. These modern facilities were designed to blend into the surrounding natural landscape through their subdued plainness. Cecil Doty, the lead architect for the program, designed the Ben Reifel Visitor Center, one of the earlier projects of Mission 66. Later in the Mission 66 development program, more visually dramatic, architecturally provocative designs were created for visitor centers. Many of the Mission 66 structures have been rehabilitated in the 36 years since the Mission 66 program ended. Ben Reifel is now the only remaining Mission 66-era NPS visitor center in South Dakota that retains substantial historic integrity.

The CLR will evaluate the surrounding landscape of the developed area for integrity and significance as part of the Mission 66 program. The CLR will be produced by a team of contractors and will involve rigorous research, inventory, documentation, and analysis of both historical data and existing conditions. The CLR will provide the NPS with recommendations on managing future changes to the complex so the historic character is retained. The CLR team will also look at how universal accessibility can be improved in the Cedar Pass complex.

Want to Learn More?

For more information on the Mission 66 era, read *Mission 66 Visitor Centers: The History of a Building Type* by Sarah Allaback (U.S. Department of the Interior, National Park Service, 2000). This study is available at some libraries (those that serve as repositories for government documents) and is also for sale by the Superintendent of Documents at http://bookstore.gpo.gov. Much of the information in this article came from this book.

The Contracting Team:

Project Manager:
Mr. Dan Worth
Bahr Vermeer & Haecker Architects, Ltd.
Lincoln, Nebraska

Historical Landscape Architect:
Mr. Rob McGinnis
Oculus
Charlottesville, Virginia

Environmental Scientist:
Ms. Heidi West
Total Quality NEPA
Niwot, Colorado

Architectural Historian:
Dr. Ed Zimmer, PhD
Lincoln, Nebraska

Architectural Photographer:
Mr. Paul Brokering
Paul Brokering & Associates Architects
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Park Contact:
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Chief of Resource Education
Badlands National Park
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Interior, South Dakota 57750
605-433-5240
Badl_planning@nps.gov

Other park staff, including those in maintenance, and natural resources management, will be consulting on this project.

What are the Typical Parts of a Cultural Landscape Report?

A cultural landscape report (CLR) is typically composed of three distinct parts. The CLR for the Cedar Pass Developed Area at Badlands National Park will have two parts; the third section may be contracted at a later date. This CLR will also include an Environmental Analysis (EA) to evaluate impacts of alternative treatments developed in the CLR.

INTRODUCTION

This section includes a management summary describing the purpose of the project, a historical overview, a description of the scope of the project and methodology for completing it, a description of the study boundaries, and a summary of findings.

PART 1: SITE HISTORY, EXISTING CONDITIONS, ANALYSIS & EVALUATION

- **Site History** gives a historical description of the landscape and all significant characteristics and features. The text is based on research and historical documentation, illustrating the physical character, attributes, features, and materials that contribute to the significance of the landscape. This section identifies and describes the historical context and the period(s) of significance associated with the landscape.
- **Existing Conditions** describes the landscape as it currently exists, including the documentation of such landscape charateristics as land use, vegetation, circulation, and structures. It is based on both research and site surveys, including on-the-ground observation and documentation of significant features. Contemporary site functions, visitor services, and natural resources are described to the extent that they influence treatment.
- **Analysis and Evaluation** compares findings from the site history and existing conditions to identify the the significant landscape features and characteristics. Historic integrity is evaluated to determine whether or not the features and characteristics that defined the landscape during the historic period are still present.

PART 2: TREATMENT

This section describes the preservation strategy for long-term management of the cultural landscape, based on its significance, existing condition, and use. Treatment is also based on overall management objectives for the site, as documented in the park's General Management Plan. Treatment recommendations are described in narrative text, a treatment plan, and/or design alternatives. Value analysis is used to evaluate the impacts of each alternative.

PART 3: RECORD OF TREATMENT

This section is produced after the recommended treatment has been implemented. [A record of treatment is NOT included in this specific CLR.]

BIBLIOGRAPHY & APPENDICIES

ENVIRONMENTAL ANALYSIS

Describes the affected environment that the alternatives for treatment might impact and the anticipated impacts. Identifies the environmentally preferred alternative.

Comments on this project should be submitted by December 11, 2002.

Respond by Mail:
Superintendent
Badlands National Park
P.O. Box 6
Interior, SD 57750

Respond by Email:
badl_planning@nps.gov

National Park Service
U.S. Department of the Interior

EXPERIENCE YOUR AMERICA

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

BAHR VERMEER HAECKER

Architects

MEETING MINUTES

Date: 20 November 2002

Project: NPS Cedar Pass Badlands National Park Cultural Landscape Report — Project No.: L02073

From: Dan M. Worth

Attendees: Paul Gropper, Vern and Helen Uhlir, Stephen Rogers, Paige Hoskinson, Gene and Bernice Crew, Wayne Huether, Paul Jensen, Rick Hustad, Dave Hahn, Dan Worth, Greg Munn, Rob McGinnis, Matt Whitaker, Nick Chevance, Sherda Williams, Heidi West, Kathie Joyner and Marianne Mills.

