

Tallgrass Prairie National Preserve

Chase County, Kansas



Cultural Landscape Report

October 2004

CULTURAL LANDSCAPE REPORT

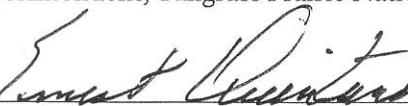
Tallgrass Prairie National Preserve
Cottonwood Falls, Kansas
October 2004

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Date: 9/27/04

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Superintendent, Tallgrass Prairie National Preserve

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Tallgrass Prairie National Preserve

Chase County, Kansas

Cultural Landscape Report

prepared for

National Park Service

Midwest Regional Office
Omaha, Nebraska

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O c t o b e r 2 0 0 4

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TABLE OF CONTENTS

1 / Administrative Data

Introduction	1-1
Scope of the CLR	1-4
Methodology and Project Staff	1-4
Summary of Findings	1-9
Recommendations for Further Historical Research, Archeological, And/or Physical Investigation	1-14

2 / Site History

Introduction	2-1
Pre-Euro-American Settlement (Pre-1856)	2-3
Early Euro-American Settlement (1856–1876)	2-13
Nineteenth-Century Ranching (1877-1906)	2-31
Twentieth-Century Ranching (1907-1993)	2-63
National Park Trust (1994-1999)	2-107

3 / Existing Conditions Documentation

Introduction	3-1
Environmental Context and Setting	3-1
Site Description	3-3
Existing Conditions Documentation by Landscape Characteristic	3-9

4 / Analysis

Introduction	4-1
Current National Register Status of the Preserve	4-1
CLR Evaluation of Significance	4-2
Comparative Analysis	4-5
Integrity Assessment	4-25

5 / Summary of Management Issues

Introduction	5-1
Over-arching Management Issues	5-1
Management Concerns by Topic	5-1

6 / Treatment Recommendations

Introduction	6-1
Identification of the Preferred Treatment Approach	6-1
Guidance Provided in the General Management Plan	6-2
Treatment Issues, Goals and Objectives	6-3
General Management and Design Guidelines and Recommendations	6-8
Management Zones	6-18
Treatment Recommendations by Management Zone	6-22

7 / Implementation Guidelines

Identification and Description of Treatment Projects	7-1
Treatment Projects	7-2
Phasing Chart of Projects	7-35

8 / Bibliography

Primary Sources	8-1
Unpublished Primary Source Materials Including Interviews	8-3
Selected Correspondence	8-5
Secondary Sources (Published and Unpublished)	8-6
Maps and Photographs	8-12

Appendices

LIST OF FIGURES

1 / Administrative Data

Figure 1. Context and Location

2 / Site History

- Figure 2. Pre-Euro-American Settlement (Pre-1856)
- Figure 3. Soil Associations (Pre-1856)
- Figure 4. Detail, Township 18 GLO survey plat, 1856
- Figure 5. Detail, Township 19 GLO survey plat, 1856
- Figure 6. Period Plan, Early Euro-American Settlement (1856–1876)
- Figure 7. Period Plan, 19th-century Ranching (1877–1906)
- Figure 8. Spring Hill Ranch Headquarters, 19th-century Ranching (1877–1906)
- Figure 9. Spring Hill Ranch Acquisitions, 19th-century Ranching (1877–1906)
- Figure 10. Deer Park Place Ranch Acquisitions, 19th-century Ranching (1877–1906)
- Figure 11. Soil Associations and Cultivated Land, ca. 1895, 19th-c. Ranching (1877–1906)
- Figure 12. The Jones Ranch and Environs, as shown in *The Kansas Picture Book*, 1883
- Figure 13. Spring Hill Ranch as shown in *Everts 1887 Atlas of Kansas*
- Figure 14. Deer Park Place as shown in *Everts 1887 Atlas of Kansas*
- Figure 15. 1901 map of Township 19 South, Range 8 East
- Figure 16. 1908 postcard view to the west across Fox Creek toward Spring Hill Ranch
- Figure 17. Detail of 1908 postcard view showing Spring Hill Ranch
- Figure 18. *Map of the Spring Hill and Deer Park Farms*, ca. 1895
- Figure 19. Detail from 1938 aerial photograph showing the southern portion of the Preserve
- Figure 20. Detail from a 1938 aerial photograph showing Spring Hill Ranch
- Figure 21. Detail from a 1938 aerial photograph showing Deer Park Place
- Figure 22. Period Plan, 20th-century Ranching (1907–1993)
- Figure 23. Z Bar/Spring Hill Ranch Headquarters, 20th-century Ranching (1907–1993)
- Figure 24. Pasture and Pond Locations, 20th-century Ranching (1907–1993)
- Figure 25. Lower Fox Creek School, 20th-century Ranching (1907–1993)
- Figure 26. Detail from a 1956 aerial photograph showing the Z Bar/Spring Hill Ranch
- Figure 27. Detail from a 1956 aerial photograph showing the Z Bar/Spring Hill Ranch
- Figure 28. Detail, 1971 aerial photograph, southern portion of what is now the Preserve
- Figure 29. Detail, 1971 aerial photograph showing the Z Bar/Spring Hill Ranch
- Figure 30. Detail, 1971 aerial photograph showing Deer Park Place

- Figure 31. 1997 aerial photograph, Tallgrass Prairie National Preserve
- Figure 32. Detail, 1997 aerial photograph showing southern portion of Preserve
- Figure 33. Detail, 1997 aerial photograph showing Z Bar/Spring Hill Ranch
- Figure 34. Detail, 1997 aerial photograph, Deer Park Place
- Figure 35. Curt Benninghoven at rear of Benninghoven residence
- Figure 36. Ranch hands eating watermelon at rear of Benninghoven residence
- Figure 37. Cattle in corral on Benninghoven Ranch
- Figure 38. Sheep grazing on Benninghoven Ranch
- Figure 39. Edith Benninghoven's turkeys
- Figure 40. Cattle drive, 1938
- Figure 41. Pastoral view of ranch, Benninghoven period
- Figure 42. Panoramic view of ranch, Benninghoven period
- Figure 43. Horse-drawn equipment
- Figure 44. Mechanized equipment
- Figure 45. Riding the range on horseback
- Figure 46. Children, possibly students of the Lower Fox Creek School
- Figure 47. Concrete spring box/water trough at ranch, date unknown
- Figure 48. Pasture east of the Spring Hill residence
- Figure 49. The Spring Hill headquarters
- Figure 50. Spring Hill stone barn with ramped second floor entries
- Figure 51. Spring Hill stone barn and cement stave silos
- Figure 52. A tenant house is visible in background of this ca. 1950 photograph.
- Figure 53. Enclosure for spraying cattle
- Figure 54. Oblique view, aerial photograph Deer Park Place ranch
- Figure 55. Deer Park Place barn and corral, ca. 1940
- Figure 56. Early use of automotive transportation at the ranch
- Figure 57. Cars and trucks used two-track ranch roads
- Figure 58. Photo of Spring Hill barn, circa 1938
- Figure 59. Spring Hill Ranch stone retaining walls and terraces, ca. 1940
- Figure 60. Fritz Benninghoven with fruit tree
- Figure 61. Front entrance of the residence, date unknown
- Figure 62. East elevation of Spring Hill residence with three upper terraces, 1946
- Figure 63. Photograph of a possible rock cairn, East Traps Pasture, date unknown
- Figure 64. Fencing and chutes associated with the corral area along the rail line spur, 1950
- Figure 65. Period Plan, National Park Trust (1994–1999)
- Figure 66. Z Bar/Spring Hill Ranch headquarters, National Park Trust (1994–1999)

- Figure 67. Corral in Two Section Pasture, 1997
- Figure 68. Stone fence line with barbed wire and wooden post, 1997
- Figure 69. View north toward Z Bar/Spring Hill Ranch headquarters, 1998
- Figure 70. Terrace steps toward east facade of Spring Hill residence, 1997
- Figure 71. Detail of water hand pump, Lower Fox Creek School, 1997
- Figure 72. Stone fence with metal gate, 1998
- Figure 73. View toward mature Osage orange treeline in Two Section Pasture, 1997

3 / Existing Conditions Documentation

- Figure 74. Existing Conditions 2001
- Figure 75. Z Bar/Spring Hill Ranch Headquarters, Existing Conditions 2001
- Figure 76. Detail, Lower Fox Creek School, Existing Conditions 2001
- Figure 77. Detail, Deer Park Place, Existing Conditions 2001
- Figure 78. Spatial Organization and Views Diagram
- Figure 79. Land Use and Activity Diagram
- Figure 80. Circulation Diagram
- Figure 81. Photo Station Points 2001
- Figure 82. Detail, Photo Station Points 2001
- Figure 83. Photo Station Points 2001: Z Bar/Spring Hill Ranch Headquarters
- Figure 84. Photo Station Points 2001: Deer Park Place
- Figure 85. Photo Station Points 2001: Lower Fox Creek School

4 / Analysis

- Figure 86. Analysis: Character-Defining Features
- Figure 87. Z Bar/Spring Hill Ranch Headquarters, Analysis: Character-Defining Features
- Figure 88. Analysis: Landforms and Significant Views
- Figure 89. Zones of Integrity

LIST OF PHOTOGRAPHS

3 / Existing Conditions Documentation

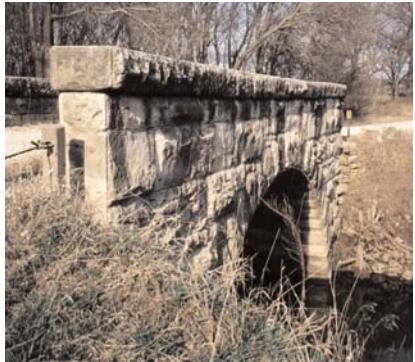
- | | |
|----------------|--|
| Photograph 1. | View of Fox Creek |
| Photograph 2. | View of riparian woodlands |
| Photograph 3. | Spring box at stock pond |
| Photograph 4. | Stock pond #4 |
| Photograph 5. | Low-water crossing |
| Photograph 6. | Culvert under railroad spur |
| Photograph 7. | View of ranch showing cedar plantings |
| Photograph 8. | Highway 50 overpass at Deer Park Place access road |
| Photograph 9. | Osage orange fenceposts |
| Photograph 10. | Cairns atop knoll |
| Photograph 11. | View of pasture fields |
| Photograph 12. | View of cropland |
| Photograph 13. | Visitor information signage |
| Photograph 14. | Self-guided trail |
| Photograph 15. | Wooded portions of Fox Creek |
| Photograph 16. | Electrical lines |
| Photograph 17. | Metal barn |
| Photograph 18. | Gas pipeline |
| Photograph 19. | Concrete culvert, Deer Park Place |
| Photograph 20. | County road connecting with Highway 177 |
| Photograph 21. | County road accessing Two Section Pasture |
| Photograph 22. | Gate and two-track road |
| Photograph 23. | Two-track ranch spur road |
| Photograph 24. | Two-track leading to Preserve's eastern side |
| Photograph 25. | Former highway alignment |
| Photograph 26. | Road trace |
| Photograph 27. | Two-track spur leading to Red House Pasture |
| Photograph 28. | Tour Road |
| Photograph 29. | View of Highway 177 |
| Photograph 30. | Main entrance drive |
| Photograph 31. | Visitor parking lot |
| Photograph 32. | Bus and RV parking lot |

- Photograph 33. Main house access drive
Photograph 34. Access drive
Photograph 35. Service drive
Photograph 36. Outbuilding and service drive
Photograph 37. Service drive towards main house
Photograph 38. Short paths to chicken house
Photograph 39. Tour Road leading west
Photograph 40. Upper service drive leading north
Photograph 41. Upper service drive leading to Quonset
Photograph 42. Path leading to the Quonset behind the Ranch headquarters
Photograph 43. Path leading to the cistern
Photograph 44. Main house, Z Bar/Spring Hill Ranch
Photograph 45. Front entrance walk
Photograph 46. Stone steps and cheek wall
Photograph 47. Steps, wall, and gate system
Photograph 48. Detail, steps
Photograph 49. Porch and concrete terrace
Photograph 50. Rear view of main house
Photograph 51. Building perimeter stone steps
Photograph 52. Building perimeter stone wall
Photograph 53. Interpretive trail route
Photograph 54. Outhouse path
Photograph 55. Ice house path
Photograph 56. Trail through cedar planting
Photograph 57. Trail information sign
Photograph 58. Trail leading to gate
Photograph 59. Southwind Nature Trail view
Photograph 60. Tallgrass prairie
Photograph 61. Trees along fencelines
Photograph 62. Trees along water sources
Photograph 63. Riparian woodlands
Photograph 64. Osage orange hedgerow
Photograph 65. Trees, Red House ruins
Photograph 66. Icehouse and cistern
Photograph 67. Carriage house
Photograph 68. Corrals and concrete silo

Photograph 69.	Grain silo
Photograph 70.	Trench silos
Photograph 71.	Deer Park Place headquarters
Photograph 72.	Board-and-batten barn
Photograph 73.	Hollow-tile barn
Photograph 74.	Chicken house
Photograph 75.	Stone bridge
Photograph 76.	Lower Fox Creek School House site
Photograph 77.	School House
Photograph 78.	Privy
Photograph 79.	Springhouse, Red House ruin
Photograph 80.	Substation
Photograph 81.	Well house
Photograph 82.	Stone fencing, East Traps Pasture
Photograph 83.	Detail, stone fencing at Two Section Pasture
Photograph 84.	Detail, stone fencing
Photograph 85.	Stone fence augmented with barbwire
Photograph 86.	Osage orange posts strung with barbwire
Photograph 87.	Braced gate
Photograph 88.	Barbwire fencing with bracing
Photograph 89.	Gate and cattle guard
Photograph 90.	Wood-stave corral fencing
Photograph 91.	Metal-pipe fencing
Photograph 92.	Box- or pig-wire fencing
Photograph 93.	Limestone cairns
Photograph 94.	Trough and tuck road
Photograph 95.	Salt lick
Photograph 96.	Box car
Photograph 97.	Bison wallows
Photograph 98.	Gas line
Photograph 99.	Pond remnants
Photograph 100.	Deteriorated stairs, bank barn
Photograph 101.	Deteriorated wooden fence
Photograph 102.	Small-scale features within barn corral area in poor condition
Photograph 103.	Roof drain system requiring rehabilitation
Photograph 104.	Rusted metal fence component

- Photograph 105. Wall failure, bank barn area
- Photograph 106. Wall failure, bank barn area
- Photograph 107. Wall support, bank barn
- Photograph 108. Gate in need of repair
- Photograph 109. Heavily eroded path
- Photograph 110. Path requiring repair
- Photograph 111. Steps associated with Z Bar/Spring Hill Ranch terraces requiring repair
- Photograph 112. Steps associated with Z Bar/Spring Hill Ranch terraces requiring repair
- Photograph 113. Stacked stone wall requiring repair
- Photograph 114. Drainage problems associated with Z Bar/Spring Hill Ranch terraces
- Photograph 115. 19th century illustration of terraces

Chapter 1 / Administrative Data



1. ADMINISTRATIVE DATA

Introduction

Tallgrass Prairie National Preserve (Preserve) is located in the heart of the Flint Hills region of east-central Kansas, in Chase County (*see figure 1*). The 10,894-acre Preserve sits two miles north of Strong City, three miles north of the county seat at Cottonwood Falls, and approximately sixteen miles south of the town of Council Grove. Kansas State Highway 177, a designated Kansas Scenic Byway, runs north/south through the Preserve and provides access to many of its features, including the Z Bar/Spring Hill Ranch headquarters. The majority of the Preserve is currently owned by the National Park Trust (NPT), a private, nonprofit organization. In 2002, the federal government received title to a portion of the Preserve—29.9 acres encompassing the Z Bar/Spring Hill Ranch headquarters area, and 2.35 acres associated with the Lower Fox Creek School House. In 2003, an additional 1.21 acres were donated to the federal government to support access to the Lower Fox Creek School House. The parcels in federal ownership are administered by the National Park Service (NPS). Portions of the Preserve are leased for the grazing of livestock and natural gas extraction.

The Preserve occupies a splendid and scenic Flint Hills location, representing one of the last areas of native tallgrass prairie remaining on the continent. Its scenic beauty is a byproduct of its geomorphology, geology, and vegetation. Visitors are drawn to its expansive landscape, romantic pioneer associations, and historic ranching traditions, as well as to its value as a managed prairie ecosystem. The Preserve's compelling combination—wide blue skies, golden grasses, rock outcrops, historic 19th-century architecture, and rolling hills—holds a unique place in American natural and cultural history.

Congress established the Preserve on November 12, 1996 through Public Law 104-333 to “preserve, protect, and interpret for the public an example of a tallgrass prairie ecosystem...and to preserve and interpret for the public the historic and cultural values represented on the Spring Hill Ranch.” The legislation established cooperative management of the property by the NPS and NPT. The Preserve was designated a National Historic Landmark (NHL) on February 18, 1997, and is listed on the National Register as the Spring Hill/Z Bar Ranch Historic District.

Long-standing relationships between cultural uses and natural features and systems remain apparent throughout the Preserve, and the layered cultural history of the Preserve is evident over much of the landscape. The layers can be viewed as a series of historical periods evolving from the combined natural and economic forces of preceding eras influenced by the changing face of agriculture, ranching, transportation, and settlement. Witnessing the story of human endeavors, of economic hardships and prosperity, and of subsistence and affluence, the Preserve represents the ever-intriguing conflict and confluence that exists between culture and environment in the settlement and development of the United States. The Preserve touches on the myth and reality of westward expansion and settlement of the American West. It illustrates the importance of a

transcontinental railroad in taming a western land that was big enough geographically and socially to welcome and celebrate both southwestern stockman, Stephen Jones, and Irish quarryman, Barney Lantry.¹ Landscape features associated with the Preserve include several collections of domestic and agricultural buildings, structures, and small-scale features associated with historic ranching operations; a school house; prehistoric and historic archeological resources; stock ponds; former crop fields; cultivated grass pastures; and areas of native tallgrass.

The Preserve unfolds to reveal an open range where cowboys on horseback were present through the late 20th century, where the fortuity or calamity of climatic change and national economic trends could make or break a family fortune—regardless of effort or investment. If, to paraphrase Alfred Hitchcock, drama is life with the boring parts taken out, the Preserve represents both life and drama. It represents the day-to-day tedium of isolation on a cold, windswept prairie; the back-breaking work of nameless men building mile after mile of stone wall; the labor of women establishing a family and making a home in a land many found desolate; the violence of an unplanned prairie fire; but also a glorious sunset across golden prairie grasses, grasses so high they could be braided while astride a horse's back. It represents the American dream and the American nightmare several times over: small homesteads improved by families beginning again in a new land or region, later sold to finance another farm, a house in town, or a small business; land bought at bargain prices from families who had invested not only all of their financial resources but also all of their hopes and dreams in land and livestock. It also represents the realization of economic success of self-made fortunes invested and held in ranchland without loss for decades.

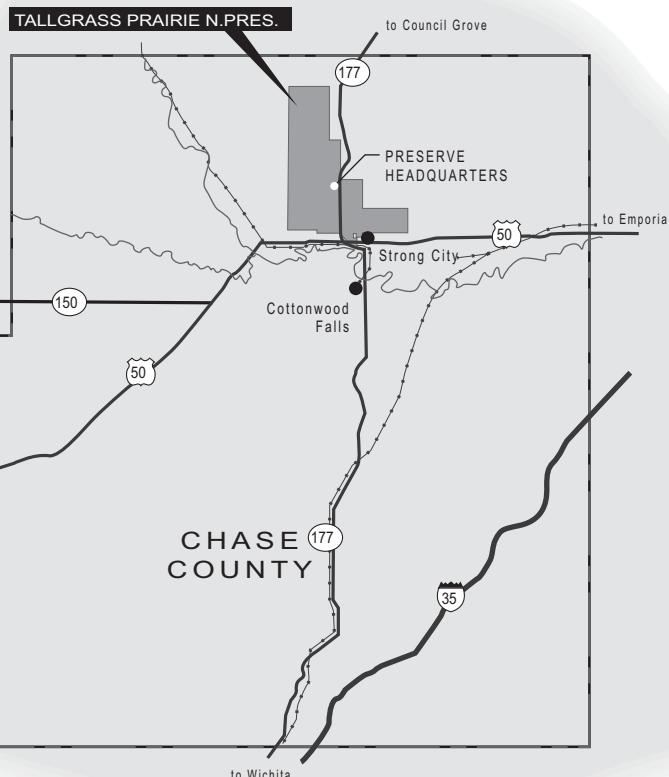
Much of the Preserve's human history is not apparent above ground; little tangible evidence of the periods prior to the 1870s are apparent, and many vestiges of 20th-century ranch life have already disappeared. Cultural features of the 19th-century landscape, however, remain in sufficient numbers and concentrations to link the surviving fragments to various periods, and to represent both the enduring effects and the impermanence of the Flint Hills tallgrass prairie cultural landscape.

This CLR is intended to support the ongoing efforts of the NPS and NPT to adapt a working ranch to the needs of visitors who are interested in learning about the Preserve's history. The GMP prepared by the NPS established an overarching approach to site management that is followed in spirit and detail by this CLR. The CLR provides "general and specific preservation treatment(s) for the landscape of the Preserve based upon the historical significance and integrity identified through site physical history development and National Register level evaluation, and on the strategic vision embodied in the GMP."² The primary objective of this document is to draw together the varied knowledge of the physical history and current condition of the Preserve landscape into a synthetic document that subsequently suggests appropriate means for implementing the overarching management approach laid out in the GMP.

¹ Jones, whose family had moved within the South before moving to the west, symbolizes the geographic mobility of Americans seeking available land in diverse regions and advantageous economic opportunities. Similarly, Lantry moved his family to Kansas from Wisconsin to take advantage of the abundant limestone necessary for his quarrying operations and lucrative railroad construction contracts.

² National Park Service, "Scope of Work; Cultural Landscape Report, Phase 2" (Omaha: Midwest Regional Office, May 10, 2000), 2.

Regional Context



Site Location

Map prepared by Land and Community Associates, April 1999.

Tallgrass Prairie National Preserve

Figure 1.
Context and Location

Cultural Landscape Report

October 2004

Scope of the CLR

Land and Community Associates (LCA) of Charlottesville, Virginia, commenced work on Phase 1 of this Cultural Landscape Report (CLR) in the summer of 1998. The scope of work prepared by the NPS for the report divided the CLR into two distinct phases—Phase 1 would address historical documentation and site analysis and evaluation, including assessment of historical integrity and evaluation of significance; Phase 2 would focus on existing conditions documentation, the documentation of Preserve resource management concerns, and the development of a treatment plan.

Phase 1 was completed in late 2000. The site history chapter included in Phase 1 addressed the physical evolution of the site's landscape during the following five time periods: pre-Euro-American habitation; Euro-American settlement and homesteading; 19th-century ranching; 20th-century ranching; and purchase by the NPT. The written narrative is accompanied by historic photographs, maps, and other historic images as well as period plans developed by LCA to illustrate physical changes during each of the five historic periods identified. The analysis chapter identifies the period of significance appropriate for the site, evaluates its overall integrity, its significant components and characteristics, and includes maps that identify zones of relative levels of integrity.

Phase 2 was prepared by John Milner Associates, Inc. (JMA), formerly OCULUS, of Charlottesville, Virginia, subconsultants to Bahr Vermeer Haecker Architects (BVH) of Lincoln, Nebraska. It is composed of existing conditions documentation developed through field investigations and collection of material; revision to the site history and analysis chapters developed in Phase 1 based on new findings; documentation of management concerns; and preparation of a treatment plan. The treatment plan was developed in accordance with the General Management Plan/Environmental Impact Statement (GMP) finalized in 2000.

During the course of the development of this project, a separate, but related, study was completed through modification to the CLR contract. This study, which focused on the corral area located along the County Road and the former railroad spur, was completed in May 2002. The CLR makes reference to information collected in preparing the corral area report, which included personal interviews with local residents and additional historical research.

Methodology and Project Staff

Phase 1

The methodology used for Phase 1 of this CLR was based on a multidisciplinary approach that combines narrative and graphic research of both primary and secondary sources with limited field investigations. The work was initiated in 2000 by Land and Community Associates of Charlottesville, Virginia, in association with Quinn Evans Architects of Ann Arbor, Michigan. LCA staff members investigated US government land records and other historical collections at various locales. Field investigations focused on becoming familiar with the overall organization of the site and on assessing integrity. A Cultural Landscape Inventory (CLI) undertaken by the

NPS Midwest Support Office in 1997 provided background information on existing conditions; no existing conditions fieldwork was undertaken by LCA for the Phase 1 CLR.

Volunteer historians Julia and Edward Hobbs of Wichita, Kansas generously shared the results of their in-progress research into the history of the property, and their insights into 19th-century settlement and land exchange. A number of individuals associated with the site during the 20th century were interviewed. They included: Fred Howard, Jr., Peggy and Don Jenkins, Marguerite Buffon, Dean Schroer, Erma Slabaugh, and several other individuals who requested that they not be identified by name. LCA also used transcripts of previous NPS interviews as well as research notes and drafts of other NPS work-in-progress studies related to the Preserve. The LCA team met with NPS and NPT personnel to discuss the site and its resources; the results of these meetings were used to inform and facilitate the research and analysis for Phase 1 of the CLR.

LCA project staff included J. Timothy Keller, FASLA, historical landscape architect; Genevieve Keller, cultural landscape historian and preservation planner; Frederick Schneider, cultural landscape specialist and historical architect; Harold Reem, historian; Matthew Tucker, landscape architect; and Ann Warner, editor and research assistant. The team worked together using an integrated approach for the development of the CLR, with the work of each individual discipline and project team member addressing and balancing the work of the others.

Site History Development

The site history chapter of the CLR is based on primary source research synthesized with primary and secondary source information collected and supplied by NPS and NPT. Graphic materials, such as maps, photographs, and other historic illustrations, were consulted frequently in the preparation of this report. Volunteer researchers Julia and Edward Hobbs made available research findings and sources, particularly information found in 19th-century Chase County newspapers.

Research was specifically conducted by LCA at the Chase County Historical Society in Cottonwood Falls, the headquarters of the NPT, the National Archives in Washington, D.C., and the Kansas History Center of the Kansas Historical Society in Topeka, Kansas. Queries of organizational representatives at both the historical society and the NPT headquarters failed to identify extensive pertinent primary source material related to the cultural landscape. A cursory review of 19th-century Chase County newspapers and collections revealed some information; additional news articles, summaries, and citations were made available by Julia and Edward Hobbs. Since the Hobbs' research commenced with the Jones period and had not yet progressed into the Lantry period, complete newspaper source research results were not yet available when this document was finalized.

The use of some material made available for research on behalf of this study was restricted in terms of publication, and has therefore not been included here. Other materials have not been reproduced because of the age and condition of the original documents, and are described but not reproduced in this CLR. In addition, some government land records are illegible and documentation appears to be incomplete for some parcels of land now included within the Preserve's boundaries. Some people believe that there may have been squatters on the land prior to the 1856 survey. Although no direct evidence has been found to date to support that

assumption, it remains a possibility since there are newspaper accounts of farmstead acquisitions from individuals whose names never appear in recorded land records. It also is possible that these acquisitions were for improvements, such as houses, barns, and fences, and not for the land itself.

Extensive historic railroad records could not be located at the Kansas History Center during 1999 research efforts. Information relating to early farmstead sites was also not forthcoming.

Finally, interviews were conducted with knowledgeable sources identified by NPS. These individuals had first-hand knowledge of the 20th-century history of the Preserve's lands, ranching practices, and Chase County. It is likely that continued investigations along these lines, which are beyond the scope of this CLR, may support a more complete understanding of the site history of the Preserve.

The focus of the efforts conducted on behalf of the site history was to create both a graphic representation and a narrative of the historical chronology of the site's evolution, and to identify the major categories for the site characteristics and features that have existed over time within the Preserve. The purpose of the site history was to provide a basis for cultural landscape analysis and evaluation.

Identification of landscape features and characteristics was accomplished through documentary research and an analysis of photographic imagery, including aerial photographs, provided by NPS.³ The results of earlier and in-progress NPS research, including GIS mapping and the Cultural Landscape Inventory (CLI), were used to inform the Phase 1 CLR Site History in map development and to supplement project research. This information reflected very recent conditions.

Research and narrative development was oriented toward developing a context for evaluating site evolution and change in relation to historical significance and integrity for the 1878–1904 NHL period of significance, and the extended local period of significance, prehistory–1970.

Phase 2

Field Investigations

The JMA project team conducted five trips to Tallgrass Prairie National Preserve on behalf of the CLR. The first involved a pre-design conference held in December 2000. BVH Principal Dan Worth and JMA (then OCULUS) Associate Rob McGinnis were scheduled to meet with Superintendent Steve Miller and Midwest Regional Office Historical Landscape Architect Sherda Williams at the Preserve to discuss the project and tour the site. Due to inclement weather, only Rob McGinnis was able to reach the Preserve. He met with Superintendent Miller to discuss the project, and toured the project area.

³ Since this phase of the CLR did not include an existing conditions component, there was no mechanism for identifying characteristics through fieldwork until Phase 2.

Between March 22 and 25, 2001, JMA personnel Liz Sargent and Gina Haney conducted preliminary field investigations with the help of former Site Manager John Donaldson. The group visited the majority of the lands included within the Preserve, and viewed most of its primary cultural and natural resources. The fieldwork visit included ground-truthing base map data included in the Phase 1 CLR, collection of condition assessment data, and photographic documentation of landscape features and systems. The team members collected a wide range of information from Site Manager Donaldson and Superintendent Miller, particularly involving their understanding of the construction methods utilized to establish various ranching features and their specific former uses.

During the week of April 8, 2001, Rob McGinnis again visited the Preserve to participate in a workshop to address the issues relating to improving the water system at the Z Bar/Spring Hill Ranch headquarters. This visit, a modification to the original CLR contract, involved discussing the impact that construction of a water tank to support fire suppression and gravity fed supply needs within the Z Bar/Spring Hill Ranch headquarters might have on the cultural landscape.

The fourth trip was conducted in July 2001. CLR personnel Liz Sargent and Gina Haney visited the site between July 27 and 29, 2001, to present the first draft of the Phase 2 CLR, and to conduct additional field investigations. The meeting was held with Preserve Superintendent Miller, NPS Natural Resource Specialist Peter Dederich, Sherda Williams, Historical Landscape Architect of the Midwest Regional Office of NPS, and Louise Carlin of NPT at the Preserve on the afternoon of July 27, 2001. The meeting focused on discussions of the direction for future drafts.

The fifth trip to the Preserve was conducted by Liz Sargent on October 31, 2003. This visit was intended as a presentation of the approach to significance and treatment as the CLR approached 95% completion. Liz Sargent provided a verbal and written overview of the project findings to date, along with an indication of where the final draft was headed to those assembled in the NPS offices located in Cottonwood Falls. NPS personnel in attendance from the Preserve included Superintendent Steven Miller, Facility Manager Robert King, Chief of Resource Management Paula Anderson, and Chief of Interpretation and Visitor Services Heather Brown. Attending from the Midwest was Regional Office Historical Landscape Architect Sherda Williams. Paul Duffendack attended from NPT.

Management Concerns

During the March 2001 site visit, CLR project team members met with Superintendent Miller and former Site Manager John Donaldson to discuss the resource management concerns to be included in this report, which would serve as the basis for the treatment plan. The management issues and concerns identified by Superintendent Miller and Site Manager Donaldson were documented and augmented with additional issues identified by Donaldson during field investigations. They form the basis for Chapter Five of this report. The preliminary documentation of management concerns was transmitted to Sherda Williams in Omaha, Nebraska, and to Superintendent Miller and Site Manager Donaldson at the Preserve for their review. The group finalized the list of management concerns to be included within the CLR through a subsequent conference call.

Base Map Preparation

JMA project team members initiated existing conditions documentation using the mapping available from the Phase 1 CLR, including the plan enlargement of the Z Bar/Spring Hill Ranch headquarters. The maps were acquired and revised in Freehand software. Some of the original fonts utilized to prepare the maps were found to be difficult to replicate on all printers. Some of the fonts utilized in the Phase 1 CLR were changed to facilitate printing by a wider range of users.

Existing Conditions Documentation

The documentation of Preserve existing conditions is provided in this report through cross-referenced narrative, graphic, and photographic materials. An introductory section describing the regional environmental context and setting prefaces a description of the site as a whole. These introductory sections are followed by documentation of the site in accordance with the guidelines provided in National Register Bulletin 30: Guidelines for Documenting and Evaluating Rural Historic Landscapes. Documentation of the landscape identifies the existing landscape features and qualities associated with each of the following landscape characteristics: spatial organization and views; responses to natural features and systems; land uses and activities; circulation patterns and features; vegetation; buildings and structures and structural clusters; small-scale features and objects; utilities; and archeological resources.

Existing conditions documentation has been prepared through review and compilation of information derived from Phase 1 CLR base mapping, 1997 aerial photography, USGS quad mapping, field investigations, the Chase County soil survey, review of photographs taken in the field, and examination of park planning documents and preliminary CLI mapping notes prepared in 1997 by the NPS.

Inventories of the features documented by landscape characteristic have also been prepared. These inventories serve as the basis for a condition assessment (see below), and for the assessment of contributing and non-contributing resources included in the Analysis chapter.

Photographs of representative landscape features are included in the Existing Conditions chapter of this CLR. These are referenced in the text, and their photographic station points are indicated on base maps included within the chapter. A documentation notebook of all existing conditions photographs taken in support of Phase 2 of this project, in conjunction with a base map indicating the locations of all views taken, has been provided to NPS as a long-term record of conditions at the end of the 20th century.

Condition Assessment

The team has developed a preliminary condition assessment for each inventoried landscape feature identified within the Preserve using the following condition categories based on the guidance available in the Cultural Landscapes Inventory Professional Procedures Guide: Good, Fair, Poor, and Unknown. The definitions of these categories used in developing assessments are included with the assessments conveyed in Chapter 4.

Treatment Plan

Preparation of the treatment plan included review of all available planning documents as they continued to evolve, such as the GMP, HSR, and interpretive prospectus materials, as well as the guidance offered in the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. JMA project personnel engaged in two conference calls—on February 20 and November 13/14, 2003—with NPS project personnel from the Preserve and the region to discuss the direction for treatment, and comments on early drafts of treatment. JMA also conducted additional research in support of the development of specific treatment recommendations in the plan specifically relating to bison management, protection of water resources in conjunction with cattle ranching, rendering disused gas lines and meters safe for the public, back-country trail standards, and accessibility guidelines, among others.

JMA project staff involved in this project included Rob McGinnis, Senior Project Manager; Liz Sargent, Project Manager and Historical Landscape Architect; Rachel Evans Lloyd, Landscape Architect; Gina Haney, Planner; and Adriane Fowler, Project Designer. Project staff from BVH include Dan Worth, Principle-in-Charge, and Matt Hansen, Architect.

Summary of Findings

The Preserve was recognized as a NHL in 1997 for its representation of the transition from the open range to the enclosed holdings of large companies in the 1880s, with the Z Bar/Spring Hill Ranch headquarters containing a concentration of features identified as contributing to the NHL status. The NHL period of significance for the Preserve is 1878–1904. Although there have been changes to the landscape since that period, the existing ranch continues to represent the NHL period of significance, and retains a good deal of integrity. Furthermore, the research and analysis conducted as part of the CLR supports the evaluation indicating national significance for this site.

A draft National Register Nomination for a historic district encompassing the former ranch holdings of Stephen Jones and Barney Lantry recommends extending the period of significance from 1878 to 1993 at the local level for its

ability to represent the evolution of cattle ranching in the Flint Hills region. The [site's] resources embody the changes in ranching demonstrated by the careers of Jones and Lantry and their 20th-century successors. The ranch provides an excellent model of these important changes during an extended period of local significance from 1878–1993.

The CLR recommends continued exploration of the establishment of a National Register historic district that encompasses the almost 11,000 acre Preserve landscape, with a modification to the period of significance to ca. 1856–1970. This extended period reflects the understanding that the Preserve's cultural landscape is a result of a long continuum of cultural use and adaptation to the natural environment. The 1856 beginning date coincides with early Euro-American settlement in the region, and the first recorded examples of cultural adaptations to existing natural conditions; this date, however, could be extended to earlier documented prehistoric human uses with

sufficient contextual study. The CLR recommends that the period extend forward, encompassing not only the NHL period of significance, but Benninghoven ownership; fragmentation of the ranch; the Dustbowl and Great Depression-era reconsolidation as a cattle ranch; and mid-20th-century corporate ranching, particularly Fred Howard, Sr., management of the site. These periods reflect the close association between the existing built environment and the transformation of western cattle ranching. The recommended end date of the period of significance—1970—coincides with the decline of the importance of railroad transportation to cattle ranching in Kansas, significant changes in the regional agricultural economy, and the death of Fred Howard, Sr. The site retains a good deal of integrity for this extended period of local significance as well.

Based upon the CLR assessment of Preserve significance and integrity, and the needs and goals associated with providing interpretive opportunities to visitors, the primary recommended treatment approach for the Tallgrass Prairie National Preserve landscape is rehabilitation.⁴ Rehabilitation meets the goals and objectives of the Preserve's GMP by preserving and stabilizing features of the historic ranchlands while also allowing for the new uses suggested by the planning document.

Recommendations for specific landscape treatment under an overarching rehabilitation approach and the framework of the guidance provided by the GMP, are organized in the CLR by management zones (see Chapter Six for illustrations showing management zones). Within the overall framework of rehabilitation, the treatment plan provides a resource-driven approach to landscape management that is specific to each zone; the zones are compatible with the management areas identified within the GMP. By zone, the overarching approach to management of the site recommended in the CLR is as follows:

1. Western Preserve Pastures

The CLR recommended approach to managing this zone involves rehabilitating prairie flora and fauna to increase biodiversity through modifications to burning and grazing practices, and retaining, protecting, and maintaining many of the existing cultural and historic resources and patterns of spatial organization contributing to the site's ranching legacy.

2. Cattle Ranching Interpretation Pastures

The recommended approach to managing this zone involves retaining, protecting, and maintaining existing cultural and historic resources that contribute to the site's significant ranching legacy, and protecting existing patterns of spatial organization to the extent possible, while allowing for the development of necessary new facilities to support proposed new uses, such as a joint bison and cattle handling facility.

⁴ The Secretary of the Interior's Standards for the Treatment of Historic Properties recommends that the goal of rehabilitation is the act or process of making possible a compatible use for a property through repair, alteration, and addition while preserving those portions or features which convey its historical, cultural, or architectural values.

3. Eastern Preserve Pastures

The recommended approach to managing this zone involves rehabilitating the area to accommodate appropriate new uses, while retaining, protecting, and maintaining many of the existing cultural and historic resources and patterns of spatial organization that contribute to the site's ranching legacy.

4. Z Bar/Spring Hill Ranch Headquarters

The recommended approach to managing this zone is to preserve and interpret historic resources and retain and maintain existing cultural, natural, and historic resources and patterns of spatial organization. The ranch headquarters accommodates, and will likely continue to accommodate administrative, service, supply, and storage needs. All recommendations that involve new construction and changes to resource management to accommodate contemporary needs and uses should be carefully considered prior to implementation in order to avoid altering significant known and potential resources. This is particularly important in regard to archeological resources.

5. Lower Fox Creek School

The school site is designated within the GMP as a resource with possible interpretive value. The recommended approach to managing this zone involves preserving and interpreting historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate interpretive uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological resources.

6. Deer Park Place

The recommended approach to managing this zone involves preserving and interpreting historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate management and operations uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological resources.

7. Riparian Woodlands

This zone overlays other zones. It recommends preservation and protection of natural resources associated with woodland areas along the bottomlands of Fox Creek and Palmer Creek.

8. Archeological Resources Overlay Zone

This management zone overlays other zones. The approach to managing this zone involves the protection of all known resources, except where their investigation is warranted in order to gain

specific knowledge. This treatment plan recommends identification, inventory, and documentation of all known and potential archeological resources as soon as possible to avoid unnecessary disturbance. It also recommends that NPS consider the interpretive potential of all significant archeological resources as part of the development of a long-range interpretive plan.

9. Water Resource Overlay Zone

This zone overlays other zones. The recommended approach to managing this zone is to protect and enhance water-related resources primarily through soil erosion control and vegetation management.

10. Cultural Concentrations Overlay Zone

This zone encompasses all known sites of former habitation that include evident associated resources, and is intended to highlight the locations of features that occur within broad expanses of open prairie where natural resource protection and enhancement may otherwise dominate. The recommended approach to these areas is to protect their cultural resources from access or use by visitors, damage from prescribed burning, and grazing herds of livestock or bison.

11. Zones of Potential New Development

This management zone relates to potential future development to accommodate the new facilities and uses proposed in the GMP. It considers potential siting and/or general design and construction guidelines for new features.

In addition to the specific recommendations that are included in the treatment plan to support the approach described for each zone, a series of twenty-two treatment projects are suggested and described in the implementation plan presented in Chapter Seven. These projects follow the format of the NPS Project Management Information System (PMIS) forms to facilitate their adaptation to funding requests. The projects illustrated in the CLR include:

1. Stabilize and rehabilitate stone walls and fences
2. Rehabilitate historic crop fields and orchards
3. Mitigate effects of livestock on riparian systems and stock ponds
4. Mitigate threats to spring boxes and springhouses, including Red House site
5. Re-establish bottomland prairie
6. Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
7. Establish Day Use Area trails (Two Section trails, Cairn Overlook trail)
8. Establish backcountry trails (Ridge and Palmer Creek trails)

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9. Expand shuttle tour route
 10. Improve drainage in Spring Hill house precinct and rehabilitate terraces
 11. Mitigate effects of visitation on Day Use Area resources
 12. Rehabilitate Cow Meadow pasture, and provide interpretation
 13. Mitigate effects of bison on cultural resources
 14. Establish long-term coordination with Kansas Department of Transportation and National Scenic Byway Program to preserve and enhance the tallgrass prairie right-of-way along Highway 177, reinforcing the visitor experience of native prairie plants and historic scene
 15. Protect cultural concentrations and features from prescribed burning
 16. Inventory, identify, control and remove exotic invasive plants
 17. Establish vegetation on eroded drainageway banks
 18. Assess and develop treatment and interpretive plans for mineral extraction sites
 19. Establish circulation plan, including ADA access, between buildings within Z Bar/Spring Hill Ranch headquarters
 20. Establish long-term plan for parking
 21. Rehabilitate groves and plantings of trees at Z Bar/Spring Hill Ranch headquarters
 22. Investigate and rehabilitate Lower Fox Creek School House and schoolyard

Various maps and diagrams accompany the treatment plan to illustrate the proposed treatments and projects. The treatment plan and implementation projects were conceived to support the protection, preservation, and enhancement of the Preserve's scenic beauty, expansive landscape, romantic pioneer associations, and ranching traditions, as well as its value as a managed prairie ecosystem.

Recommendations for Further Historical Research, Archeological, and/or Physical Investigation

To date, more research and investigation have been devoted to Stephen Jones and Spring Hill than to Barney Lantry and Deer Park Place.⁵ Future research may reveal the motivations and economic conditions that resulted in the Lantry consolidation of Spring Hill and Deer Park Place and explore more fully the relationship between Lantry's quarry and the railroad.⁶ If Lantry did develop the original spur connecting his quarry to the AT&SF Railroad line, he was responsible for setting the stage for the extensive 20th-century rail transport of cattle directly to and from the ranch. Lantry's Irish ancestry, working class background, and railroad construction associations connect his story to many other immigrants nationally and regionally, just as Jones has been associated with Southern planters who invested in western land and livestock following the Civil War. Considered together, Jones and Lantry provide two very different models for 19th-century capitalist ranchers and illustrate the cultural diversity of the Flint Hills in the 19th century. There is also a need for more detailed information concerning other relatively short-term owners such as the Urschel and Patten families.

Secondly, a full evaluation of the Davis/Z Bar Ranch era is dependent upon a regional context for 20th-century ranching and evaluation of the significance of Davis and others associated with the ranch. Further investigations by a historic agricultural economist may reveal new information that would enhance NPS understanding of the significant transitions in ownership and 20th-century operations. These transitions have been associated with major periods of ranch development that followed periods of more diversified but less profitable agriculture.

The Preserve may possess aspects of significance of which we are unaware or unable to assess adequately at this time with the information that is currently available.⁷ It is anticipated that other discrete areas of significance may be identified or re-evaluated as time progresses, particularly early farmsteads identified through archeology and landscape field studies. Future investigations that coordinate the land records research of Julia and Edward Hobbs, government land records, and historic archeological investigations may inform updates of this study and help to formulate a more complete picture of land development and use during the early settlement period. It is likely that continued investigations beyond the scope of this CLR may support a more complete understanding of the site history of the Preserve.

There is still not an adequate historical context with which to evaluate 20th-century ranching or the Great Depression in Chase County or the Flint Hills in a comprehensive way. Once such

⁵ This is perhaps because of the significance of the architectural design of the headquarters at Spring Hill. It may be also because NPT does not own the former Lantry residence, nor is the residence within the Preserve boundary. In addition, the property formerly owned by Stephen Jones has a stronger association with ranching.

⁶ Lantry, of course, was an adjacent property owner, and he and Jones had both sought to acquire land to round out their holdings. Lantry also was probably one of the few Chase County property owners who could afford to buy Spring Hill from Jones.

⁷ Before analysis can be considered complete, there is a need for development of a 20th-century ranching context. Only a few prehistoric archeological resources have been identified and others will continue to be identified as the site is explored as will additional archeological resources associated with early settlers. Vegetation associated with their uses and habitation sites may also be identified as further field investigations occur. These periods are not well represented above ground, and only limited archeological resources have been identified to date.

contexts are developed, the analysis included in this CLR should be revised to identify other thematic areas of significance. One feature for which little information is currently available is the Ranch Hand House located within Spring Hill. Various reports suggest that it was either moved onto the site, or built during the mid- to late 20th century. However, investigation of the structure suggests that it may be a much older building that was rehabilitated later. Further investigation of this structure is merited.