CC: Sherda Williams, Billy Davis, Rob McGinnis, Heidi West, Marianne Mills, Project File

Public Meeting at Kadoka Auditorium, Kadoka, South Dakota, November 20, 2002 - 7:00-9:00 p.m.

1. Sherda Williams gave opening remarks and introduced CLR team and Park Staff.
2. Sherda gave overview of project area and described what CLR is and will do.
3. Sherda discussed background of project and Mission 66 initiatives.
4. Issues to consider during project were reviewed. These included:
    - Lighting - minimize light pollution.
    - Utilities - extend to new projects, move all to underground.
    - Universal accessibility - some areas accessible.
    - Public areas - shading at picnic/camping areas, showers at campground.
    - Signage - differentiate Visitor Center and Administration.
    - Vegetation - non-native grasses, Siberian elms.
    - Drainage - poor at Lodge and Visitor Center parking, floors at old Ranger Station, culverts at campground inadequate.
    - Parking - Visitor Center, Lodge and cabins.
    - Circulation - Bottleneck at entrance, RV's and buses, road surfacing.
    - Functions and Land Use - no proposed changes in way areas are used.
5. Questions/Discussion included the following items:
    - Please try to accommodate change to increase capacity for more visitors without changing character.
    - Schedule - next public review meeting is planned for July.
    - What changes are planned?
        - Visitor Center rehabilitation

121 SOUTH 13th STREET
NO. 200
LINCOLN NEBRASKA
68508

V 402 475 4551
F 402 475 0226

OMAHA NEBRASKA

www.bvh.com

- Fire cache
- Museum storage
- Campground - road paving - showers

- Status of Big Dig - closed down for winter.
- Shading - many trees not native?
- Tunnels on Highway 240 - removed.
- Bootleg still down by Haystack Butte.
- Requested historical pictures from participants of landscapes and buildings - contact Marianne or Sue at Badlands National Park.

Respectfully submitted,

Dan M. Worth, AIA
Principal

Attachments: Sign-in Sheet and Handouts

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If you disagree with any of these notes or decisions, please respond within three (3) working days of receipt of this document; otherwise we will assume your concurrence.

11/20/02 Kadoka, SD Kadoka Auditorium

Name	Mailing Address	Email Address (If Possible)	Comments or Questions?
PAUL GROPPER	BOX 56 LONG VALLEY SD 57547		
VERN + HELEN UHLIR	BOX 77 KADOKA, SD 57543	VUHLIR@WEENET.COM	
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Paige Hoskinson Review + Compliance Coordinator	900 Governors Dr Pierre SD 57501	Paige.Hoskinson@State.sd.us	
Grady - Bernice Crelo	HC1 Box 57 Philip, S.D. 57567	gbc@gwtc.net	
WAYNE Huether Interior S.D 57750	Paul Jensen Box 1 Wasta SD 57791 348-2223	Jens620@rap.midco.net	
	"	"	
DAN WORTH	121 S. 13TH. LINCOLN, NE. 68508	dworth@bvh.com	

BAHR VERMEER HAECKER

Architects

MEETING MINUTES

Date: 21 November 2002

Project: NPS Cedar Pass Badlands National Park Cultural Landscape Report

Project No.: L02073

From: Dan M. Worth

Attendees: Rick Hustead - Wall Drugstore
Dave Hahn
Sue Lamie - Minuteman Missle NHS
Rob McGinnis, Matt Whitaker - Oculus
Nick Chevance, Sherda Williams - NPS MWRO
Kathie Joyner, Heidi West - TQNEPA
Dan Worth, Greg Munn - BVH

CC: Sherda Williams, Billy Davis, Marianne Mills, Sue Lamie, Rob McGinnis, Greg Munn, Project File

Public Meeting at Wall, South Dakota, November 21, 2002 - 7:00 p.m.

1. Sherda Williams introduced the CLR study and explained why CLR is being conducted.

2. Sherda introduced project team members and park staff.

3. Sherda reviewed list of issues and items generated with park staff. She noted that goal of CLR is to provide guidance for park as they implement changes/projects at park with relation to historic landscape and resources. Issues include:
   - Lighting - minimize light pollution.
   - Utilities - extend to new projects, move all to underground.
   - Universal accessibility - some areas accessible.
   - Public areas - shading at picnic/camping areas, showers at campground.
   - Signage - differentiate Visitor Center and Administration.
   - Vegetation - non-native grasses, Siberian elms.
   - Drainage - poor at Lodge and Visitor Center parking, floors at old Ranger Station, culverts at campground inadequate.
   - Parking - Visitor Center, Lodge and Cabins.
   - Circulation - bottleneck at entrance, RV's and buses, road surfacing.
   - Functions and Land Use - no proposed changes in way areas are used.

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4. Discussion/Questions included the following:
   - Will this project delay Visitor Center project?
   - Park Service tends to over do it. Keep solutions simple.
   - Not much need to change a lot of facilities.
   - Do not impede experience of visitor - balance resource and needs and process.
   - Caretakers house most significant building - it was knocked down.
   - Light pollution important - keep levels very low.

Respectfully submitted,

Dan M. Worth, AIA
Principal

Attachments: Sign-in Sheet

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If you disagree with any of these notes or decisions, please respond within three (3) working days of receipt of this document; otherwise we will assume your concurrence.

11/24/0

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