The Preserve will also need to consider additional research on a variety of issues as they become current. It is important to investigate the potential impacts on cultural and natural resources of proposed new land uses, such as bison reintroduction; potential visitor activities, such as horseback riding; and proposed new management approaches, such as changing the patterns of prescribed burning. Further investigation into frequency with which fire may have been utilized by American Indian populations would greatly support fire management planning. In-depth studies such as a detailed viewshed analysis; plant inventory; and identification of potential archeological sites would contribute greatly to the protection of these resources and aid future planning efforts. On an as-needed basis, it is recommended that the significance, condition, usefulness, and negative effects of features such as stock ponds, two-track roads, and stone walls be assessed. In general, it will be critical that sufficient study and recordation of individual landscape features requiring modification, repair, or replacement is undertaken before any work is performed to protect research and interpretation values. As conditions at the Preserve begin to change based upon the implementation of treatment projects, recordation of treatment will become critical. The CLR recommends that NPS initiate efforts to develop a methodology for this as soon as possible. Records can be combined with the supporting research and documentation materials provided to NPS by the CLR team. Also recommended is completion of a long-range interpretive plan for the Preserve that will help to place all of the recommended interpretive concepts into context. Finally, various studies will likely be needed to support implementation of the many projects listed in Chapter 7 of the CLR. It is recommended that the list of studies be evaluated, prioritized, and considered by NPS in the near term.

Chapter 2 / Site History



2. SITE HISTORY

Introduction¹

The cultural history of Tallgrass Prairie National Preserve (Preserve) is a byproduct of its prairie landscape, which itself developed over time as a result of the environmental changes and shifts that occurred in prehistoric times, in conjunction with its underlying geology. The Preserve's almost 11,000 acres, which lie in the midst of three stream valleys, are located within the heart of the Flint Hills, characterized by relatively steeply sloped uplands dominated by stony and erodible soils comprised of chert and limestone. The existing landscape reflects cultural use and adaptation of tallgrass prairie environmental resources, maintained throughout human occupation partly because they are ill suited for growing crops. The Preserve's rich history reflects the well-known historical themes of the American West: American Indians finding sustenance in natural resources, pioneers moving west to establish new homes, cowboys riding horseback on long cattle drives, the coming of the railroad, and the Dustbowl destroying family dreams. Through it all the tall prairie grasses have stood golden against a wide, blue sky.

Over the extent of the Preserve, American Indians engaged in agriculture, hunted, and quarried the stone outcrops for materials to manufacture tools prior to the establishment of Euro-American farmsteads. The small farms of the mid-19th century gave way to ranching when convenient access to the Atchison, Topeka & Santa Fe (AT&SF) Railroad provided the impetus for increased economic activities in Chase County in the 1870s. Once the railroad ensured regular connections to markets and supplies, major quarrying operations and large-scale cattle ranching—both occupations based on the natural resources of the area—became viable. Large-scale cattle ranching subsequently became the predominant land use within the Preserve as the small landholdings of early settlers were acquired and consolidated into larger ranches. Ranching remained the dominant land use, with varying degrees of economic return throughout the 20th century. By the end of the 20th century, efforts to preserve a portion of the nation's tallgrass prairie had resulted in acquisition of 10,894 acres to form Tallgrass Prairie National Preserve. Despite conservation of the Preserve lands, cattle grazing continues through lease agreements, perpetuating this important and long-standing cultural use, which is reflected throughout the Preserve.

The physical history of the Preserve is documented in this chapter, which is organized into five sections that chronologically depict the evolution of the culture landscape:

- | | |
|-------------|--|
| 1. Pre-1856 | The period prior to the US government land survey and Euro-American settlement. <i>American Indian groups occupied and</i> |
|-------------|--|

¹ The majority of this site history was researched and compiled by LCA as part of Phase I of this CLR; this chapter was edited and augmented as necessary by JMA to reflect additional data available during Phase 2.

traveled through the area; there was no known Euro-American settlement within the Preserve.²

2. 1856–1876 The period of US government land survey and initial settlement and homesteading. *The US government authorized settlement, and various land claims began to be filed. The Kansas, Missouri & Texas Railroad owned substantial portions of the Preserve and sometimes offered them for sale to early settlers. Farmsteads were established on land that was claimed or purchased from the government, the railroad, or another early settler.*
3. 1877–1906 The period of 19th-century ranching. *During this period, Stephen F. Jones and Barney Lantry moved to Chase County and established large-scale livestock ranches. Unification of the two ranches occurred during this period under the ownership of Barney Lantry. The Lower Fox Creek School and St. Anthony Cemetery were also established during this period.*
4. 1907–1993 The period of 20th-century ranching. *This period began with division of the consolidated ranch and ended with the sale of a reconsolidated ranch to the National Park Trust (NPT). There were several individual owners during this period, including two periods of extended ownership, the first associated with a portion of the property by the Benninghoven family, the second relating to the reconsolidated property operated as the Davis or Z Bar Ranch. The Lower Fox Creek School closed during this period.*
5. 1994–1999 The period of acquisition and initial planning for Tallgrass Prairie National Preserve. *During this period, the NPT acquired the property and the Preserve was established under the joint management of the NPT and the National Park Service (NPS).*

² Conclusive documentary or archeological evidence has not yet been identified proving that Euro-American settlers occupied land in the Preserve prior to 1856. It is possible, however, that there were squatters on the land during this period.

Site History

Pre-Euro-American Settlement (Pre-1856)

(See figures 2 and 3)

During the pre-Euro-American period, the area encompassed by the Preserve comprised a diverse natural environment that attracted and supported human occupation and uses at various times, and discouraged it at others. Paleo-environmental data suggest considerable climatic fluctuations, and associated variations in vegetation over the millennia prior to European contact.

The landscape was not static during this extended period; dramatic climate changes resulted in profound prehistoric landscape changes and shifts. There were periods of drought that may have resulted in human abandonment of the Great Plains area for extended times, and there may also have been periods of significant erosion that removed evidence of human use. Archeological evidence indicates that the Flint Hills have supported continuous, if intermittent, occupations and uses since approximately 10,000 BC. However, archeological investigations of the Preserve itself have not been extensive to date. Field investigations have been conducted on less than 2 percent of the total land area of the Preserve; knowledge about specific cultural activity during prehistoric periods within the Preserve is expected to grow as additional investigations are conducted.³

Figure 2 indicates major natural features that are known to have existed during this period and that may have influenced human uses.⁴ Since this project does not include an archeological component, the site history has been developed using the results of the *1999 Archeological Overview and Assessment for Tallgrass Prairie National Preserve, Chase County, Kansas* by Bruce Jones of the Midwest Archeological Center at Lincoln, Nebraska. Archeological site information has not been made available for public distribution and is exempt from the Freedom of Information Act.⁵

During the Late Pleistocene, the region appears to have supported a grassland/steppe taxa similar to current conditions at the southern edge of the Canadian boreal forest. The retreat of the last Pleistocene ice from Kansas, starting as early as approximately 18,000 BC, initiated the first era of human use. During times of major Pleistocene glaciation, the terminal moraine of the Nebraskan/Kansan advance reached down to Pottawatomie County, just forty miles north of Chase County. This area of the Flint Hills, at the edge of the glacier, would have supplied easily-harvested tool materials for prehistoric hunters of the megafauna, the process of frost heave bringing resistant chert (flint) nodules to the surface of the soil. Climatic variations during this period were dramatic, including both a shift to drier and warmer conditions as well as an abrupt

³ Bruce A. Jones, *Archeological Overview and Assessment for Tallgrass Prairie National Preserve, Chase County, Kansas* (Lincoln, NE: US Department of the Interior, National Park Service, Midwest Archeological Center, Technical Report No. 61, 1999), 10. This archeological overview describes the episodes of archeological research and prehistoric conditions related to the Preserve. This CLR includes summaries of this information as considered necessary to understand development of the cultural landscape extant today.

⁴ To ensure the security of sites important in prehistory, sensitive cultural sites have not been mapped for this period.

⁵ Jones, *Archeological Overview*, 58.

interval of sharp cooling. Climatic changes near 6,500 BC allowed the formation of a vast prairie; tree growth diminished throughout the region as grasslands increased and the prairie/forest interface retreated eastward as far as Illinois. The effects of this change appear to have been uneven at different locales within the region. Evidence suggests, however, that there were pronounced changes affecting plant, animal, and human populations. Geomorphological studies in Kansas in the 1990s suggest that reduced vegetative cover, combined with drought conditions, and infrequent, but intense, precipitation caused substantial erosion, perhaps removing much of the archeological record from the area. The effects of these warmer, drier conditions on indigenous cultures are not known but may have been substantial as humans were forced to adapt to a changing physical environment.⁶

Isolated Paleo-Indian (ca. 10,000–6,000 BC) materials have been found in the Flint Hills region, but none have as yet been located within the Preserve. It has been suggested that any Paleo-Indian materials present in eastern Kansas are likely to have been deeply buried and only exposed occasionally through disturbances such as erosion and construction.⁷ At present, there is also little reported evidence of the Early Archaic (6,000 BC–3,000 BC) period in the Flint Hills region.⁸

At the end of the Archaic period (6,000 BC–AD 1) archeologists suggest that there were successful human adaptations that exploited diverse floral and faunal resources, and that there was experimentation with ceramic technologies as well as horticultural activity. During the Early Ceramic Period (AD 1–950) which followed, larger human populations and more complex settlement patterns developed based on the successes of some of these earlier developments. Conditions during the Middle Ceramic Period (AD 950–1500) supported more intensive horticulture as well as the essential subsistence activities of hunting and gathering that had characterized earlier periods. The Late Ceramic/Protohistoric/Contact Period (AD 1500–1825) was a transitional period of more intensive horticultural activities as well as increased bison hunting in this region due to the introduction of the horse to American Indian groups. More densely concentrated human populations were also present during this period and archeologists are able to associate artifacts with specific tribes, such as the Wichita, Osage, Pawnee, and Kansa. The first European explorers traveled to the region during this period with the Spanish expedition of Coronado in 1541 and French explorers passing through central Kansas in the mid-1600s. There are no known accounts of either Spanish or French explorers within the Preserve itself. The Flint Hills area was known to Euro-Americans in the early 19th century, however, prior to the westward expansion of the United States. Zebulon Pike, who crossed Kansas in 1806, traveled through Chase County, but probably not through the Preserve. Pike's observations of the Cottonwood River vicinity would probably apply to the character of the Preserve area as well. Pike described vast grasslands and wildlife, which included buffalo, elk, deer, turkey, cabrie [antelope], and panthers.⁹

As the 19th century progressed, there was increasing contact between Euro-Americans and American Indian groups. Beginning in the 1840s, US government policy involved moving tribes

⁶ Jones, *Archeological Overview*, 6–8.

⁷ Jones, *Archeological Overview*, 10.

⁸ Jones, *Archeological Overview*, 45. It is expected that as investigations continue, additional sites will be identified and that the new information will enhance understanding of the prehistoric landscape.

⁹ Jones, *Archeological Overview*, 10–17.

to reservations. As a result of the Mission Creek Treaty of 1846, a small Kansa reservation was established southeast of Council Grove and north of the Preserve. The Kansa, who had hunted in the vicinity, continued to travel seasonally (probably along the Kaw Trail north of the Preserve) to hunt bison and may have been continually present within the Preserve to the end of this period.¹⁰

In general, the Flint Hills still retain the bluestem prairie vegetation that characterized the region during initial Euro-American exploration. The dominant species remain big and little bluestem, switchgrass, and Indian grass. The droughts of the prehistoric period, lightning-ignited prairie fires, and anthropogenic burns may have slowed the growth of deciduous trees. Fires may have occurred more in the summer storm season, but were probably smaller in scope than man-made fires due to lightning commonly striking in wet conditions. American Indians appear to have burned the prairie, more often in the fall than in the spring, for many reasons including to attract or hunt bison, and in support of warfare. Further research on the cultural practices of the Kaw, Osage, and other Flint Hills tribes may reveal information regarding their burning practices.

Patterns established during the proto-historic period likely shifted in response to Euro-American settlers; as tribes were relocated, European weaponry such as guns were introduced, and bison herds were decimated by hunting. The eventual use of uplands for grazing and concentration of crop cultivation in bottomlands near creeks and streams by the European-American settlers contributed to the retention of prairie vegetation.

No contemporary descriptions have been identified for the area contained within the Preserve prior to the government survey reports prepared for Townships 18 and 19, Range East, in 1856.¹¹ These descriptions are, however, a good source of information about the condition of the landscape at the end of the pre-settlement era.¹² The government land surveys were based on field surveys conducted in the area in 1856 and provided descriptions of the land including the two townships that are represented in the Preserve as follows:

The surface of the Township [18] is rather rolling in the Eastern part and broken in the West. The quality of the Soil is generally poor and broken in the West [included within the Preserve]. The quality of the Soil is generally poor; being, for the most part, covered with small broken limestone, & unfit for cultivation. Timber, chiefly Elm, Walnut, Sycamore, Hickory, and a little Cottonwood is found in clumps upon or thinly skirting the banks of a small creek in the Western part of the Township. Limestone is found in abundance.

A fair proportion of this Township is good, rich bottom, well adapted to cultivation...The timber is scarce, but with economy, Sufficient for the farming

¹⁰ Jones, *Archeological Overview*, 22.

¹¹ The land area contained within the present Preserve boundaries lies in both townships.

¹² The date 1856 was chosen to terminate this period because the land survey resulted in the imposition of the standard township/section/range grid on the land. The survey made subdivision possible and made the land available for purchase, grant, or claim. Once the survey was complete and available to prospective land claimants, purchasers, and speculators, it can be assumed that there was some degree of Euro-American activity on the land.

purposes. The uplands are generally hilly and stony. Limestone are every where abundant, except in the vallies...¹³

These descriptions reveal natural characteristics that would have supported wildlife and hunting, provided a source of stone for various prehistoric uses, and sustained modest agricultural endeavors in some, but not all, of the area contained within the Preserve.

Response to Natural Environment

Hydrology

The Preserve's three permanent streams have undoubtedly influenced human uses throughout its cultural history. The streams include Fox Creek, which flows south to the Cottonwood River; Palmer Creek, a Fox Creek tributary; Stout's Run; and Diamond Creek, which is not within the Preserve but drains its western edge. Numerous intermittent seasonal streams, as well as more than a dozen springs and seeps, were utilized by, and influenced, human settlement patterns on the land. For a more comprehensive discussion of existing hydrology, see Chapter 3, Existing Conditions.

Geology and Soils (see figure 3)

Chase County lies in a physiographic region known as the Flint Hills, a linear zone about thirty to forty miles wide, extending north to Nebraska and south into Oklahoma. The bedrock in Chase County is largely a collection of Permian-age (250 to 290 mya) limestones and shale. In areas along stream corridors, the bedrock has been eroded and re-deposited as Quaternary terraces and alluvium. Chert, locally referred to as flint, occurs in nodules and beds within the limestone.

Of particular interest in terms of historic human use of geologic resources are the Cottonwood Limestone and Crouse Limestone. Both of these limestones have been quarried and utilized during the history of Preserve lands.

Soils are relatively deep in the stream valleys but are thin on the hilltops and slopes (see Appendix B). This concentration of soils has resulted in an abundance of visible bedrock exposures throughout the Preserve's landscape. Arable land for crop cultivation has been by necessity concentrated at the bottomlands of creeks and streams. The poor qualities of the soil on the uplands for tilling led eventually to attempts to use it for cattle grazing, rather than crop farming, and its heyday as pastureland. The 1974 Soil Survey of Chase County notes that "about 80 percent of Chase County is used for native range. This native range has been used to 90 percent of its capacity since 1900. More than 100,000 cattle are summer grazed in the county every year."¹⁴

¹³ John P. Cathcart, *Field Notes of the Survey of the exterior boundaries of T18 & 19 south, R8 east of 6th Principal Meridian in territory of Kansas* (Topeka: Kansas State Historical Society, December 1856).

¹⁴ James T. Neill, *Soil Survey of Chase County, Kansas* (Washington: USDA, US Government Printing Office, June 1974), 1, 61.

Vegetation

The Flint Hills today retain a vegetative composition that is likely very similar to that present during the final phase of the pre-Euro-American settlement period of the late 18th and early 19th centuries. Tallgrass prairie dominated the uplands and riparian communities edged Fox Creek, Palmer Creek, and their unnamed tributaries. The tallgrass prairie ecosystem at that time extended over a broad portion of the plains of the north central United States, including eastern Kansas and Nebraska, most of Illinois and Iowa, northern and western Missouri, and southwestern Minnesota.¹⁵

Assuming that the Preserve's prairie was a typical tallgrass ecosystem, the predominant grass species probably were big bluestem and Indian grass, both of which grew more than six feet tall, and little bluestem, which grew approximately three feet tall. The tallgrass prairie association probably included warm season perennial tallgrasses and cool season grasses together with composites, legumes, other forbs, and a variety of woody species. Other grass species—some of the more than 150 kinds typically found in a tallgrass prairie—likely would have included sloughgrass, switch grass, prairie dropseed, sideoats grama, Canada wild rye, June grass, porcupine grass, wheatgrasses, needle-and-thread, and needlegrasses.¹⁶

The belts of woods that occurred along portions of the well-watered creek margins were typical of vegetation along the rivers and streams throughout the western edge of the tallgrass prairie. Deciduous trees such as elm, walnut, sycamore, hickory, and cottonwood would have occurred naturally along the banks of the creeks.¹⁷ The side slopes of the upland areas probably supported species such as walnut; sycamores would have grown in lower areas with reliable water sources. These trees would have provided a source of firewood and provided some shelter from wind and other weather conditions.¹⁸ Persimmon, Osage orange, elderberry, serviceberry, chokecherry, and wild grape were also found in the larger Osage Plains. A diverse assemblage of species would have been found in the wetlands below seeps and springs. It is likely that American Indian groups would have gathered plant resources found in the stream valleys and near springs and seeps. They also may have practiced rudimentary agriculture in the bottomlands and on natural terraces found along slopes above streams and creeks.¹⁹ Remnants of a terrace system of uncertain origin have been found along Fox Creek and along portions of Palmer Creek within the Preserve.²⁰

The 1997 *Tallgrass Prairie Resource Management by Means of Fixed Point Repeat Photography* identified herbaceous plants associated with undisturbed Flint Hills riparian forests in adjacent Butler County. These plants included Dutchman's breeches, dogtooth violet, yellow downy violet, green dragon, Solomon's seal, rattlesnake fern, anise root, Virginia buckwheat, blue phlox, purple meadow rue, horse-gentian, woods bedstraw, lopseed, and catnip giant hyssop.²¹ It

¹⁵ John Madson, *Where the Sky Began: Land of the Tallgrass Prairie* (Ames, IA: Iowa State University Press, 1995), 19-21.

¹⁶ Madson, *Where the Sky Began*, 51-71.

¹⁷ Cathcart, *Field Notes*.

¹⁸ Jones, *Archeological Overview*, 46.

¹⁹ Jones, *Archeological Overview*, 6.

²⁰ Jones, *Archeological Overview*, 46.

²¹ Iralee Barnard, *Tallgrass Prairie Resource Management by Means of Fixed Point Repeat Photography* (n.p.: Challenge Cost-Share Program, NPS, 1997), 159.

is likely that the riparian areas of the Preserve supported similar species during the prehistoric period.

In his August 2000 draft ethnobotany report for the Preserve, Dr. Michael Evans, NPS Midwest Region Senior Cultural Anthropologist, notes that the American Indians here would have used nearly all of the available plants for one purpose or another. He suggests that, because these plant materials were a highly accessible natural resource, indigenous peoples would have been acutely aware of the attributes and potential uses of each plant and would have made the most of them. They would have used the available plants as sustenance, as medicine for themselves and their horses, to construct tools and shelter, to fashion useful implements, as food, beverage, flavorings, and fuel, and for ceremonial and aesthetic purposes. Many plants, including wild onions, elderberries, chokecherries, wild grapes, hackberries, acorns, ground cherry, lamb's quarters, prairie wild rose hips, prairie turnip, wild gourd, sunflower, and Jerusalem artichoke were used as sources of food. Common milkweed, a common prairie forb, was boiled and eaten as a cabbage-like vegetable. Purple mallow root was gathered and used by the Osage as food in the winter.

Woody plants were a valuable resource available primarily within riparian areas. Trees were used not only for fuel and as a source of building materials, but were also tapped for sap, and burned to make charcoal for tattooing. Various parts were used for medicine. For instance, cottonwood bark was used both as horse feed and to make medicinal teas. The spring leaf buds produced a yellow dye. Elm trees were used to produce lodge poles and other building materials, as well as to make saddles, and mortars and pestles. Black walnuts were gathered for food and used to produce black dye, while the sap of the boxelder was used by Pawnee and other tribes to make sugar. Osage orange wood, with flexible and curved branches, was used to make bows. Chokecherry was eaten, and the juice used as a purgative; sumac was also used medicinally.

Forbs and wildflowers were a rich source of medicine, beverages, dyes, food, fuel, and ceremonial materials. Purple coneflower (*Echinacea*) was one of the most widely used medicinal herbs on the Plains. It was used by American Indians and later by settlers, eventually finding its way into patent medicines. The Pawnee used the plant's juice to treat burns, to form a poultice as an anesthetic, and as an antidote for a variety of poisons.

Indian tea (*Ceanothus americanus*) was used by the Pawnee and other tribes, as its name suggests, to make a tea; the Pawnee also used the roots as fuel when on buffalo hunts if wood was scarce. Yarrow, a common medicinal plant also used by the settlers, was used by the Pawnee for cauterizing wounds, by the Osage as a toothache medicine, and as a perfume. Lamb's quarters was made by the Pawnee into green paint or dye for arrows. Solomon's seal had many medicinal uses and was favored as a soup vegetable by some tribes. Anise root was used by the Pawnee as a tonic, and lopseed was made into a gargle for sore throat.

The early inhabitants of the prairie used plant medicines to maintain their horses' health and performance. For instance, the Pawnee mixed purple meadow rue with mud to rub on a horse's muzzle as a stimulant. Wood sorrel was used as a human food, but it was also fed to horses in the belief that it made them faster.

Ceremonial use of plants was also common. White sage (*Artemisia*) was widely used medicinally and also for ceremonial purification and protection. Columbine seeds were brewed in a tea to treat headaches, but were also used by the Pawnee as a love charm, as were wild parsley and cardinal flower.

Because of their close relationship with their environment, Plains Indians also were aware of which plants to avoid. For instance, a common forb—snow-on-the-mountain—was known by the Pawnee to be poisonous.

Grasses were utilized for many purposes as well. Big bluestem was used medicinally by some tribes, and structurally as a thatch or covering for lodges, and even cooking pots. Sideoats grama was used as fodder for horses and to make brooms and hairbrushes.

Land Use

The presence of a number of recorded prehistoric sites in Chase and adjacent Morris Counties indicates a high probability that similar human activity was occurring within the Preserve in the centuries prior to European settlement as at these sites since the natural resources within the Preserve were sufficient to support prehistoric human use and occupation. The types of sites that have been recorded include probable animal kill locations, quarries, workshops, habitation or campsites, possible burial mounds, and rock shelters. Because the tallgrass prairie ecosystem produced an abundance of flora suitable for herbivores such as deer and bison that are known to have been present in the region, the region was likely attractive to prehistoric hunters. In addition, creek bottoms were well-drained and possessed soils capable of supporting subsistence agriculture, while the steeper slopes were more appropriate for grazing animals.²² Because of the geomorphology, hydrology, and associated vegetative patterns, human use was concentrated in creek and stream bottoms, on hillsides, and near large limestone outcrops, which were another attraction for prehistoric peoples. The interbedded chert (called flint) found in the Flint Hills likely provided a focus for prehistoric activity, particularly surface collection, as well as small-scale quarrying of stone suitable for tool-making materials. Quarry sites have been recorded throughout the Flint Hills where raw materials were obtained by prehistoric peoples. Quarrying appears to have been extensive within the general vicinity of the Preserve, given its abundance of limestone outcrops.²³

Hunting Grounds

Prior to settlement, the area currently occupied by the Preserve was a hunting ground for both the Kansa and Osage.²⁴ The work of NPS ethnographers indicates that the Wichita and Pawnee may also have been present within the Flint Hills. There are likely numerous sites in the Flint Hills where American Indians seasonally hunted and killed game, including large herbivores, and other wildlife such as bison, white tailed deer, coyote, cottontail and jackrabbit, red fox, raccoon, opossum, squirrel, wild turkey, prairie chicken, elk, antelope, black bear, wildcat, wolf, mule

²² Jones, *Archeological Overview*, 5.

²³ Jones, *Archeological Overview*, 6.

²⁴ Joseph W. Snell, “A Brief History of the Z Bar Ranch, Chase County, Kansas,” Appendix D of *Special Resource Study, Z Bar (Spring Hill) Ranch* (Omaha: NPS, 1991), 1.

deer, gray fox, beaver, otter, and passenger pigeon.²⁵ The area also would have supported various species of fowl. Common insects would have included bumblebees, honeybees, flies, and prairie grasshoppers—the so-called “Rocky Mountain locust” that plagued early Euro-American settlers.²⁶

Sites of Habitation and Cultural Significance

Since archeologists have thus far conducted a limited amount of work within the Preserve, it is difficult to draw conclusions about the extent of human habitation during prehistoric periods. By the time the US established a territorial government in the region, opening the area for legitimate settlement, it appears that there were no permanent Indian habitation sites in the vicinity of the Preserve, although there was a Kaw reservation located north of the Preserve.²⁷ Archeological research and evidence indicate that the area of the Preserve had at one time, however, served as the site of individual camps, short-term occupations, and permanent settlements or larger, extended villages. Short-term campsites were most likely to have occurred near trails and routes of access. Sites of habitation would have typically been located near creeks and springs. Such sites would have afforded a supply of drinking water, supported naturally occurring plant life, and may have been suitable for agriculture as well. Firewood, food, and construction materials would have been more plentiful along stream bottoms than on hillsides or ridge tops in the Flint Hills region.

Several probable short-term prehistoric habitation sites have been identified within the Preserve to date. These include one site along the western side of Fox Creek east of the Z Bar/Spring Hill Ranch headquarters (14CS109), and another (14CS105) along the west side of Fox Creek near the southern edge of the Preserve. Visible surface materials cover approximately seven acres at the site east of the ranch headquarters; archeologists believe that this site represents a series of short-term occupation sites. The second is likely a single campsite or a site that may have been used for short-term occupation on a number of occasions. It is typical of the Early and Middle Ceramic Period in the Flint Hills.²⁸

It is possible that there may have been sites in the region that were considered significant for cultural reasons, although none have been identified within the Preserve. A spoked circle formation (possibly a medicine wheel) has been reported west of the Preserve that may have served religious or ceremonial purposes.²⁹

Quarries

The Preserve’s extensive rock outcrops supported prehistoric quarrying activity on relatively steep but eroded hillsides where stone, particularly chert (flint) could be collected without excavation. Such sites were likely used intermittently or seasonally. A large quarry and

²⁵ Jones, *Archeological Overview*, 50. Game drive systems may be present on hillsides within the Preserve, as bison wallows may be present along ridge tops where the soil is shallower and more rocky; information provided by Doug Lehmann, NPS, Tallgrass Prairie National Preserve, during tour of Preserve for Land and Community Associates (December 1998).

²⁶ Madson, *Where the Sky Began*, 125-165.

²⁷ Snell, “A Brief History of the Z Bar,” 1.

²⁸ Jones, *Archeological Overview*, 37–38.

²⁹ Jones, *Archeological Overview*, 50.

workshop site (14CS108) has been identified along the edge of a hill west of the Fox Creek drainage.³⁰ This quarry/workshop site may have covered some fifty to sixty acres, although its actual extent has not yet been determined. The site was not likely excavated; instead quarrying probably consisted of collecting broken or loose chert from the faces of the outcrops. It is likely that this site was used over a long period for such quarrying activities. It is also likely that activities associated with finishing stone products would have occurred near sites of habitation and not at stone deposit and outcrop sites such as this.³¹

The presence of finished, knapped stone tools and smaller lithic debris indicates that there were habitation sites, and possibly even structures, near the places where stone tools were made and maintained. Another large prehistoric quarry/workshop and habitation site of some twenty-five or more acres (14CS405) has been identified in the northern part of the Preserve, and may have extended outside the Preserve.³² This site has been tentatively identified as an Early Ceramic Period site with a date of AD 1–950. The site may be a multiple component site representative of both earlier and later prehistoric occupations. Another quarry/workshop site (14CS406), encompassing at least four acres, has been identified near a large limestone outcrop below a high point within the Preserve. Finally, artifacts and other evidence of prehistoric use have been found in eroded areas along creeks and streams. There are probably other subsurface features, such as hearths and trash middens, which have not yet been identified.

Circulation

The ridge tops and upland areas of the site would have traditionally provided the most convenient locations for overland circulation routes from the earliest times. First developed as hunting trails while in pursuit of game, such trails may have endured and become more frequently used as movement in the area increased. Although the exact locations of pre-Contact era trails are not known, approximate sites of the major trails appear to have been identified and mapped during the 1856 government land survey (*see figures 4 and 5*).

Two trails are depicted on the land survey associated with the Preserve vicinity. These trails may have developed to link various habitation sites with each other and/or with quarries and cultivated areas, creeks, springs, and other natural or cultural features. The trails run generally in a southwest/northeast direction. One originates in the northwest portion of current Township 19 and crosses several tributaries of Fox Creek as it progresses northeast through Township 18 and out of the current Preserve. The routes are identified simply as “Indian trails” in the land survey notebooks that accompany the maps.³³

A second major trail visible on *figure 5* leads from the southwest corner of Township 18, progressing northwest until it intersects with the Preserve boundary. It then continues in a northerly direction before veering out of the present Preserve, and finally heads northeast. A spur of this trail begins on the eastern side of Township 18, crosses outside of the Preserve and connects to the primary trail as it parallels the Preserve boundary. Another spur runs northwest to and from the primary trail, connecting to an area just east of the Preserve boundary and Fox

³⁰ Jones, *Archeological Overview*, 40.

³¹ Jones, *Archeological Overview*, 40.

³² Jones, *Archeological Overview*, 44.

³³ Cathcart, *Field Notes*.

Creek. A two-track road segment is also depicted as extending on a diagonal route for a short distance between both townships (linking the current Section 31 in Township 18 and Section 6 in Township 19). The two-track does not lead to any identified feature or use on the map. Its presence likely indicates a Euro-American use, although no information has been located to suggest why the road was developed or when.

Both trails appear to follow the uplands to the greatest extent possible, in keeping with the established traditions of Great Plains peoples who attempted to avoid repeated climbs and descents. A similar use of upland areas to site trails has been documented at other known prehistoric sites in the Great Plains.³⁴ According to the *Chase County Historical Sketches*, American Indian trails were located along the “high ridges [which] afforded the smoothest trail and they chose that one which led to the best river crossing already provided by nature.”³⁵

In contrast, NPS anthropologist Michael Evans, has related in NPS inter-office communications that the main Kaw/Kansa Trail was not aligned to take advantage of the natural topography. Instead, the trail followed a direct route, “as straight as the crow flies” going up and down hill, across sharp ridges, when a slight detour would have avoided heavy pulls.”³⁶ Within this area of the Flint Hills, the Kansa were historically known to travel from the Council Grove area to bison territory in the Arkansas drainage on a seasonal basis. Their route, known as the Kaw Trail, later served non-native traders and hunters, and traversed present-day Morris County to the north of the Preserve. References to another Kaw Trail that may have led south through the Preserve have never been confirmed.³⁷

³⁴ Jones, *Archeological Overview*, 47.

³⁵ Chase County Historical Society, *Chase County Historical Sketches* (Emporia, KS: Emporia Gazette, 1984), 49.

³⁶ Message from Michael J. Evans at NPS-MISS to Dena Sanford at NPS-MWRO, 11/4/97.

³⁷ Jones, *Archeological Overview*, 38; Michael J. Evans to Dena Sanford at NPS-MWRO, 11/4/97 citing George P. Moorehouse’s article “Along the Kaw Trail” in *Transactions of the Kansas State Historical Society* 8 (1903), 206–212.

Early Euro-American Settlement (1856–1876)

(See figures 4 through 6)

The early Euro-American settlement/subsistence agriculture period was brief within the Preserve, lasting only twenty years before yielding to another agricultural use—ranching—that has prevailed to the present day. Little physical evidence of this small-scale farmstead period remains, and the mid-19th-century history of the region was only minimally recorded. It appears, however, that many of the settlers established farmsteads that were never finished, or abandoned the land that they had claimed or begun to purchase. Many of the names that appear in federal land transfers were never recorded in the Chase County land records.³⁸

The AT&SF and the Missouri, Kansas & Texas Railroads were the original owners of record for much of the land now included within the Preserve; the AT&SF received its land from the State of Kansas in 1873, and the Missouri, Kansas & Texas received its land from the US Government in 1876. The railroads received these federal grants of land following the survey conducted by the Government Land Office (GLO) in 1856. The intention was to stimulate railroad construction by providing the railroad companies with land they could sell to new settlers, generating much-needed capital for the railroads to use in developing new routes and financing railroad construction in the West. Recognizing the importance of the railroad to Kansas, the Kansas Territorial Legislature chartered fifty-one railroad companies by 1861.³⁹ By 1869, the transcontinental railroad was completed, finally providing a rail connection between East and West, and access to the associated markets for formerly isolated frontier settlement areas such as Chase County. Large-scale agriculture and cattle ranching, rather than subsistence farming, were possible once railroad access became available.

Typically, the US government issued railroad grants for every other section, leaving the alternating sections available for homesteaders and other settlers to acquire directly from the government.⁴⁰ The railroads generally offered terms amounting to eleven years' credit, with a 10 percent down payment and a 20 percent discount for cash. Such terms continued to be advertised by the AT&SF Railroad in Chase County and other newspapers through the 1870s.⁴¹

When the Kansas Territory was created on May 31, 1854, its Euro-American population was very small, and most residents were concentrated in eastern Kansas. By 1854, military personnel were well established at defensive installations such as Fort Leavenworth (1827) and Fort Scott (1842). Missionaries and traders had also traveled in Kansas, and a few farms were beginning to be established by 1854. A Methodist mission for the Kansa reservation was established in Council Grove in 1850. By 1854 there was a small trading operation and settlement there as well.⁴² The passing of the Kansas-Nebraska Act, which repealed the Missouri Compromise,

³⁸ An examination of government land records corroborates many of the findings and assumptions of Julia and Edward Hobbs, who have also researched 19th-century Chase County land records and news articles. Their research and that undertaken for this CLR have identified the names of some early claimants, owners, and settlers within Preserve boundaries.

³⁹ Robert W. Richmond, *Kansas, A Land of Contrasts*, 3rd ed. (Arlington Heights, IL: Forum Press, 1989).

⁴⁰ The resulting pattern of railroad ownership generally resulted in a checkerboard pattern of land ownership, although there were some deviations due to land swaps and other exchanges.

⁴¹ A perusal of the several Chase County newspapers for this period identified a number of such advertisements for railroad land.

⁴² John Maloy, *History of Morris County 1820–1890* (1891), 6. Council Grove is north of the Preserve.

stipulated that the settlers of the new Kansas and Nebraska territories decide through popular sovereignty whether they would enter the Union as free or slave states. This political issue led strong supporters of both persuasions to claim or purchase land in Kansas simply to be able to vote on this controversial topic. It is not currently known if any of these landowners resided within the Preserve or Chase County. Official establishment of the territory in 1854 made the area available for settlement, and the population of Kansas began to increase.

Chase County, located in the eastern part of the newly organized Kansas Territory, was one of the first areas where post-territorial Euro-American settlement occurred. A US government land survey was conducted for the area included in the Preserve in 1856, resulting in the subdivision of land into Townships, Ranges, and Sections based on regular units and divisions of one mile. These subdivisions, which endure today, formed the basis for land development and real estate transactions (*see figures 4 and 5*). In most cases, surveys occurred from a starting point and moved west, marking off the divisions of sections, ranges, and townships. Periodically, the surveyors would true up the overland measurements. The western edge of the Preserve occurs at a point where previous miscalculations needed to be reconciled. The sections here are much wider than the standard one mile. The western pastures included special lots, in addition to the usual 640-acre sections, that could be subdivided into halves, fourths, and eighths. Typically, section lots were laid out as forty-acre parcels. The Preserve's westernmost lots, however, were laid out to include the excess land as well. Most of the western lots were between thirty and forty acres in size.

The GLO survey maps and field notes indicate that there was little or no evidence of Euro-American settlement in the Preserve area prior to this time.⁴³ No descriptions of cabins or other land improvements were included in the GLO notes for the land contained within the sections that make up the Preserve. The "General Descriptions" for Township 18 noted no structures; the "General Descriptions" for Township 19 noted that there were two vacated cabins with no improvements in the township. The locations were not identified, but it is assumed that they were outside the Preserve since there was no mention of them in the field notes for the sections contained within the Preserve. The field notes also do not indicate the presence of squatters within the Preserve prior to 1856.

An examination of government records documenting the initial transfers of land from the federal government has been completed using the collections of both the National Archives in Washington, D.C., and the Kansas History Center of the Kansas Historical Society in Topeka. These records, known at the Kansas History Center as the "Kansas tract books," document the initial transfer of land within the Preserve boundaries to private owners through preemption, homestead, purchase, or railroad grant. An investigation of the "Preemption Book," also located in the manuscript collections of the Kansas Historical Society in Topeka, failed to identify any preemptions for the portions of the townships included within the Preserve during the territorial period. There were, however, a few transactions in the "Kansas tract books" that were identified as preemptions.

⁴³ Cathcart, *Field Notes*, and A.S. Sleeper (Surveyor General, Leavenworth, Kansas), *Plats of the Topography of Townships 15–21 of Ranges 10–13, Township 13 or Range 18 and Part of Township 13 of Range 17 and all of the Base Line and East of the Prime Meridian* (Topeka: Kansas State Historical Society, n.d.).

Source: TAPR Archive

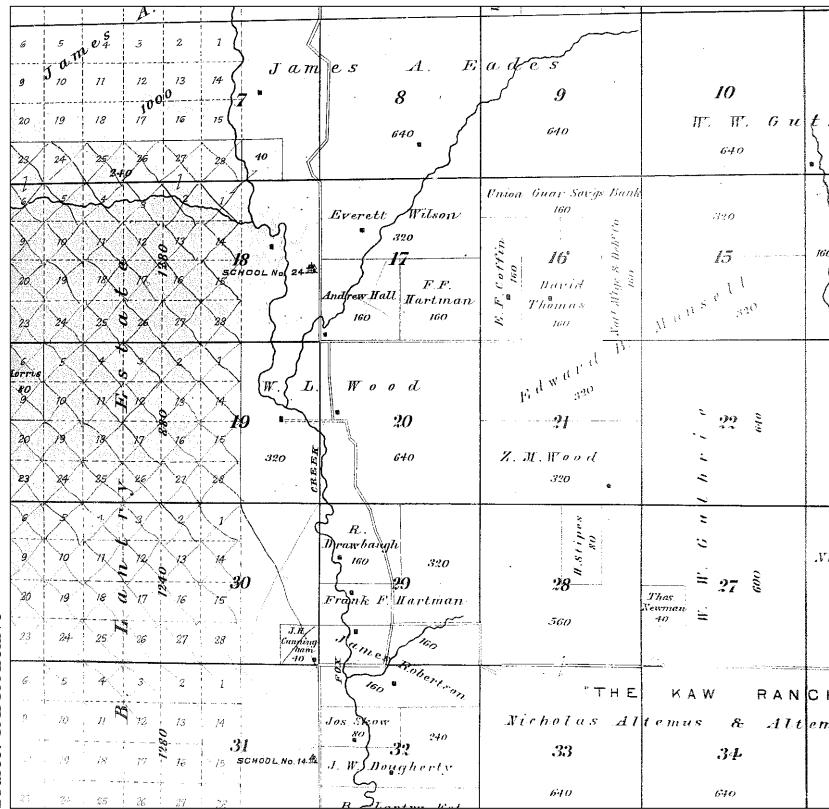


Figure 4.

Detail from the Township 18 survey plat from the General Land Office survey, 1856.

Source: TAPR Archive



Figure 5.

Detail from the Township 19 survey plat from the General Land Office survey, 1856.

Although some of the records for this area are illegible or difficult to decipher, the tract books do suggest a history of pioneer claimants, abandonments and cancellations, as well as a substantial railroad ownership within the Preserve during the initial settlement period. It is likely that many of the first owners never made improvements and that others started and for unknown reasons ceased their efforts and abandoned their land. Some property transfers were to speculators who never settled on their land. Only a few, it appears, established well-appointed farmsteads during this era. The high abandonment rate is not surprising given the drought of 1860, the remoteness of the prairie, and other frontier hardships. Without large parcels of land, convenient railroad access, and large amounts of capital, these early settlers could do no more than hope to subsist. Economic depressions, extensive speculative ownership, technological changes, and pre-Civil War politics also discouraged the development of permanent farms during this period.⁴⁴

Chase County was first included within Butler County, which was organized by an act of the legislature of 1855.⁴⁵ Butler County originally encompassed 900 square miles, including the current Preserve lands. According to *Butler County's Eighty Years*, “the first white settler” was William Hildebrande, who built a cabin in what is now El Dorado Township in 1857.⁴⁶ The “Kansas tract books” indicate that there was very little private land ownership within the Preserve prior to the establishment of Chase County in 1859. Chase County was named for Salmon P. Chase, Governor and Senator from Ohio, Secretary of the US Treasury, and Chief Justice of the Supreme Court.

The first identified land records for the Preserve area appear to be for portions of Section 5 in Township 19. The “Kansas tract books” record claims for Benjamin S. Fairchild (1858), Nathan Fairchild (1858 or 1859), Sarah Jane Moore (1860), William and Francis E. Smith (1860), John H. Scribner (year illegible), and Betsy E. Scribner (1861) for portions of this section. Early transactions were also recorded for Section 8 of Township 19. Legible names appearing in the “Kansas tract book” for Section 8 include James H. Fairchild (1858 and/or 1860) and a preemption for Jerome B. Smith (1859 and/or 1860). Other early records for the tract include a mostly illegible entry for Asa Hall for a portion of Township 18, Section 32 in 1861. Betsy Scribner also held a patent for the south half of the southwest quarter of Section 32 in Township 18.⁴⁷

There were a number of entries for portions of Township 18, Section 18 recorded for the years 1863–1866. Names recorded for portions of the section include another entry for Asa Hall as well as ones for Horace Hall (Hall’s name appears in the 1855 Kansas Territorial census; however it is not certain that it is the same individual), Horatio N. Simmons, and George Buckbee. It appears, however, that most of these claims were abandoned, cancelled, or relinquished, with the Missouri, Kansas & Texas Railroad selecting most, if not all, of the section by 1866; the railroad transaction, however, was not approved until 1875 with a patent date of 1876. Other records give the names of L.P. Watson and Amos Noyes for 1867 for

⁴⁴ Joseph V. Hickey and Charles E. Webb, “The Transition from Farming to Ranching in the Kansas Flint Hills,” *Great Plains Quarterly* 7 (Fall 1987): 244–255.; Thomas D. Isern, “Farmers, Ranchers, and Stockmen of the Flint Hills,” *The Western Historical Quarterly* 16 no. 3 (July 1985): 253–264. Both articles discuss the reasons that ultimately ranching, not small-scale agriculture, took hold in the Flint Hills.

⁴⁵ Jessie Perry Stratford, *Butler County's Eighty Years, 1855–1935* (1935), 10.

⁴⁶ Stratford, *Butler County*, 13.

⁴⁷ Beal, L.G., “Abstract of the Lantry Ranch in Chase County, Kansas, 1906–1907” (Topeka: n.p., 2000), 37.

portions of this section; it is possible that Watson and Noyes claimed land that had been selected by the railroad but not yet approved.⁴⁸ There are many notes of land exchanges throughout the tract book for railroad grants, with the railroad accepting various parcels of land in lieu of others. Regardless of ownership or ultimate disposition, however, it is reasonable to assume that some settlement activity occurred on this section during the early settlement period.

Since neither the microfilm consulted at the Kansas Historical Society nor the original tract books consulted at the National Archives are completely legible, it is not clear what settlers claimed which portions of many sections, or the exact dates of the transactions. It is also not known when the Preserve was first settled by Euro-Americans or where the earliest of these settlers established home sites. It is possible that not all of those whose claims were recorded actually began to establish themselves on the land.

It is known that John H. and Elizabeth (also known as Bettie or Betsy) Scribner owned 160 acres that they developed as a homestead within the Preserve between 1860 and 1866. The Scribner land in Townships 18 and 19 eventually became part of the Spring Hill Ranch established by Stephen Jones. This property is located directly east of the current Z Bar/Spring Hill Ranch headquarters. The Scribner family lived in a log cabin, and the land was held in both of their names. In addition to establishing and improving his homestead, John Scribner drove wagon teams to Leavenworth, Kansas, to bring back supplies and goods as a way to supplement or support their agricultural activities. In 1865, Scribner had 32 cattle, which was actually a large number for the township's small farmers, who all together owned only 275 cattle. Scribner harvested 34 bushels of wheat and 80 bushels of Indian corn in that year; in addition, he cut 100 tons of hay for his livestock. In 1866, the Scribner land was sold to William Barton for \$800. Barton sold the property to John C. and Jamima Rocker and William M. Langston in 1873 for \$2,000.⁴⁹

The Daugherty family was an example of a successful pioneer family that survived the difficult early settlement period. W.J. Daugherty, a mason who worked on the construction of the Chase County Courthouse, filed a homestead claim in 1866. He finished his improvements and finalized his homestead claim for the north half of the southwest quarter of Section (S) 32 in Township (T) 18, Range (R) 8, just north of the Preserve boundaries.⁵⁰ The homestead remained

⁴⁸ Both Amos Noyes and L.P. Watson are listed in the 1875 Kansas Agricultural Census for Falls Township, but their names have not been located in Chase County deeds. The Noyes farm was valued at \$1,200 and the Watson land at \$1,200. Each owned 80 acres with about half in cultivation.

⁴⁹ Julia and Edward Hobbs, research notes (1998). Copy provided by NPS. Chase County Historical Society, *Sketches*, vol 1, 373–376. *Kansas State Agricultural Census*, 1865. Julia and Edward Hobbs have identified the Scribner farmstead as the first Jones purchase. Betsy Scribner, one of the earliest patent holders in the Preserve area, also owned land in Township 18 in the southwestern portion of the section immediately north of this parcel. William Barton purchased the Scribner land in 1866, but is not listed in either the 1870 or the 1875 state census; neither are Rocker or Langston, from whom Jones purchased the land. It is possible that none of them were residents of the county. Local newspapers through the late 1870s and early 1880s included brief notices of land sales for much of the land within the Preserve today. Julia Hobbs believes that in many cases these notices indicate that the transactions involved purchasing the improvements, but not the land itself, from these settlers, as the earliest names in the Kansas tract books rarely appear in deed transactions. Some of those named as the sellers would likely have been among the early settlers of the Preserve. It is entirely possible that some owners did not live on their land, and that some of the land was unimproved. Some sellers may have been squatters or settlers with unfinished claims who were selling improvements such as structures, cultivated fields, or enclosed pastures.

⁵⁰ "Kansas Tract Book," Township 18, Section 32, Range East (on microfilm at Kansas History Center, Kansas Historical Society, Topeka). Chase County Historical Society, *Sketches*, 178-179. Daugherty's homestead was recorded under E-245 on

the Daugherty family home until 1911. For a brief period of time Daugherty also owned the adjacent southern half of the southeast quarter of Section 32. The Lower Fox Creek School #14 was located on the eighty acre Daugherty homestead in the southeast corner of S30, T18, R8.⁵¹ This, and another early school located on a one-half acre parcel east of Fox Creek, pre-dated the Lower Fox Creek School House.⁵² In 1883, when the new (existing) school house was completed, Daugherty removed the second stone school house, a structure that he had built.

The Scribners, Daughertys, and other settlers that lived in the Flint Hills during the pre-ranching period would have been considered pioneers. *Butler County's Eighty Years* defines the pioneer period in a way that generally describes the character of the Preserve prior to the late 1870s:

It will no doubt always be an open question as to who should be classed as pioneers, and where the lines of demarcation should be drawn when the adventurer, explorers, and trader ceased and also when the term "pioneer" should cease to be applied. In this article, it will be assumed the pioneer period commences when the first family came into the county with its personal effects, builded [sic] a cabin, hut, or dugout ... and actually began wringing a precarious livelihood from the virgin soil—and ended when families had actually settled generally over the county, not only the bottom land with its timber and water but also the upland prairies which contributed nothing but grass, and by toil had demonstrated that generally the soil and climate, by proper tillage, would produce the necessary products to sustain the population.⁵³

The early years would have been especially hard for the new settlers. In addition to the necessity of constructing a rudimentary shelter and planting crops, the new settlers would have had to endure the extreme drought reported for 1860. The history for the adjoining Butler County recounts that 1860 was a year of "unprecedented drought—May, June, and July passed without a drop of rain. Every green thing withered. Even the leaves on the trees turned yellow and then brown. Streams dried up. Fish died, and as the deep water holes dried away they were pitched into a wagon and hauled to hogs. Great seams cracked the earth. It was really dangerous to ride a pony at speed across the prairie. ... Many settlers, under these distressing circumstances ... left the state never to return. This awful year gave Kansas a name that was a detriment to her for years afterward."⁵⁴ To compound the settlers' agony that year, grasshoppers were first noticed in large numbers and contributed to the loss of crops.

April 25, 1872. Like other successful owners of agricultural land, he also owned property in the town of Cottonwood Falls, as well as other parcels.

⁵¹ Presumably this is the same as the 80-acre Daugherty homestead on N2SW4, S32, T18, R8, which is not within the boundaries of the Preserve, according to the research of Julia and Edward Hobbs.

⁵² Hobbs, research notes; and telephone interviews of Julia Hobbs by Genevieve Keller, February and December 1999. The legal description for the school is described as beginning at the northeast corner of N2 SW4 S32, T18, R8, running south 8 rods thence 10 rods west, thence 8 rods north, thence 10 rods east to the point of beginning. This property was deeded to School District #14 of Chase County on July 26, 1877, for \$1.00 and was to revert to the owner upon disuse as a school. There was a school on this site prior to 1876; that structure was blown down (perhaps in a tornado or in a strong windstorm) and replaced with a stone school measuring 18 by 24 feet in 1876.

⁵³ Stratford, *Butler County*, 26. For adjoining Butler County the author defined the pioneer period as 1856 to 1873 and noted that the county was "well settled" by 1873 with the exception of "the grazing district bordering the Flint Hills."

⁵⁴ Stratford, *Butler County*, 24.

Wallace Wood, who was twelve years old when his family moved from Ohio to Elmdale in Chase County in 1866, recalled the memorable terror that drought held for the early pioneers of the county. He related stories he was told concerning the 1860 drought that haunted settlers for decades following: “One of the constant menaces to the pioneers were the long, dry spells for which the Kansas climate is noted. The whole existence of the settlers was dependent on their water supply. In 1860 there was an unusually long, hard drought that left the settlers without food and with very little water; many of them went back to the East … Needless to say, experiences of this sort made the people constantly fear another such drought, and any little dry spell would be cause to say that it was acting just as it had in ‘60.”⁵⁵ Although there were other dry seasons, the drought of 1860 appears to have been particularly severe and memorable. With such conditions, it is not surprising that the population of the county increased only gradually between the 1850s and 1870s.⁵⁶

In 1870, the Chase County Board of Commissioners approved orders for the AT&SF Railroad to cross the county.⁵⁷ The rail line across the county was completed in 1871. The company established its station in the small community of Cottonwood south of the present Preserve, but not in the county seat of Cottonwood Falls.⁵⁸ To eliminate confusion, Cottonwood or Cottonwood Station (as it was also called) was renamed Strong City in honor of William Barstow Strong, the president of the railroad.⁵⁹ The railroad was an impetus for growth in the small community, which began to rival nearby Cottonwood Falls as the commercial center of the county. The presence of railroad transportation not only made Chase County more accessible but it also greatly increased the potential for prosperity. The Missouri, Kansas & Texas Railroad did not link with Strong City or Cottonwood Falls, but it did run south and east of the Preserve and extended through Council Grove north of the Preserve. The presence of both rail lines enhanced access to the Flint Hills region for more settlers, increased the amount of goods and supplies available for settlers to use in establishing new homes and businesses, and provided a reliable and regular way for residents to trade with distant markets.

When the AT&SF Railroad arrived in Chase County in 1871, it boosted the local economy by providing an effective way to transport the bountiful limestone that was quarried in the vicinity. The quarrying industries provided a substantial number of employment opportunities for the growing county population. Rail cars of limestone in various forms outnumbered those of livestock through the 1880s.⁶⁰ In 1879, for example, there were 1,462 carloads of stone shipped as compared to 80 carloads of cattle.

The railroad ensured that all products and supplies could be shipped quickly and efficiently to and from markets. Limestone was one such product; by 1876 the county’s stone was described as an “excellent quality of building stone.”⁶¹ This abundant local supply of stone was already being

⁵⁵ Wallace A. Wood, unpublished manuscript (Wallace A. Wood Collection, Kansas Historical Society).

⁵⁶ State Board of Agriculture, *The Fifth Annual Report of the State Board of Agriculture to the Legislature of the State of Kansas for the Year Ending November 30, 1876* (Topeka: George W. Martin, Kansas Publishing House, 1877), 124.

⁵⁷ Chase County Board of Commissioners, *Journal* July 18, 1870-September 2, 1872 (Kansas Collection, Kenneth Spencer Research Library, University of Kansas Libraries), 15.

⁵⁸ Chase County Board of Commissioners, *Journal*, 15.

⁵⁹ Snell, “A Brief History of the Z Bar,” 2.

⁶⁰ Newspaper research of Julia and Edward Hobbs has revealed the importance of quarrying to the local economy in the early railroad era.

⁶¹ State Board of Agriculture, *Fifth Annual Report*, 123.

exported for use in major public buildings elsewhere in Kansas. The report notes that Chase County limestone had been used in the capitol at Topeka, at Leavenworth, and also in Kansas City. This same stone was available to the new settlers of the area and was used to build farmhouses, stone walls, and other features necessary to establish farmsteads on the prairie.

The availability of rail transportation also meant that cattle and other livestock could be transported directly into and out of the county by rail without the long overland drives that had previously been necessary. By 1872, the *Chase County Leader* was boasting that “This is truly a stock raising county, we have thousands of acres of land that cannot be cultivated, but cannot be surpassed for grazing.”⁶²

Pioneer reminiscences provided by the earliest settlers and their children, although probably romanticized or embellished in places, provide slice-of-life narratives of the early settlers’ hardships and accomplishments.⁶³ Settling a new land, fearing sporadic Indian attack,⁶⁴ enduring harsh weather conditions, isolation, drought, prairie fires, and grasshopper and other insect invasions presented Chase County pioneers with many challenges, but specific details about their occupation of the area are difficult to find. Some insights into early pioneers’ anecdotal life are found in *Chase County Historical Sketches*, which was published in the 20th century and is probably the most comprehensive source on record.

Wallace Wood’s reminiscences of growing up near Elmdale in Chase County provide an additional in-depth account of life on the prairie that complements the accounts found in *Sketches*. It is likely that the early settlers of the Preserve had experiences similar to those recalled by Wood and the contributors to *Sketches*. Wood related that his father had purchased a log house and disassembled it, moving it “piece by piece and building it gradually” while the family lived with a relative in Cottonwood Falls. If this practice was not unique to the Wood family, it could explain the loss of early structures and lack of evidence of early settlement. Other families could have lived away from their claims for some time until a suitable family dwelling and other necessary improvements could be developed. Wood recalled both good times and bad, beginning with an account of his loneliness upon first moving to the isolated prairie, mourning the death of a young friend, and recalling the joy of “riding our horses across the prairie.” In *Sketches*, Inez M. Brickell also remembered that “the loneliness of the prairie was so impressive that I can seem to feel it now. . . . but how soon I came to love it, in spite of the loneliness.”⁶⁵ Wood explained the job of freighter, available to settlers with a wagon and team of horses to convey goods from the railroad connection in Emporia to stores in Cottonwood Falls in exchange for store credit. Many early settlers who lacked the cash to pay for purchases obtained goods on credit or by barter. Wood also recalled American Indians coming to his family’s farm

⁶² *Chase County Leader*, Cottonwood Falls, March 1, 1872.

⁶³ *Chase County Historical Sketches*, a 20th century publication, is probably the most comprehensive source for vignettes of pioneer families in the county.

⁶⁴ Jones, *Archeological Overview*, 22. Although Indian attacks would have been increasingly rare by the 1870s, they are part of the anecdotal history of the county and are included in reminiscences in the *Sketches*. Indian tribes had been moved to reservations beginning in the 1840s; by the 1870s nearly all of the original inhabitants of eastern Kansas had been moved to the Indian Territory of Oklahoma. Bruce Jones repeats a reference to 400 Kaw selling furs and ponies in Cottonwood Falls as late as 1858. The Kansa reservation near Council Grove was reduced in size in 1859 because of conflicts between the Kansa and white residents and merchants. The date 1873 is now considered the “generally accurate terminal date for all Kansa activity in the vicinity of the Preserve.”

⁶⁵ Chase County Historical Society, *Sketches*, 79-80.

to trade for “hoggy meat.” Wood provided information on essential farmstead practices such as developing a lime kiln to produce the lime needed for chimney construction and finishing the plaster cracks in log houses. According to George Starkey, documented in *Sketches*, settlers made their own lime before the coming of the railroad. Kilns were usually located along a steep bank in a deep hole dug like a well.⁶⁶ It is not known whether any of these kilns existed on the Preserve, but this may be determined as archeological investigations are conducted.

Continued research in county land records and newspapers by various historians is expected to reveal additional information about early settlers. Future archeological investigation, detailed research with land records, and inquiries among local citizens and the Chase County Historical Society genealogists may eventually reveal more about this period.

Land Use and Site Organization

The early Euro-American settlement period, from 1856–76, marked the establishment of a permanent human presence and the beginning of more than a century of agricultural land uses within the area now included in the Preserve. Euro-Americans began to settle in the area, some as new property owners and perhaps others as squatters. These settlers began to establish farmsteads in areas of the prairie that were conducive to settlement. Desirable farmstead sites included those with well-drained soils, proximity to a water source, and some woodland. It is reasonable to assume that the most desirable sites, such as the Scribner homestead along Fox Creek, would have been developed first. Despite settlement, the prairie, with its big bluestem grasses, would have continued to dominate the Flint Hills landscape within the Preserve. Early settlers grazed their livestock on the prairie and began to cultivate grains and develop family gardens, orchards, and vineyards within their farmsteads. They established farmsteads that were usually modest at first, using the stone, timber, and other materials available in the vicinity for construction. Thomas Isern, in his 1985 article “Farmers, Ranchers, and Stockmen of the Flint Hills,” describes early Flint Hills farmers as practicing diversified farming with “corn on the bottoms, …hay on the slopes, …modest herds of Shorthorns..., Poland China hogs to follow the cattle in the lot, and scattered...Rhode Island Red chickens.”⁶⁷ Most farmers in the early settlement period did indeed have modest herds of cattle and hogs. In 1865, there were only 692 cattle in the entire township, exclusive of milk cows, with 417 of the cattle belonging to just three owners. Although the township figure would almost double to 1,221 in 1875, those are still low numbers of cattle for a ranching operation, considering the quality of the available grasslands.⁶⁸

Railroad development was clearly essential in opening up the Flint Hills to settlement and particularly to the cattle ranching industry, which was dependent on the rail lines for transportation of the cattle to market and from the Southwest. Some areas of the Preserve appear never to have been settled during this initial settlement period. Instead, the land was granted to the railroads, which were not able to sell the land until its value for ranching was recognized.

⁶⁶ Chase County Historical Society, *Sketches*, 110.

⁶⁷ Isern, “Farmers, Ranchers, and Stockmen of the Flint Hills,” 25.

⁶⁸ Comparison of the state census for 1865 with that for 1875.

Once the railroad reached nearby Strong City (formerly Cottonwood), farmers and ranchers began to exhibit more interest in these newly accessible tracts of land.⁶⁹

Response to Natural Environment

The first settlers of Chase County found an open landscape that was primarily bluestem prairie. Early settlers, like the American Indian tribes who had used the area before them, found places within the prairie environment that would support human life and some forms of agriculture. There were plentiful stone outcrops, stands of timber along creeks and streams, and suitable habitation sites near creeks, streams, and springs. Most importantly, there was adequate water in such locations, and soils suitable for agriculture. These characteristics, in addition to the abundant grasslands that would support their livestock, made Chase County a destination for those moving west into the new Kansas Territory. During the first years of the early settlement period, Euro-American settlers and investors found that Chase County possessed the natural characteristics desirable for stock raising. Most, however, lacked the financial resources to invest in cattle. Lack of transportation was a significant disincentive to potential investors.

It is also during this period that the bison disappeared from Kansas. Little information was located through research for this CLR about the range and size of bison herds prior to early settlement and the series of events leading to their eradication within the present Preserve area. It is known that rail access to the prairie hastened the slaughter of the plains bison by both market and sports hunters. The development of railroads may have split the buffalo population into north and south groupings. Within four years of the railroad's advance, well over four million bison died on the southern plains. The last known bison hunt by the Kaw took place in the 1870s; the bison slaughter in Kansas peaked between 1870 and 1873.⁷⁰

Various Chase County newspapers from this period reported the occurrence of prairie fires during the spring and fall. At least one account suggests that the uplands were purposefully burned. Another reported in 1880 that the "heavens are now illuminated nightly by prairie fires." Archeologists believe that burning was a traditional American Indian practice. According to what is known about the fire history of the region, anthropogenic burns have occurred for thousands of years, starting in prehistoric times. The most frequent fires were reported in the mid- to late 19th century between January and April, and August and November, possibly because the conditions were best for fire at those times of year.

By the 1870s, most intentional burning was taking place in the spring, predominantly between March and April. New settlers needed to learn to be wary of and prepared for the prairie fires that could threaten their existence and newly built homes and barns. Settlers developed fire guards, and lit backfires, to protect their hay stacks and dwellings; entire towns often got

⁶⁹ An investigation of the "Kansas Tract Books" at the National Archives in Washington, D.C., and the Kansas History Center in Topeka, Kansas, during the spring of 1999 began to reveal the land disposition trends and patterns that characterized the initial acquisition of surveyed land by both individuals and railroad companies, as well as subsequent sales, transfers, revocations, and exchanges.

⁷⁰ Kenneth S. Davis, *Kansas, A Bicentennial History* (New York: W.W. Norton and Company, The State and Nation Series, American Association for State and Local History, 1976); William Cronon, *Nature's Metropolis, Chicago and the Great West* (New York: W.W. Norton and Company, 1991); NPS correspondence of Michael Evans to Dena Sanford, May 19, 1998.

together to create a firebreak around their settlement.⁷¹ An early county settler, Inez M. Brickell, recalled that “Every home had its ‘fire guard’ unless the ground around it was plowed. The guard was made by plowing a few furrows about an eighth of a mile from the house and as soon as possible after the grass became dry, the space within was burned over” so that the set fire could burn out to meet the prairie fire.⁷² George Starkey estimated that the first furrow would have been plowed about fifteen steps away from a farm’s improvements and the next about ten steps out.⁷³ Even so, fire controls were primitive and unreliable, consisting primarily of gunny sacks, until well into the 20th century. Fortunately, buildings were usually protected not only by firebreaks but by adjacent ground conditions consisting of plowed crop fields, lack of vegetation, and compacted soils.

Quarrying, as discussed above, occurred in response to an existing natural resource. The Cottonwood Limestone present on the Preserve and around Strong City was recognized as an important source of building stone; its massive deposits allowed for the extraction of large blocks. Local stone was quarried commercially and used in the construction of numerous buildings both locally and regionally. Smaller quarries of the more platy Crouse Limestone supplied smaller, flatter pieces of stone for the unusual stone fences that began to appear as field boundaries during this period.

Clusters of Buildings and Structures/Archeological Sites

Building clusters on typical farmsteads generally would have included a dwelling, a barn, root cellars, livestock sheds, a corncrib, a privy, cisterns, a smokehouse, and a springhouse or icehouse. The cultural traditions of the early settlers probably varied little since most of those who arrived in Chase County during this period appear to have been of English, Scottish, Irish, or German descent from the states of Pennsylvania, Ohio, and Illinois.⁷⁴ With limited cultural variations and adaptations, it would be logical to assume that the early farmsteads were fairly homogeneous. They all depended upon the same available natural resources—limestone and wood—to build the earliest structures. The early settlers would have needed barns and sheds, however rudimentary, to provide shelter for their livestock during the harsh winters. Livestock present in the county as reported in *The Fifth Annual Report of the State Board of Agriculture to the Legislature of the State of Kansas for the Year Ending November 30, 1876* included horses, mules, asses, cattle, sheep, and swine. Other structures and landscape features that were likely developed were not documented. There may have been springhouses and privies as well as specialized structures, such as limekilns. A number of small-scale features, such as water barrels, would have been located within the farmstead clusters.⁷⁵ Practical farmsteaders would have developed fireguards to protect their structures and gardens, as discussed above.

According to the *Archeological Overview and Assessment* for Tallgrass, by Bruce A. Jones of the Midwest Archeological Center, archeologists have identified the limited remains of several early

⁷¹ The research of Julia and Edward Hobbs concerning prairie fires and burning practices is still ongoing. Most of their information to date has come from county newspapers from 1879, 1880, and 1881. They have come across no accounts of prairie fires attributable to storms.

⁷² Chase County Historical Society, *Sketches*, 81.

⁷³ Chase County Historical Society, *Sketches*.

⁷⁴ Hal K. Rothman and Daniel J. Holder, *Tallgrass Prairie National Preserve Historic Resource Study* (Omaha: NPS, 2000).

⁷⁵ Chase County Historical Society, *Sketches*, 81. Inez M. Brickell recalled fires being fought with water from water barrels kept on the farm.

farmsteads. These are described in the following paragraphs; the numbers in parentheses for each possible site are the numbers used in the *Archeological Overview and Assessment*.

While no intact early houses survive within the Preserve boundaries, building clusters and spatial relationships are suggested through the few architectural fragments that survive and the archeological resources that have been documented. Most early houses were small, and may have been intended to be temporary dwellings that would be enlarged or replaced as the settlers became more prosperous. Within the Preserve, however, the settlers, for whatever reasons, did not expand their farmsteads. By 1876, land prices in the county ranged from \$1.50 to \$8 an acre, when the settlers, who had located within what is now the Preserve, found outside buyers for their land.⁷⁶

The characteristics of the pioneer farmsteads that Stephen Jones and Barney Lantry later purchased reveal something about the kinds of areas that were claimed or purchased by the first settlers. All of the initial purchases were parcels where water was accessible year-round; they filled out their holdings later with less desirable parcels.⁷⁷ It appears that early settlers, like their American Indian antecedents, chose habitation sites that were near spring heads and creeks so that they could control water sources. Many were associated with desirable sheltered bottomland locations where farmsteads could be developed.

Since Chase County had no herd law, early settlers would have needed to fence their crops to protect them from free range cattle. It is likely that Jones and Lantry extended any fencing systems that were located on land they purchased; both are known to have maintained extensive fencing systems to keep roaming livestock off their property. Fencing to keep livestock out was an effective way not only to protect crops from destruction, grassland for one's own livestock, and fenced livestock from disease, it also helped to squeeze small farmers out of the ranching business. Farmers with no place to graze were more likely to sell parcels for consolidation into the new ranches as upland grazing areas became increasingly scarce. Ultimately, fencing led to enclosure and the loss of free range.

The most readily identifiable historic farmstead is that known as the Red House site, located in Township 19, Section 6 (14CS111).⁷⁸ It was most likely the farmstead of John W. Griffis; the ruins of a possible house site may be located in either lot 20 or lot 27 of the section. Griffis, who acquired six lots in two adjacent sections from the AT&SF and the Missouri, Kansas & Texas Railroads, assembled his land between 1879 and 1886.⁷⁹ Lying in the southwestern corner of the Preserve on both sides of a small, unnamed, south-flowing stream, the site possesses unmistakable evidence of development, possibly from the early settlement period. The site would have been considered a desirable, if isolated, location for a farmstead. There would have been pleasant views, but more importantly, the characteristics essential for a successful farmstead were present. On the western side of a stream, a spring flowed from the base of an east-facing

⁷⁶ State Board of Agriculture, *Fifth Annual Report*, 125. Settlers in the Preserve sold their pioneer farmsteads to Stephen Jones and Barney Lantry, two wealthy individuals who moved to Chase County in the late 1870s and developed large ranches. The pioneer farms were consolidated into Jones and Lantry's large late 19th-century cattle ranching operations, which would come define the character of the land.

⁷⁷ Julia Hobbs relates that the property Jones had owned in Colorado prior to moving to Kansas had constant, year-round water sources (telephone discussion with Genevieve P. Keller, December 1999).

⁷⁸ Jones, *Archeological Overview*, 42. The derivation of the name Red House has not been determined.

⁷⁹ Hobbs, telephone discussion with Keller, December 1999.

hillside. The hillside provided a sheltering bank for construction of a house and possibly a barn that would have been safe from flooding when the stream overflowed its banks. The spring and the stream provided an essential water supply for both humans and livestock. There were level bottomlands for cultivation, including relatively wide floodplains that had good soils with little stone, supporting cultivation and hay fields. These water sources guaranteed the farmstead's fertile bottomlands would be well-watered and suitable for cultivation. There would have been native vegetation to use as firewood and for construction. Nearby, limestone outcrops provided building stone for structures and walls.

There is a limestone structure, possibly the remains of a two-room house, on the site. Glass fragments found on the site indicate an 1870–1880 occupation date. Although in ruins, the structure is a rare example of standing architecture, outside of the Z Bar/Spring Hill Ranch headquarters, Deer Park Place, and the Fox Creek School House, within the Preserve today. A second limestone foundation on the site, located along the bottomland east of the stream corridor, the previously described structure, and the spring, may have been associated with the remains of a barn on the hillside west of the stream and north of the spring. A long, dry-laid limestone wall extends south down the western edge of a terrace along the eastern side of the stream, and may have been constructed to protect a cultivated area.⁸⁰

Another site located 0.6 miles due north of the Lower Fox Creek School (14CS107) may also have been developed during the early settlement period. A 1910 county map indicates a house owned by J.H. Cunningham in approximately that location; Stephen Jones later acquired a parcel in this location of a size that is consistent with the extant stone wall configuration. The fence may thus date from the early settlement period. The limestone footings at the site suggest the foundation of a small house. However, there is not enough evidence to confirm the site as a historic farmstead at this time. It is also possible that this site may have been a prehistoric occupation site. If a farmstead once occupied this site, it was razed and most of the building materials were apparently taken from the site.⁸¹ Surviving evidence also suggests that a small barn, a privy, a corncrib, and a cistern may have been associated with the site.⁸² Remnants of what may have been a stone-lined walkway extend east from the foundation to what was probably an old section road. Archeologists also have located another small, stone-lined depression east of the access road a short distance northeast of the probable house and barn site. Fragments of Portland cement, likely to postdate 1910, also have been found, suggesting that the site could have remained in use into the 20th century.

The James O'Dell Farm in the northwest portion of Section 18, Township 18, has also been identified as an archeological site. O'Dell, who registered a brand in 1871, owned eighty-three acres and raised sheep on his land ca. 1875.⁸³ Archeologists have identified a shallow depression and a complex of dry-laid limestone walls. Since a large limestone outcrop overlooking Palmer Creek dominates the site, it is likely there was at least a rudimentary stone wall present during

⁸⁰ Jones, *Archeological Overview*, 42.

⁸¹ Jones, *Archeological Overview*, 39.

⁸² Jones, *Archeological Overview*, 39.

⁸³ Kansas Agricultural Census (1875). The brand was "N," which was the brand Stephen Jones used first in Colorado and later in Chase County.

the early settlement period. Jones, who is known to have developed stone fences following his purchase of the property in 1879, in all likelihood extended this system.⁸⁴

The layout of these agricultural complexes is not known; future archeological and cultural landscape field investigations may reveal more information.

Circulation

According to *Chase County Sketches*, “most of the first white settlers followed Indian trails across Kansas.” The Kaw Trail was the thoroughfare many early settlers followed into Chase County.⁸⁵ It is likely that at first the early settlers used the existing Indian trails and then developed roads that were similar in character to the Indian trails but were related to their agricultural activities and their commercial and social interaction with other settlers (*see figures 4 and 5*). The government land survey identified one two-track road fragment that linked portions of Townships 18 and 19, but neither the maps nor the survey reports identified the road by name or usage.

Within the clusters, there would have been worn paths between structures and related land uses. It is also likely that “cow paths” would have been worn on the land, primarily along ridges and ridge tops. Two-track wagon roads would have developed to facilitate interaction between neighbors and to provide access to the commercial centers and communities that were developing in Strong City and Cottonwood Falls. Some of these roads would have required stream crossings or fords, perhaps near the same locations where Preserve vehicles continue to ford streams today. Some current fords are marked with stones to facilitate and define the crossing; perhaps this same convention was used by early settlers. Crossings generally would have become fairly well established, with settlers fording the creeks and streams regularly at the places generally acknowledged to be naturally good crossing points. The need for bridges was addressed in news articles of the time that reported buggy upsets in creeks and streams.⁸⁶

Horse trails into the prairie and between farmsteads also likely existed within the area. It is likely that some of the existing trails and two-track roads within the Preserve originated during this period. As additional information becomes available through the research of NPS, NPT, and volunteers concerning the history of the early settlement period, it may be possible to trace the relationships of existing roads and early farmsteads.

Boundary Demarcations and Enclosures

It is not known when the first fences were constructed in the county but it can be assumed that the early settlers erected rudimentary fences and walls. NPS anthropologist Michael Evans has related that American Indians, accustomed to traveling a free and open prairie, resented the

⁸⁴ Jones, *Archeological Overview*, 41. The remains of a privy may also survive on this site, but no specific dates of construction have been suggested. A former associate of Davis remembered seeing a depression in this location when riding in this area when he was ranch manager (1947–1987). He recalled that the site looked as though it had been abandoned for a long time at that point. *The Chase County Leader* for October 29, 1879 reports that Jones was having 2.5 miles of fence built in this area shortly following his purchase.

⁸⁵ Chase County Historical Society, *Sketches*, 49.

⁸⁶ Julia Hobbs has seen news articles but will need to review sources again to identify them specifically (telephone discussion with Genevieve P. Keller, December 1999).

settlers beginning to enclose their land. In some cases, they destroyed the fences, although no instances of this are documented within the Preserve.⁸⁷ *The Fifth Annual Report of the State Board of Agriculture* for 1876 mentioned fence construction in the county; the report for the previous year had related that the herd law was not enforced in Chase County, indicating the need for early settlers to fence at least their cropped areas.⁸⁸ Some settlers made fencing a priority to keep unwanted livestock off their property. J.H. Scribner, for example, had enclosed 125 acres by 1865.⁸⁹ Since his land along Fox Creek would have had timber, these early fences may have been wooden. Many settlers would have had livestock at free range, but the limited small holdings of most early settlers might have made putting up with intruding livestock an annoyance worth tolerating until there was time to devote to fence building. The large amount of acreage maintained by absentee owners, including the railroad and unclaimed, unsettled, or unimproved government land in the Flint Hills would have benefited the small landowners and squatters who could have used the large open pastures without having to purchase them. In fact, a Cottonwood Falls newspaper, the *Chase County Leader*, enticed new settlers to the area by suggesting that the Flint Hills “will always be open to the stock-raiser without cost.”⁹⁰

Early settlers within the Preserve probably developed rudimentary walls or fences to define or protect portions of their property and some may have enclosed their livestock.⁹¹ There is some indication that settlers may have established living fences. The remnant row of Osage orange in Sections 9 and 10 of Township 19 appears to indicate that these features were at least started, possibly in response to state-financed bounties offered for the planting of Osage orange hedgerows in the late 1860s.⁹² Full enclosure, however, would not be accomplished until the period of large-scale ranching that began in the late 1870s. There may have been corrals for livestock on some farmsteads. It is likely that some of these walls and fences survived the period and may have provided the basis for the extensive stone fencing that occurred in the subsequent ranching period. Barbed wire was in use in Kansas by this period but none was in use in the Preserve before 1875.⁹³

Vegetation

Vegetation was associated with success and survival in the newly developed farmsteads of the early settlement period. Timber provided wood for construction, tool-making, carpentry, and fuel. Timber also occupied land that would support agriculture and indicated a good farmstead site. Areas of the Preserve such as those portions of Sections 18 and 19 of Township 18 that possessed timber were claimed early. The 1856 survey report for those sections indicates the presence of stands of walnut and sycamore, a scattering of cottonwood, and hickory growing on the “first-rate soil” and rolling land.⁹⁴

⁸⁷ Message from Michael J. Evans at NPS-MISS to Dena Sanford at NPS-MWRO, November 4, 1997.

⁸⁸ State Board of Agriculture, *Fourth Annual Report of the State Board of Agriculture to the Legislature of the State of Kansas, for the Year Ending November 30, 1875* (Topeka: George W. Martin Public Printer, 1875), 218.

⁸⁹ *Kansas State Agricultural Census* (1865)

⁹⁰ *Chase County Leader* (Cottonwood Falls: June 7, 1872)

⁹¹ According to Julia Hobbs, no properties were reported as completely fenced in the 1865 census, but 90 percent of the properties were enclosed with wood rail and board fences in 1875.

⁹² Alvin Peters, “Posts and Pilings, Posts and Planks” *Kansas History* 12 (1989–1990), 222–231; and Joel Yoder, “Osage Orange Hedgerows in Kansas,” (n.p.: Dyck Arboretum of the Plains, Hesston College, March 21, 1995.)

⁹³ *Kansas State Agricultural Census* (1875). No properties within the Preserve reported wire fences in 1875.

⁹⁴ Cathcart, *Field Notes*.

Like the American Indians before them, early Euro-American pioneers probably used a variety of native plant species for food and medicinal uses. Purple coneflower, for example, had been widely used by American Indians and was used by settlers, eventually finding its way into patent medicines. Sunflowers and other native plants were collected for food. Grasses were used for fodder for livestock. In general, however, use of native plants declined during the settlement period, as newly arrived Euro-Americans did not understand the beneficial properties of the unfamiliar prairie plants. Instead, settlers would have brought with them familiar, useful plant species from other regions and possibly from other countries.

As in the prehistoric period, native grasses continued to be the predominant vegetation within the Preserve lands during the early settlement period. Inevitably, there were naturally occurring lightning-ignited prairie fires from time to time, and settlers were known to have intentionally burned some portions of the prairie to regenerate grasses. Accidental fires (such as from sparks from passing locomotives) and arson fires were also not uncommon. *The Fifth Annual Report of the State Board of Agriculture to the Legislature of the State of Kansas for the Year Ending November 30, 1876* provides the best available description of the county near the end of the early settlement period. It described the average timber belt along streams in the county as measuring about “three-eighths of a mile.” The report also identified native trees associated with these timber belts as walnut, bur oak, hackberry, hickory, sycamore, and cottonwood.

The early settlers grazed their livestock on the readily accessible prairie grasses and began to plow the prairie as they developed their small farmsteads. The most successful cultivation occurred along the creeks in the fertile bottomlands. By necessity, the pioneer settlers would have grown corn and other grains, and developed vegetable gardens. Crops reported in Falls Township for 1875 included winter wheat, rye, spring wheat, corn, barley, and oats. There were only 3,263 cultivated acres in the entire township that year, and approximately one-half of that acreage was planted in wheat. Some early settlers may have attempted to raise ornamental plantings, but it is unlikely that many could have afforded the time or money necessary to pursue planting purely for pleasure. It is likely that neither vegetable gardens nor ornamental plantings were very successful given the conditions of drought and insect infestations that confronted early settlers. It is more likely that they grew to appreciate the beauty of the native prairie flowers that bloomed in the late spring and early summer.

Although the grasshopper infestations that plagued most of Kansas in 1874 are still legendary, apparently they were not as severe in Chase County as in some other areas of Kansas. The county reported to *The Fourth Annual Report of the State Board of Agriculture to the Legislature of the State of Kansas for the Year Ending November 30, 1874* that the grasshoppers appeared first in August. This timing likely spared the county from complete agricultural devastation since there was not much damage to early corn. The late corn, however, was “entirely devastated” and the county’s fruit trees were “generally stripped.” According to this official report, and to local news accounts, about half of the county’s peach crop and all its garden products were destroyed by the grasshoppers of 1874. Cherries and plums did not fare as badly.⁹⁵ Although the county reported a surplus of winter wheat for 1874, it also noted a surplus derived from the bottoms, but little in “the uplands where the new farms” were located. The report noted that the “poorer classes on the uplands will find it difficult to obtain wheat for seed.” W.S. Romigh, the secretary

⁹⁵ *Chase Courant* (Cottonwood Falls: November 27, 1874).

for the Chase County Agricultural Society, noted that many people who lacked feed were giving their horses “choice fall wheat.” He noted that garden vegetables were “scarce.” In addition, the report noted that there would not be enough potatoes for “home consumption.”⁹⁶

Reminiscences from long-term area resident Wallace Wood provide some indication of the lasting legacy of the grasshoppers. Wallace Wood related to his granddaughter that “The old settlers said that there was no use to try to raise corn here. A few early vegetables were all the garden they thought worthwhile to try. About all they had in the fruit line were a few seedling peach trees, which the earliest settlers had planted and the wild grapes and plums, which were eagerly sought after.”⁹⁷ Many settlers depended on purchasing or bartering for groceries from area merchants. In his history—*Kansas: Land of Contrasts*—Robert W. Richmond described the severity of the grasshoppers, which in some cases were so dense that they could block the sun from view. In addition to crops, the grasshoppers would eat clothing and the soft wooden handles of tools and utensils. They also caused considerable agony to the settlers’ livestock.⁹⁸

The 1875 annual report of State Board of Agriculture reported that “Grasshoppers passed over this place … A few alighting. But doing no apparent damage …”⁹⁹ The next year’s report related that Chase County suffered from the invasion of Rocky Mountain locusts that plagued Kansas in 1876. The report, which was presented in November, noted that the insects had invaded Chase County in September. Perhaps the vegetative damage and the resulting economic hardships influenced the early settlers who subsequently gave up their newly established claims or actual farmsteads to the railroad companies or other new owners.

It is likely that the settlers of the Preserve area would have grown many of the types of agricultural crops listed as produced within the county for 1876. These crops included winter wheat, rye, spring wheat, corn, barley, oats, buckwheat, Irish potatoes, sweet potatoes, sorghum, flax, tobacco, broom corn, millet, Timothy meadow, clover meadow, and prairie meadow. The amount of rye produced was reported as an increase from earlier years while winter wheat, spring wheat, corn, and oat production had decreased. This decline in grain production may have been related to the invasion of locusts in 1876. The report also listed orchards, nurseries, and vineyards as having been established in the county. At least some of the settlers within the present Preserve boundaries may have begun to develop orchards and perhaps vineyards during the early settlement period, including the probable orchard depicted in figure 12.

A chart listing plants identified at Tallgrass Prairie National Preserve that may have ethnographic value has been developed by NPS anthropologist Michael Evans, consultant to the GMP. The chart lists the scientific and common names, cultural affiliations, and uses of plants identified. It can be assumed that many of these species, plus others that have been lost, would have been present during this early settlement period.

⁹⁶ State Board of Agriculture, *The Third Annual Report to the Legislature of the State of Kansas for the year ending November 30, 1875* (Topeka: Geo. W. Martin, Public Printer, 1875), 19.

⁹⁷ Wood, unpublished manuscript.

⁹⁸ Richmond, *Land of Contrasts*, 144.

⁹⁹ State Board of Agriculture, *Fourth Annual Report*.

Nineteenth-Century Ranching (1877–1906)

(See figures 7 through 18)

The Flint Hills landscape, including the present Preserve, was much better suited to the development of large-scale ranching than it was to small, independent pioneer farmsteads. Since the advent of rangeland cattle on the Great Plains, the Flint Hills have been used almost exclusively as pasturage for two reasons: limestone soil fosters the growth of nutrient-rich and verdant grasses; and chert nodules in the soil make plowing difficult. This, in combination with the region's steep slopes, made it difficult to produce more than a subsistence-level cash crop on a small parcel. Livestock operations large enough to be profitable required not only substantial capital for the initial investment but also many acres to sustain forage and pasture needs. Reliable railroad connections for transporting livestock and grain to and from markets and prospering young towns with new financial opportunities provided new residents with lucrative prospects in both ranching and business. These characteristics made the area attractive to a new wave of investors. According to historian Robert W. Richmond, Chase County was one of the areas of Kansas that attracted “outside capitalists” to invest in ranches.¹⁰⁰ These investors had already made their first fortune elsewhere, and were willing to move to a Kansas that was more accessible, settled, and secure than the territory had been.

The two 19th-century ranchers who would have the most influence on the land within Preserve boundaries both moved to Chase County in the late 1870s. Barney Lantry came to the county in 1877, Stephen Jones a year later in 1878. The rich limestone deposits of Chase County and its Strong City connection with the AT&SF Railroad provided the basis for Lantry to establish a substantial quarrying and construction business on his land. Lantry quickly became a major employer of local residents through his quarries.¹⁰¹ Over time, he diversified his investments and expanded his ranch holdings. Jones made his move to Kansas in concert with his brothers, who were his business partners. Jones left Colorado for Kansas to establish a feeding station for the cattle interests he had developed with his brothers.¹⁰² The Jones family typified entrepreneurial Americans relocating to take advantage of land investment opportunities. The Jones family had originally settled in New England in the 17th century. Members of the family moved south to Virginia before the 18th century. Descendants relocated southwest to Tennessee and Texas as those areas opened up, and continued west to Colorado, before heading back east to Kansas in the late 1870s.

The Jones brothers understood the lucrative investment opportunities in a new community with abundant grassland, and which, thanks to the railroad, was now accessible for markets and supplies; these factors eliminated the need for overland cattle drives. As they surmised, the region would soon become the “largest commercial grazing area for transient cattle in the United States.”¹⁰³

¹⁰⁰ Richmond, *Land of Contrasts*, 136.

¹⁰¹ Julia Hobbs has news articles from the *Strong City Independent*, January 1, 1884 and the *Chase County Republican*, December 3, 1887 that document Lantry’s reputation and success in the quarrying and construction business. Ranching became a supplementary source of income and investment.

¹⁰² Hobbs (telephone discussion with Genevieve P. Keller, December 1999).

¹⁰³ Walter Kollmorgen and David S. Simonett, “Grazing Operations in the Flint Hills-Bluestem Pastures of Chase County, Kansas,” *Annals of the Association of American Geographers* 55 (June 1965), 262.

Both Lantry and Jones established ranches that would mark the end of the pioneer era and the initiation of a new era of large-scale livestock ranching. An 1881 newspaper article, “The Independent Man Goes Up Fox Creek, and Comes Home Delighted With What He Saw,” reflects the changing landscape of the 1880s. The article describes not only the properties of Lantry, Jones, and several of their neighbors but also the Chase County landscape in the Strong City vicinity as well. It reveals the transition of this landscape from one of small independent farmsteads to large consolidated ranches.

The article provides a composite view of the landscape by describing a number of its features. These included the “thrifty young orchard” of the Nehrbass place; “the fine orchard, a splendid grapery, and a small, but neat and well arranged farm” owned by C.A. Capwell; the “old log cabin” of the widow Smith which, with its “proper cultivation and the right kind of improvements could be made exceedingly valuable;” the stone dwelling and “fine looking orchard” formerly the home of John Wesley Harris, who had moved to California after selling his farm to Barney Lantry; the first fall wheat at the McClure place; a “constant succession of good farms” with houses and outbuildings that were a “sad contrast with the well cultivated and fine looking fields;” the “picturesque” residence of frontiersman rancher and Sheriff F.E. Smith with its “genuine Kansas stable” and board fence; and Daugherty’s own “neat, stone structure.” These pioneer farmsteads appear to be the logical result of the early settlement period. Most, if not all, of the farms mentioned above would eventually be acquired by Jones and Lantry. The puzzling aspect of the newspaper account, however, is the lack of substantial correlation between these names and those identified through research for ownership or claims in this vicinity.¹⁰⁴

By contrast, the properties of Lantry and Jones demonstrated change in the Chase County landscape. Both men expanded their holdings by purchasing neighboring farms. The Lantry property was described as the “boss” farm with its residence “nestling as it does amid a profusion of green foliage.” It was further described as the home of a “solid man.” The article continues on to describe Lantry’s stone walls that symbolized the end of the free-range era and the coming of enclosure. The stone walls were described as protecting the property from the “ravages of the stray herds.” Apparently the Spring Hill Ranch headquarters that would be developed by Jones was still under construction, but his new Second Empire style house was described as “the palatial residence of the wealthiest man in the county.”¹⁰⁵

This Flint Hills landscape is evocative of the landscape envisioned in the *1874 Fourth Annual Report of the State Board of Agriculture*. In the report, Daniel Wilder wrote that the settlers of Kansas coming from every state and every European power were transforming the “hunting ground of the savage into the home of the civilized and contented European.”¹⁰⁶ To the author, this transformation was the unfolding of a drama exhibiting “the heart and power of the American nation.” By the late 1870s and early 1880s, a major player in the drama was the stock rancher attracted by the potential for a booming cattle business in the Flint Hills of Kansas.

¹⁰⁴ “The Independent Man Goes Up Fox Creek, And Comes Home Delighted With What He Saw,” *Strong City Independent*, (October 15, 1881). The Nehrbess farm was in the SW 1/4, Sec 9, T 19, R8 bought by Lantry on September 12, 1882. The Harris farm was in NW 1/4, Sec 9, T19, R8 that Lantry purchased on March 30, 1881. The F.E. Smith farm was in NE 1/4, S 1/2 NW 1/4, N 1/2 N 1/2 SW 1/4, Sec 5, T19, R8.

¹⁰⁵ “Independent Man,” *Strong City Independent*. Jones would not have been the wealthiest man in the county. Nineteenth-century publications often embellished their terminology to flatter the subject, pique the interest of their readers, or both.

¹⁰⁶ State Board of Agriculture, *Fourth Annual Report*, 59.

Quarantines on Texas cattle, which may have been carrying the extremely contagious and fatal “Texas fever” as well as hoof-and-mouth disease, created an impetus for cattle to be fattened and shipped from Kansas, especially with its increasing access to rail transportation in localities such as Strong City. Strong City was on the route that Stephen Jones would have taken while accompanying cattle from his former ranching home in Bent County, Colorado, to Kansas City. Jones was the member of his family who traveled as stockman with the cattle to tend to them en route and oversee their transfer to the stockyards. Such trips from Colorado to Kansas City, with stops in Strong City, would have made him familiar with the Flint Hills and its potential for his family’s ranching and cattle operations.

Stephen F. Jones and Spring Hill Ranch

Although Stephen F. Jones lived in the Spring Hill mansion for less than five years, he was instrumental in masterminding the basic landscape organization and uses that still characterize the Spring Hill portion of the Preserve today. In assembling his ranch, he set about acquiring land deliberately, choosing first the most desirable and possibly best developed parcels in the vicinity. He spent nearly ten years in this endeavor, purchasing his first parcel in August 1878 and selling his total holdings to Barney Lantry in February 1888.

In 1878, Stephen F. Jones bought his first 160 acres in Chase County from John C. and Jamima Rocker and William M. Langston for \$2,000.¹⁰⁷ This site had first been developed as a homestead by John H. and Elizabeth Scribner, and consisted mostly of desirable bottomland along Fox Creek. After that, Jones continued to add to his acreage, buying land adjacent to his holdings as possible until he amassed a total of 7,000 acres. The parcels he assembled included 2,855 acres in five parcels that he purchased from the AT&SF Railroad, 360 acres in four parcels from the Kansas, Missouri & Texas Railroad, and three dozen other parcels from individuals. He named the assembled property Spring Hill Ranch (*see figure 9*). The name “Spring Hill” is believed to be derived from the presence of a number of springs flowing from the hillside where his house was sited. His acquisitions ranged in parcel size from 40 acres to more than 1,000 acres.¹⁰⁸ Each year, he enclosed his newly acquired lands in stone fencing.

Jones, born in Tennessee, married Louisa Margaret Barber in Tallapoosa County, Alabama, in November 1849. Following their marriage, Stephen and Louisa Jones remained in Alabama for a short time before moving to west Texas where they lived for eighteen years. In Alabama, Jones had worked on a cotton plantation, but it was in Texas that Jones made the transition to stock farming and ranching. Along with his brothers—Peyton, or ‘Pate,’ and James, or ‘Jim’—Jones moved his stock and ranch operation in 1869 to Bent County, Colorado Territory where the three purchased a large property. Jim Jones drove the family cattle in two or three drives from Texas to Colorado between 1869 and 1871. According to the *History of Kansas*, Stephen Jones was “very successful in his business enterprises, amassing a large property.” In 1878, when Stephen Jones sold his Colorado interests to Pate for \$125,000, he owned 600 acres of land, 8,000 head of cattle, and 250 horses. At the time of the move, he also bought a farm and livestock in Morris County, Kansas, from his brother Jim. When Stephen Jones arrived in Chase County, he would

¹⁰⁷ Snell, “A Brief History of the Z Bar,” 3.

¹⁰⁸ Hobbs (telephone interview with Julia Hobbs by Genevieve P. Keller, n.d.).

have had about \$100,000 to establish a ranching operation. Jones duplicated his Colorado success in Chase County, assembling a large ranch in a relatively short time.¹⁰⁹

According to an 1885 *Chase County Leader* article, Jones lived in the county for almost a year before determining that it would be a good place to establish a cattle ranch. Once that decision was made, he and his brothers sold their Colorado ranch to the Prairie Cattle Company for \$625,000. Pate Jones had already moved to Kansas and was in residence in Council Grove at the time of the sale. *The Leader* described him as a “capitalist.”¹¹⁰

It is not clear exactly how many head of cattle Jones shipped to Chase County from Colorado. There are conflicting news accounts but in August 1878, at least 1,000 cattle were unloaded from railroad cars at Cottonwood Station and were driven to the Spring Hill Ranch to graze its rich pastures.¹¹¹ Additional cattle were driven overland from Cottonwood Station to the Council Grove vicinity where Jim and Pate Jones established a ranch together. The *Chase County Courant* reported that the cattle unloaded in Cottonwood Station were “the first installment of 10,000 that are to be brought to Chase County from Colorado.”¹¹² As they continued to bring in cattle from Colorado, Stephen Jones also purchased local cattle to increase his herd.¹¹³ News articles throughout the 1880s mention Jones shipping livestock to Chicago, Kansas City, and other markets. According to the local press, Jones also continued to travel to Colorado to replenish his stock throughout the 1880s.¹¹⁴

Jones likely followed the usual stock raising practices of the period, keeping cattle through the winter. Newspapers of the 1880s report cattle shipments during winter months and relate accounts of prominent county stockmen feeding cattle over the winter. Jones, for example, had 400 head of cattle that he carried over for the winter of 1881–82. The *Chase County Leader* listed fifty stockmen who had fully fed cattle during the winter of 1884–85.¹¹⁵

Initially called “the cattle man from Colorado,” the wealthy Jones immediately became a prominent member of the Strong City business community.¹¹⁶ With Edward A. Hildebrand, he founded the Strong City Bank in 1882. Jones and Hildebrand were the first president and cashier respectively. The \$50,000 in initial capital would have come from Stephen Jones and his silent partner, his brother Pate.¹¹⁷ When the bank received its charter as a national bank in July 1883,

¹⁰⁹ Chase County Historical Society, *Sketches*, 1361; Hobbs (telephone discussion with Keller, December 1999).

¹¹⁰ *Chase County Leader*, “S.F. Jones’ Cattle Ranch,” (June 11, 1885). Copy of reprint provided by Julia and Edward Hobbs.

¹¹¹ Snell, “A Brief History of the Z Bar,” 3. Julia Hobbs also believes that 1000 head is the correct number based on her research of several news accounts.

¹¹² *Chase County Courant* (August 23, 1878). According to Julia Hobbs, the May 1879 news account implies that that the cattle brought to Chase County were steers. The newspaper states that Jones had sold 500 steers, and had 300 steers at pasture. An August 9, 1878 newspaper from Las Animas, Colorado reported that the Jones brothers were taking 1,859 beef steers to Council Grove, Kansas. That would place 859 beef steers (exclusive of any loss) on the Morris County ranch which Stephen Jones had purchased.

¹¹³ Snell, “A Brief History of the Z Bar,” 4.

¹¹⁴ *Strong City Independent* (Strong City: October 30, 1885). Copy provided by Julia and Edward Hobbs. Although there are references to cattle shipping both in and out of Strong City, the *Chase County Leader* did not report much in the way of cattle shipments. Julia Hobbs relates that the Las Animas, Colorado newspaper coverage would be superior, but is not available on microfilm for the period 1879–1898. She reports that she is continuing to search for other sources that report cattle shipments (telephone discussion with Keller, December 1999).

¹¹⁵ The newspaper research of Julia and Edward Hobbs documents this pattern (telephone discussion of Genevieve P. Keller with Julia Hobbs, December 1999).

¹¹⁶ Snell, “A Brief History of the Z Bar,” 3.

¹¹⁷ J.W. Lewis, “Historical Statement of Strong City State Bank, Strong City, Kansas,” *Sketches*, 1949; Hobbs, research notes.

Jones remained president, Barney Lantry was vice-president, and Hildebrand remained the cashier. Jones was also a partner in lumber and hardware businesses and in a meat shop in Strong City with butcher W. R. Hoffman. In 1882, he bought an interest in the lumber and hardware business of his Strong City Bank partner Edward A. and George O. Hildebrand; the business was renamed Hildebrand Brothers & Jones.¹¹⁸ Jones had other business interests in Chase County and was recognized as one of its most "solid men."¹¹⁹ Although he was one of the wealthiest men in Chase County, Jones was probably surpassed by J.R. Blackshere of the Clover Cliff Ranch (located eight miles west of Spring Hill Ranch), N.J. Swayze, a private banker, D.B. Berry, a stockman with other large cattle operations in Montana, Colorado, and Texas, and his neighbor Barney Lantry, a quarryman and railroad contractor.¹²⁰

The headquarters site that Jones selected for his ranch was located approximately three miles north of Strong City. This location made it accessible to both Strong City and Cottonwood Falls, the county seat. The two communities were about a mile distant from each other and separated by the Cottonwood River. Although both communities were growing, Chase County remained sparsely populated; in 1880, there were on average eight residents per square mile.¹²¹ The consolidation of land by wealthy individuals such as Jones kept population growth low. Unlike pioneer settlers turned ranchers, Jones could afford to develop his ranch all at once as a showplace with an elaborate ranch headquarters (*see figures 12 and 13*). By September 1878, the first Jones residence, a frame house, was under construction.¹²²

By 1883, Spring Hill was being described as "the best improved ranch" in Kansas, with all of its land "enclosed with stone fence."¹²³ According to the 1883 account, the livestock herd at the ranch was comprised principally of thoroughbred Hereford, Galloway, and Durham cattle stock. Herefords, apparently, were the preferred stock of the Flint Hills range and became dominant in the area.¹²⁴ Jones also kept Berkshire cattle and hogs of the Poland China breed, as well as horses and sheep.¹²⁵ A newspaper business notice for 1885 reported Jones and his meat shop partner, W.R. Hoffman, owning between 300 and 400 hogs in 1885.¹²⁶ The estimated value of the ranch in 1885 was \$150,000. The 1885 Kansas census provided detailed information about the livestock kept on the ranch: 450 cattle, 200 swine, 30 horses, 4 mules, and 8 dairy cows.¹²⁷ About 300 acres of the Spring Hill Ranch were under cultivation. Jones rented some of his land to others beginning in 1882; an 1884 news account related that he had rented one of his farms "at the head of the creek." The rented pasture in 1882 was large: 5,000 acres were leased to an agent of the AT&SF Railroad for a summer for a fee of \$1,000.¹²⁸

¹¹⁸ Snell, "A Brief History of the Z Bar," 5.

¹¹⁹ Andreas-Cutler, *History of the State of Kansas*, 130.

¹²⁰ Julia Hobbs discredits the oft-repeated statement that Jones was the second wealthiest man in the county and believes that these individuals would have had more personal wealth than Jones.

¹²¹ Snell, "A Brief History of the Z Bar," 2.

¹²² Snell, "A Brief History of the Z Bar," 3.

¹²³ E.C. Tewksbury, *The Kansas Picture Book* (1883); *Strong City Independent* (December 10, 1885). It was not unusual for several properties to be described as the "best" in this period or type of "booster" publication. Despite this disclaimer, the ranch was certainly one of the most improved in the state.

¹²⁴ James Malin, "An Introduction to the History of the Bluestem-Pasture Region of Kansas" *The Kansas Historical Quarterly* 21 (No. 1, February 1942): 12.

¹²⁵ Snell, "A Brief History of the Z Bar," 5; Snell quotes from Andreas-Cutler.

¹²⁶ *Strong City Independent* (December, 10, 1885).

¹²⁷ Snell, "A Brief History of the Z Bar," 5; *Kansas State Census, 1885, Schedule 2*.

¹²⁸ *Chase County Leader* (August 24, 1882); *Strong City Independent* (February 15, 1884). Copies provided by Julia and Edward Hobbs.

At least some of the horses at Spring Hill were thoroughbreds. A newspaper notice from 1886 relates that “two carloads of the finest horses in the State” had been brought to Spring Hill by his brother Jim Jones.¹²⁹ In May 1887, the *Strong City Independent* reported that Stephen Jones had “brought in a fine blooded trotting horse from Kansas City” and that he had several horses “in training.”¹³⁰

Jones typifies the establishment of successful stock ranching in the Flint Hills. He had other diversified business interests related to his stock ranch, including, as noted earlier, banking and sales of meat, hardware, and lumber. Enclosing the formerly open rangeland, selectively breeding cattle, and initiating seasonal grazing herds were all practices that distinguished Jones and other successful 19th-century ranchers from their pioneer counterparts. These new ranchers effectively shut out any small landholders from continuing or entering the profitable cattle business by eliminating access to the free range that earlier settlers had enjoyed. Once large-scale land and pasture fencing had begun, owners of relatively small parcels (in the hundreds, not thousands of acres) had little economic choice but to sell their farms to owners of larger ranches.

J.C. Hildebrand, a business associate, described Jones as “buying up all the land he could handle” in 1885. Hildebrand recounted the process of Jones starting with a “small piece of bottom land to which he added adjoining farms and railroad lands.”¹³¹ Jones and Lantry exchanged land, probably to “square up” or “even out their holdings.” It appears that Jones acquired his land as systematically as possible, acquiring parcels of land that would give him title to complete sections of the grid.¹³² Hildebrand further described Jones as a “land monopolist.”¹³³ A contemporary account related that the people of Chase County were “glad he [Jones] is here” since most of the thousands of dollars he spent on Spring Hill were paid to employ “comparatively poor men” instead of to “wealthy syndicates.”¹³⁴ The families of construction workers remembered many years later when the *Chase County Sketches* were compiled that stone fence building at Spring Hill was credited with “furnishing labor to a number of people who needed the work.”¹³⁵

Stephen and Louisa Jones were undoubtedly among the most prominent people of Chase County, but there are no known accounts of the Spring Hill house hosting lavish or even regular entertaining.¹³⁶ Unlike the Lantrys, who were very sociable, the Jones family is not believed to have had the social life that their prominence in business and their impressive residence would imply. Since the local papers reported the family’s trips to Texas, Colorado, and Kansas City, it is likely that social events would have been covered had there been any. Spring Hill, regardless of whether it was the scene of lavish entertaining or not, was a very visible landmark, sometimes confused with the county courthouse. Its imposing hillside location, the fine workmanship of its

¹²⁹ *Strong City Independent* (October 23, 1886). Copy provided by Julia and Edward Hobbs.

¹³⁰ *Strong City Independent* (May 20, 1887). Copy provided by Julia and Edward Hobbs. Julia Hobbs has since stated that she has found no evidence of Jones entering any horses in trotting or running races, popular sports in the 1880s.

¹³¹ J.C. Hildebrand, *Kansas City Live Stock* (1885). Copy provided by NPS.

¹³² Hobbs (telephone interview, February 1999).

¹³³ Snell, “A Brief History of the Z Bar,” 8.

¹³⁴ Hildebrand, *Kansas City Live Stock Record*.

¹³⁵ Chase County Historical Society, *Sketches*, 136.

¹³⁶ A 1984 article by Charles Hall, AIA has been quoted for its account of the parties held at Spring Hill and its description of the invited guests as the “cream” of 1880 society. Julia Hobbs, however, disagrees; her extensive research into local newspapers, both in Chase County and in other places where the Jones family lived has identified no accounts of entertaining by Stephen and Louisa Jones. She believes that their entertaining was family-oriented.

white limestone construction, the verticality of its fashionable Second Empire architectural design, and the handsome collection of stylistically similar auxiliary buildings made it a county showplace.

In 1882, Stephen and Louisa Jones donated land for a school for the primary grades to Chase County School District 14. A local paper reported that a stone school house would be built at a cost of \$1,000. The small limestone school house was built north of the Spring Hill house and opposite the Daugherty farm. The construction of the new school house followed completion of the Spring Hill house, was finished in August 1882, and it was fitted with desks in December of that year. Classes were not held there until October of 1883 due to delays in hiring a teacher. In the interim, it was used as the Sabbath School; at one point, Jones served as its superintendent. It replaced an earlier school that had been built on the Daugherty property on the eastern side of Fox Creek. Stephen Jones' seven-year-old daughter would have attended that school when the family first moved to Chase County; she attended the new school for just two years before attending private school and moving to Kansas City. The school house, built on a ridge north of the Spring Hill house in 1882, was known as Mount Pleasant School and later came to be known as the Lower Fox Creek School. The provisions of the Jones gift included a reversion clause stipulating that ownership of the property would revert to "Jones and his wife and their heirs" if the property's use changed.¹³⁷

Despite his success and substantial improvements to the ranch, Jones and his family only lived at Spring Hill for about eight years and in the mansion for less than five. In 1886, he bought a house in Kansas City from his business associate E.A. Hildebrand and moved his household there. In 1887, he had a new house built on the lot he bought in Kansas City. It is believed that Jones and his wife Louisa moved to Kansas City to provide their daughter Lutie and granddaughters Nettie and Colie Adare with better educational opportunities than those that were available in Chase County, where there were no high schools.

Regardless of his motivation, Jones sold the Chase County ranch property he had assembled to quarryman Barney Lantry, a fellow stockholder in the Strong City National Bank and a neighboring rancher, for \$95,000 in 1888. Lantry, in addition to his ranching and banking investments, had made his fortune through his quarry ownership and railroad construction contracts, and, unlike Jones, did not need to depend upon ranching and cattle sales as his major business interests.

The Jones family maintained ties to Chase County even after the sale of Spring Hill. In fact, Stephen and Louisa Jones returned to Strong City in 1889 immediately following the marriage of their daughter Lutie, and were accompanied by Louisa's mother Adeline Barber. Daughter Lutie and her husband E.P. Hickman resided in Strong City. Near the time of the move, Jones purchased a home and much of the property of his old partner E.A. Hildebrand, including other residential and commercial real estate in Strong City. Jones was active in a number of other business enterprises, including cattle operations. He was also president of the Strong City Bank, a private enterprise, which was wholly owned by his brother Peyton Jones. When Peyton Jones sold all the assets of the bank to a group forming a state bank in 1903, Stephen and Louisa Jones moved back to Kansas City where they lived until 1907. Louisa Jones died at the Strong City

¹³⁷ Copy of deed, provided by NPS; *Chase County Leader* (August 24, 1882); Hobbs.

home of her daughter Christina Adare in 1908. Sometime after that, the Adares moved to Wichita. Stephen Jones is believed to have lived in a rooming house in Strong City until joining his daughter's family in Wichita shortly before his death at their home in 1914. Stephen Jones' funeral was held in the Strong City Methodist Church in 1914, and his body was buried in the Prairie Grove Cemetery in Chase County where his wife, mother-in-law, and a daughter had been buried previously.¹³⁸

Barney Lantry and Deer Park Place Ranch

By the time he purchased the Spring Hill Ranch from Stephen Jones in 1888, Barney Lantry, despite his modest origins, was possibly even wealthier than Jones. Lantry, born in Brasher, New York, had learned the stonecutting trade in Rutland, Vermont, where he married Bridget Fogarty. Lantry was a prominent Strong City contractor. Like Jones, Lantry assembled a large ranch from a number of land purchases (*see figure 10*). His first purchase was the Hinckley farm in 1877. The purchase of Spring Hill increased his ranch holdings in 1888 to 13,000 acres. *Chase County Historical Sketches* offered that the Lantry family was "probably the most outstanding of all the pioneers of the little town [Strong City]."¹³⁹ Lantry, who eventually owned approximately 15,000 acres in Chase County, was "extremely popular and well-liked in the greater Strong City community."¹⁴⁰ The Lantrys' holdings consisted of ten separate ranches, one of which was Spring Hill.¹⁴¹

Lantry had moved to Chase County in 1877 from Wisconsin; his family joined him in late 1878 following construction of their home. Lantry initially operated a quarry near Strong City and it appears that his earliest land purchases were associated with the quarrying operation and not ranching.¹⁴² At this time in the Flint Hills, cattle ranching was growing concurrently with the quarrying industry that revolved around the excavation and shipping of Flint Hills limestone.¹⁴³ In fact, it was the limestone industry that initially supported the local economy, particularly in the vicinity of Chase County. In 1879, for example, Chase County exported 1,462 railroad cars of limestone, compared to only 80 of cattle.¹⁴⁴ The emphasis, however, would decidedly shift over the next decade in favor of cattle ranching. By 1889, the stockyards in Strong City, which abutted the rail line near the passenger depot, were expanded to meet increased rail demands for importing and exporting cattle.¹⁴⁵

¹³⁸ The land that Jones had donated for the school was excluded from the sale. Copy of deed provided by NPS. Julia and Edward Hobbs, "Forms, Stephen F. Jones, 1882–1889," (Wichita: n.p., 1998), 7; *Chase County News*, April 9, 1914; telephone discussion of Genevieve P. Keller with Julia Hobbs, December 1999.

¹³⁹ Chase County Historical Society, *Sketches*.

¹⁴⁰ Julia Hobbs, who has researched local newspapers extensively, maintains that Lantry was more sociable than Jones.

¹⁴¹ Greg Hoots, ed., "Growing Up on the Z Bar Ranch," *Flint Hills Special* (Alma, KS: Wendy Page, 1998), 5.

¹⁴² As research efforts continue beyond the CLR, additional information concerning the relationship of Lantry's primary occupation in stone quarrying to his land acquisitions may reveal the relationships among his varied business interests and land holdings.

¹⁴³ Rothman and Holder, *Historic Resource Study*, 7-8.

¹⁴⁴ Rothman and Holder, *Historic Resource Study*, 56.

¹⁴⁵ Rothman and Holder, *Historic Resource Study*, 103. A verbal description of the location of the Strong City stockyards was provided by Pat Donelson, Curator of the Chase County Historical Society, who also indicated that the existing passenger depot in Strong City is the third depot to exist within the area. All three depots have stood in the same general vicinity; the current depot, however, sits further back from the rail line than the previous depots.

As part owner of the construction firm of Lantry & Burr, Lantry's primary job was to locate stone suitable for bridge construction needed for rail line development of the AT&SF. Lantry's first purchases of land within Chase County included sites well suited for quarrying limestone within the high-quality Cottonwood Limestone formation. After developing quarries on various portions of his property, Lantry built railroad spur lines to load the quarried stone. From Chase County, Lantry's stone was transported to his various project sites, where it served as rail line ballast and as a construction material for bridge work, stations, and fences associated with the AT&SF line south of La Junta, Colorado, the Mexican Central, Atlantic & Pacific, and the Colorado Midland lines. Lantry was also responsible for the stone used to construct the railroad line to the summit of Colorado's Pike's Peak, and for rebuilding all of the masonry of the original AT&SF line in Kansas. During this period, Lantry was a major employer of local residents through his quarries.¹⁴⁶

One of Lantry's first quarries was near Strong City. Known as Crusher Hill, the quarry was located on the land later referred to as Crofoot's Feed Lot, a property that abuts the Preserve to the south. The Crusher Hill Quarry was connected to the railway via a long spur line. A second spur line arose nearby that provided a connection to a smaller quarry to the east of Crusher Hill. This second, shorter spur, shown on a ca. 1895 map of the area, appears to follow the same alignment as the southern portion of the spur at the corral area later used for shipping cattle out of the ranches (*see figure 18*). The land over which the spur was built was acquired by Lantry from the railroad in 1886.¹⁴⁷ Based on review of the ca. 1895 map, the spur line was established to support the transportation of quarried limestone, not cattle.¹⁴⁸

Just as the AT&SF system provided the most complete coverage "as far north as the Kansas River and the most strategic location of through lines connecting with the stock regions of the greater Southwest,"¹⁴⁹ these spurs were a direct link from Lantry's holdings to the rest of the nation. The expansion of rail transportation made the Flint Hills a crucial part of a Midwestern component of a national market.¹⁵⁰ Both of the spur lines were critical to Lantry's success and made possible the direct rail transport of stone, and later cattle, to and from Lantry's holdings. Over time, Lantry purchased thousands of additional acres in the region, also involving himself in crop farming and ranching.

Barney Lantry was a popular figure in Strong City and Chase County; he was a major employer and "greatly liked by the people and children." Lantry was a strong supporter of St. Anthony Roman Catholic Church in Strong City, and had 100 rods of flagstone laid to create a walk between his home and the church. In 1884, he provided the church with \$637 to pay the church's debts. In 1882, he made approximately four acres of land in the northwest corner of his property available for St. Anthony Cemetery, which was to be the Roman Catholic cemetery. The earliest mentions of burials appear to be in the 1880s. Although Lantry's funeral was held at St.

¹⁴⁶ Julia Hobbs has news articles from the *Strong City Independent*, January 1, 1884, and the *Chase County Republican*, December 3, 1887, which document Lantry's success in the quarrying and construction business. Ranching apparently provided Lantry with a supplementary source of income.

¹⁴⁷ Warranty Deed from AT&SF Railroad to Barney Lantry dated March 23, 1886, Deed Book Q, 135.

¹⁴⁸ Future research may yield additional information concerning the connection between Lantry's stone quarrying business and his choices in local land acquisition.

¹⁴⁹ Malin, "Introduction to the History of the Bluestem-Pasture," 17.

¹⁵⁰ Rothman and Holder, *Historic Resource Study*, 8.

Anthony's, both his and his wife's remains were interred in a memorial vault or mausoleum in Wisconsin. Their son Henry Lantry, however, was buried in the cemetery following his death in 1904, until the body could be moved to Wisconsin. The cemetery land was not transferred to the Roman Catholic Diocese of Wichita until 1948.¹⁵¹

The *Chase County Leader* reported in 1878 that Lantry had a "fine house" under construction and that upon completion it would be "one of the best residences in the county."¹⁵² In 1883, he owned approximately 3,500 acres on both Fox Creek and the Cottonwood River, which he developed into a successful ranch (*see figure 18*). Lantry developed his ranch on the northwest edge of Strong City, along the southern edge of Spring Hill Ranch. His ranch was called Deer Park Place because of the small herd of deer that he kept in a deer park developed for his own pleasure.¹⁵³

According to the Andreas-Cutler *History of Kansas*, nineteen miles of stone fence enclosed the ranch. Since aerial photography from the early 20th century depicts a stone fence around St. Anthony Cemetery, it is likely that the perimeter stone fence was developed in this period to enclose the four-acre cemetery on the Lantry land.

There were about 500 acres of land in cultivation, consisting mostly of corn, but also including wheat and oats. Like Jones, Barney Lantry kept cattle, sheep, and hogs, but paid special attention to "the breeding of fine stock." He also owned considerable town property in Strong City. The *Chase County Leader* for December 17, 1885 reported that "The Barney Lantry farm west of Strong City is one of the finest in Kansas." In 1887, prior to his purchase of Spring Hill, Lantry owned 5,800 acres, with 10 acres in orchard, 150 in timber, and 25 in tame grass. The remainder of the ranch was used as grazing land for his thoroughbred and graded Hereford, Short Horn, and Polled Angus stock. Lantry, described as the owner of a stock ranch, was listed in *The Official State Atlas of Kansas* compiled in 1887 as the owner of Section 6, Section 7, Section 8, Section 9, Section 10, 400 acres in Section 17, Section 18, and 160 acres in Section 22. The total value of his holdings according to the atlas was \$175,000.¹⁵⁴

It appears that the purchase of Spring Hill was strictly business. The Lantry family evidently was quite satisfied with the Deer Park Place house since they continued to live in their seventeen-room, Second Empire style house rather than moving to the Spring Hill house after Lantry purchased it from Jones. The eleven-room Spring Hill residence, while occupying a more prominent location and designed for maximum visual effect, may not have been as commodious or livable as the Lantry house. Deer Park Place's pleasure grounds were at least as developed as those at Spring Hill. Bridget and Barney Lantry may have preferred the convenience of their

¹⁵¹ There has been much discussion concerning the title to the cemetery since cemetery land is not listed in the Beale abstract for the Lantry land, although the March 9, 1882 *Strong City Independent* reported the survey for the survey of the cemetery. The Registrar of Deeds for Chase County has found a notation of 1927 in regard to the cemetery but it appears that it was not legally transferred to the diocese until 1948. It is customary for the diocese and not a local church to hold title to land held by Roman Catholic congregations. Julia Hobbs has read of burials in the 1880s but has no specific information concerning them at the present time. Both the December 14, 1895 and the May 1, 1896 issues of the *Strong City Derrick* mention the Wisconsin mausoleum. Julia Hobbs also has a Wisconsin news clipping concerning the deterioration and removal of the stone structure.

¹⁵² *Chase County Leader* (August 29, 1878). While Lantry did develop a "fine" estate, adjectives such as "fine," "best," and "most" are used with great frequency to describe the holdings and residences of most prominent citizens of the county and state.

¹⁵³ Chase County Historical Society, *Sketches*, 154; L.H. Everts and Co., *Official State Atlas of Kansas* (1887), opposite 47.

¹⁵⁴ Snell, "A Brief History of the Z Bar," 10; Everts, *Official State Atlas of Kansas*, 139. The *Atlas* was a promotional booster-type publication, which may have overinflated the values of all properties it described.

home's proximity to Strong City where their church and business interests were located. During the Lantry ownership of Spring Hill, tenant farmers associated with the combined ranch lived in the former Jones residence at Spring Hill. Many local people contend that the name Spring Hill generally disappeared in local usage after Jones moved from the county, and that the name Deer Park Place was used to describe the entire Lantry property. A ca. 1895 map of the combined ranches uses both names in its title (*see figure 18*).

Barney Lantry died on December 7, 1895. The state census for that year still lists the occupation for the 63-year-old Lantry as stone mason. The 1895 *Kansas Agricultural Census* lists Lantry as owning 13,000 acres with a value of \$234,000; this is probably the most accurate assessment of the value of his land at the time of his death. Bridget Lantry, who had been born in Ireland, died November 3, 1896. The will of Barney Lantry (after bequests for his wife and two daughters) left equally all his properties, investments, livestock, and construction equipment to his two sons, Henry E. Lantry and Charles J. Lantry. In 1903, Charles Lantry sold most of his portion of the farmland to his brother. Henry Lantry died in 1904, leaving his property to his wife Mary and two children. Later that same year, Mary sold the land back to her brother-in-law Charles Lantry. The 1905 *Kansas Agricultural Census* provides the final Lantry listing, indicating that Charles Lantry owned 13,540 acres, valued at \$200,000.¹⁵⁵ In 1907, Charles Lantry sold most of the family land to C.C. Patten and moved to North Carolina, where he was involved in railroad construction until his death in 1911. The sale of the consolidated ranches ended the era of 19th-century ranching and initiated three decades of agricultural uncertainty and fragmentation until the property was consolidated again during the 1930s.

Land Use and Site Organization

Land use within the area of today's Preserve was primarily agricultural, including pasture for livestock and crop fields. The 1883 description of the Jones Ranch in *The Kansas Picture Book* describes one 5,000-acre pasture that supported 1,200 head of cattle. *Figure 12*, which accompanied the text for the ranch in that publication, gives an indication of the land use of Spring Hill during its early years. Lithographs, it should be noted, are not entirely reliable, due to the potential for the artist to embellish the scene. As shown in this depiction, however, the rolling Flint Hills landscape was primarily open pasture land with ribbons of woodland vegetation occupying the low-lying areas along watercourses. An overwhelming majority of his land was reported as "not cultivated in 1886."¹⁵⁶ This information is consistent with the 1883 illustration and with Jones' reputation as a stockman who owned a large herd at range on the tallgrass prairie. The same is true for Lantry. Both owners had several lots and sections, with little land under cultivation. The 1883 publication also relates that Jones had developed a "reservoir with a capacity of 11,000 barrels, fed by three springs several hundred feet distant" from the house.¹⁵⁷ This reservoir may refer to the cistern in the barn (still intact) or a large pond. There is a pond depicted on the 1887 engraving in the shaded area west of the barn (*see figure 13*).¹⁵⁸ This feature

¹⁵⁵ *Kansas Agricultural Census* (1895); *Kansas Agricultural Census* (1905); Copies of deeds provided by NPS.

¹⁵⁶ "Assessment Roll of Real Estate in Falls Township, Chase County, Kansas, for the Year 1886," copy provided by NPS.

¹⁵⁷ Tewksbury, *The Kansas Picture Book*, 41.

¹⁵⁸ The 1938 aerial photograph also shows a darkened area indicating that there had been some previous soil disturbance in this area.

also appears on the ca. 1895 map, and an aerial photograph from the 20th century (*see figures 18 and 20*). It may also be the pond that Jones stocked with German carp.¹⁵⁹

Figures 12, 13, and 14 provide some indication of land use in the vicinity of both Spring Hill and Deer Park Place. Each of these complexes included a mix of residential and agricultural uses. Both were located near open pastures and enjoyed views of the scenic Flint Hills. Cattle on the hillsides shown in *figure 13* suggest that the area west of the Spring Hill residence was grazed.

Figure 12 depicts the presence of an enclosed orchard or vineyard east of and across the road from the Spring Hill headquarters.¹⁶⁰ The size of the planted area and its configuration suggest that it was likely an orchard. According to the 1885 agricultural census, Jones had 230 young, non-bearing, fruit trees, including 200 apple, 10 peach, 6 plum, 6 cherry, and 8 pear. He also had 176 bearing fruit trees: 1 apple, 50 peach, 100 plum, and 25 cherry. The census indicates that Jones also maintained one acre of vineyard at that time. Some of these trees may have been planted during the early settlement period prior to Jones' ownership of the property.¹⁶¹

The 1883 illustration provides the best available pictorial view of the open, but compartmentalized, landscape that 19th-century ranchers established on the prairie landscape of the Flint Hills. The 1887 illustration of Spring Hill indicates a telephone line near the house (*see figure 13*). According to the Hobbses, fifteen miles of telephone lines were strung to the Lantry and Jones ranches in November 1885 by Bell Telephone. The Pacific Mutual Telegraph Company applied to the Chase County Commissioners in 1886 to condemn land to extend a line in this vicinity; local papers reported construction of the line from more distant farms to Strong City.¹⁶² The line appears to extend from a point southeast of the Spring Hill barn behind the residence and continues north of the ranch headquarters.

The ca. 1895 site plan is the best indication of the land use and site organization of the ranch at the end of the 19th century (*see figure 18*). Entitled "Map of the Spring Hill and Deer Park Farms, Barney Lantry, Owner and Proprietor" and donated to the NPT by Orville Burtis, the detailed map is on long-term loan to NPS. The map illustrates the relationship of the ranch to Strong City, identifies the Chicago, Kansas, and Western Railroad line and the AT&SF Railroad line, and delineates and labels specific land uses. Identified land uses include: meadows, quarries, corn, oat, and millet fields, pastures, a garden, corrals, feed lots, reservoirs, trails, stone walls, and even Lantry's deer park.¹⁶³ The crops were likely rotated from season to season, and some fields may have been left fallow from time to time. The map also identifies Fox Creek, West Branch (now called Palmer Creek), and some springs. Short railroad spurs are shown leading to quarry sites. One of these appears to be the precursor to the 20th-century spur that served the corral area

¹⁵⁹ Newspaper research of Julia and Edward Hobbs has revealed the purchase of carp "about the size of a man's hand."

¹⁶⁰ Julia Hobbs believes that this enclosure is probably the stone fence Jones was reported to be building around his premises in 1879; she believes that the fence was to enclose the original Jones purchase of 160 acres recorded in August, 1879 for Sec. 2 SW 1/4, Sec. 32, T18, R8 & N1/2 NW 1/4, Sec 5, T19, R8.

¹⁶¹ *Kansas State Agricultural Census* (1885). Transcription provided to NPS by Julia and Edward Hobbs.

¹⁶² *Deed Book A-Misc*, 250, 305–315. Copy provided by NPS. Lantry's name is listed as one whose land will be traversed. The deed book referenced the path as passing through lots in several sections but is not legible enough to identify the exact route. According to Julia Hobbs, the *Strong City Independent* for November 26, 1885 and January 14, 1886, reported on the progress of the telephone line which was about fifteen miles long and connecting various points along a line to Strong City. Bell Telephone instruments were used.

¹⁶³ The 19th-century use of the term "reservoir" does not necessarily imply a large impoundment of water; it could refer to cisterns, above-ground tanks, or ponds of water.

along the county road. The short spur on the ca. 1895 map appears to link Lantry's quarry with the main rail line through Strong City. Since no corral area is delineated in this location on the ca. 1895 map, it would appear that the need to transport quarried stone preceded the rail transport of cattle to and from the ranch.

In addition to agricultural uses, there were residential uses at the Spring Hill and Deer Park Place ranch headquarters. While both residential complexes had landscaped grounds for recreation, Deer Park Place appears to have been developed more along the lines of an "English country place" with a designated "park" and a "deer park." The ca. 1895 map shows a garden east of the Spring Hill residence in the location of the orchard described above (*see figures 12 and 18*).

Figure 14 illustrates the organization of the Deer Park Place ranch headquarters, most of which now lies outside the current Preserve boundaries. Deer Park Place, which lacked the topographic variation of Spring Hill, was nonetheless a highly developed complex.¹⁶⁴ Consequently, there was less visual separation between residential, recreational, and agricultural uses than at Spring Hill.

There may have been other residences associated with both ranches. *Figure 12* depicts additional structures that appear residential in character, including the gable-roofed structure or structures to the right of the Spring Hill main house in *figure 13*. This may be the frame house built in 1878 for the Jones family as a temporary residence while the ranch headquarters was being constructed. Christina Jones Adare and her husband Wit Adare may have lived in the first Jones house during Adare's short tenure as ranch foreman in 1883. The Adares moved to Strong City when Wit Adare went to work at Hildebrand Brothers & Jones Hardware. By 1885, Jones was serving as his own foreman for the three men he had working for him. Adare became cashier of the Strong City National Bank in 1886.¹⁶⁵

It is also possible that ranch workers lived in other residential structures located on the extensive ranch acreage. Structures built on the land by the early settlers who preceded Jones and Lantry may have been retained and used as dwellings. In fact, the small house that may have been the cabin of early settler John Scribner appears to have remained on the first parcel purchased by Jones, since it is depicted in *figure 12*. Early owners probably did not remain as tenants following the sale of their property, the majority of them moved out of the state, although some first relocated to Strong City following the sale of their property.¹⁶⁶

Small holdings within both original ranches were developed for community purposes. An educational structure—the Lower Fox Creek School House—was built on land north of the Spring Hill Ranch headquarters donated by Jones. Similarly, Lantry donated land for the development of St. Anthony Cemetery. The cemetery had a pleasant situation, and was located near a meadow and the large park Lantry had developed north of his house.

¹⁶⁴ The water tank shown in *figure 14* was built in early 1884; the tank was to be 40 feet above the ground with water fed into the tank from a well in the building and pumped by a 12-horsepower steam engine also running a mill and sheller. The tank enabled Lantry to provide water to every room in his house, and every other building on his property. The news account researched by Julia Hobbs also revealed that Lantry would be putting in a straw and hay press with a capacity of 20 tons a day and a bolting cloth to grind his own meal and flour.

¹⁶⁵ Hobbs, "Forms, Stephen F. Jones, 1882–1889," 4.

¹⁶⁶ Telephone discussion of Genevieve P. Keller with Julia Hobbs, December 1999. News accounts of sales often mention the destinations of the sellers.

The ca. 1895 map delineates grain fields producing approximately 720 acres of corn, 70 of millet, 160 of oats, and 10 of alfalfa (*see figure 18*).¹⁶⁷ In the northern portion of the property near Fox Creek, there were two fields planted in corn, two millet fields, and two oat fields. The majority of the ranch's cultivated fields were located on land that is within the Preserve today. All of the fields appear to be within the floodplain or adjacent to streams and creeks. The largest concentration of fields was developed near the Spring Hill Ranch headquarters. These fields, which were adjacent to Fox Creek and its tributaries, tended to be the largest under cultivation, and the area's most intensive crop agriculture occurred in these locations. Oat, millet, alfalfa, and corn all were grown in this area near Spring Hill. The vast majority of planted acreage in 1895 was in corn. Nearby, there was a feed lot and corral as well as an orchard and meadow.

The Lantry entry of the state census for 1895 provides an interesting complement to the ca. 1895 map. There were not many cattle on the consolidated ranch, specifically 128 "milch cows" and 180 "other cattle." This number is less than the total owned by Jones in 1885 on much less land. Lantry was described in his 1895 death notices as owning ten farms, each with its own manager. Perhaps he employed managers who kept their own cattle, and those cattle were on the ranch, but not counted among Lantry's cattle. The Lantry family reported production of 700 lbs. of butter, but no cheese. There were 5 elk and 18 deer in Lantry's deer park preserve. He kept 122 horses, 7 mules and asses, 11 goats, and 80 swine. There had been significant losses of swine, however, with 220 reported dying of cholera. The large number of horses possibly relates to use in supporting his extensive quarry operations.

The ca. 1895 map identifies numerous pastures throughout the ranch; some of those pastures were rented to other ranchers from time to time.¹⁶⁸ West of Spring Hill and adjacent to tributaries of Fox Creek was a pasture (*see figure 18*). A meadow is shown between the cornfield and Spring Hill. It is assumed that the meadow consisted of native grasses and was not cultivated. There were also meadows shown east of Fox Creek. The creek environs appear to have remained vegetated, dominated by native trees and shrubs, particularly in the north/south section of Fox Creek.

The majority of the cultivated area in the original Lantry holding was planted in corn. Fields were developed near the creek, here, as elsewhere in this area. A feed lot is shown located on either side of Fox Creek between Spring Hill and Deer Park Place and two rectilinear fields of corn. The cornfields were thus convenient to the feed lot.

By ca. 1895, there were at least two reservoirs in addition to the one at Spring Hill:¹⁶⁹ one west of Deer Park Place, near the current southern Preserve boundary, and another in the eastern portion of the site near West Branch. There was also a large water storage tank at Deer Park Place.

Two trails are delineated on the ca. 1895 map in the eastern portion of the property near West Branch, although their purpose is not known (*see figure 18*). The illustrations of the two ranch

¹⁶⁷ These acreages are approximate and have been calculated using the ca. 1895 plan. It is interesting to note that there is no wheat; according to Julia Hobbs, Lantry is said to have stated that he did not have time for raising wheat.

¹⁶⁸ The newspaper research of Julia and Edward Hobbs has identified notices of Lantry advertising pastures to rent and reports of rentals. In 1888, for example, he was renting 5,000 acres of the Jones ranch to H.C. Miller.

¹⁶⁹ The term reservoir does not necessarily imply a large impoundment in the 19th century.

headquarters from this period depict some internal circulation, including main driveways and front walks.

The lower portion of the ca. 1895 map depicts the southern boundary of Lantry's holdings, the town of Strong City, and other prominent features such as the two sets of rail lines to the south of the Preserve boundaries. Several additional agriculture-related activities occurred along the creek and its tributaries and were part of the Lantry ranching operation, located beyond the present boundaries of the Preserve.

Response to Natural Environment

As in the prehistoric and early settlement periods, it is the area's natural environment that more than any other factor appears to have influenced site use and development. Building sites, cultivated fields, feed lots, reservoirs, and other uses were situated to take advantage of springs and streams that would provide a convenient and reliable water source. An article by J.C. Hildebrand in 1885 reported that there was a spring-fed reservoir intended to supply 500 head of cattle with water for several weeks should the springs run dry.¹⁷⁰ Both the Jones and Lantry houses had water supplied from nearby springs, as did their ornamental fountains. The 1895 census identifies a variety of local water sources, including streams, reservoirs, and twenty wells. The wells, typically thirty feet in depth, depended upon pumps and buckets to lift water.¹⁷¹

The Spring Hill Ranch headquarters was located to take advantage of splendid long views of the Flint Hills. The siting of the hillside ranch headquarters also made it the dominant manmade feature of the landscape. While the Deer Park Place ranch headquarters has no notable views today due to the built-up earthworks of the adjacent roadway and flood control berm, it may at one time have had views. Cultivated areas were developed in floodplains adjacent to creeks where there were alluvial soils. Other portions of the ranch were used for grazing, taking advantage of the naturally occurring and replenishing native grasses. The grasses, which were primarily big and little bluestem, Indian grass, and switchgrass, were best suited for use as warm-weather pastures and for prairie hay.

An analysis of the ca. 1895 map reveals a correlation between soil associations and cultivated land (*see figure 11*). The majority of the cultivated land within the Preserve boundaries during this period was in the bottom of the Fox Creek valley where the Preserve's highest quality soils, such as those in Reading-Tully association, occur. Crops, such as corn, oats, and millet, were produced in these areas, with the primary crop being corn. Corn was also produced in the Chase-Osage soils on the nearly level, deep bottomland in the lower reaches of Fox Creek near the Preserve's extreme southern boundary and Deer Park Place. The second largest area of cultivation, however, was in the Clime-Sogn soils on the western side of Fox Creek. These soils, which were of lesser quality and had lower available moisture, were sown with oats, millet, and some corn. It is interesting to note that the nearly sixty-acre area of this soil type near the Red House site had been sown with corn.¹⁷² The major use associated with Clime-Sogn soils that form over limestone was grazing. The Florence-Labette soils found in gently and strongly

¹⁷⁰ Snell, "A Brief History of the Z Bar," 6.

¹⁷¹ Julia and Edward Hobbs, "Data Sheet #53" (synopsis of 1895 census), n.p.

¹⁷² The Agricultural Census of 1885 reported thirty acres in corn.

sloping areas were also used primarily for grazing, although two cultivated areas occurred within this soil association. Corn was grown on both the north and south sides of Palmer Creek on Florence-Labette soils, and oats were cultivated north of Palmer Creek along the ranch's northern stone wall boundary.¹⁷³

Quarries were developed along the southern edge of the current Preserve boundaries in both Clime-Sogn and Chase-Osage soils. Native Chase County limestone was the principal construction material in this area. Both Lantry and Jones moved to the area for its natural characteristics that would ensure profitable enterprises. The combination of natural resources conducive to both ranching and stone quarrying was undoubtedly an attraction.

Clusters of Buildings, Structures, and Objects

Spring Hill

By the early 1880s, Chase County already had a number of substantial farms. The eleven-room, Second Empire style house Jones had built at Spring Hill, however, was considered "palatial." The cost of constructing the entire Spring Hill Ranch headquarters is believed to have been about \$40,000. The construction cost of the house was probably in the \$20,000 to \$25,000 range. Jones employed a crew of twenty builders, many of whom also had worked on the Chase County courthouse in Cottonwood Falls.¹⁷⁴ The Jones residence with its mansard roof, inscribed cornice of "AD-J-1881," cut white limestone, corner quoining, and other ornamentation was a visible landmark that made Spring Hill Ranch a point of visual identity overlooking the Fox Creek valley. Described in an 1881 article in the *Strong City Independent* as situated on a "very prominent hill," the house could be seen for miles.¹⁷⁵ The verticality of the house, combined with its elevated site, made it the centerpiece of the ranch and the most dominant feature of the domestic/agricultural cluster developed by Jones at Spring Hill. The mammoth stone barn was a prominent component of views from the south.

The residence was the earliest ranch building completed at the new Spring Hill headquarters. Jones had hired David Rettiger of Emslie, Rettiger & Company, a stone quarry north of Strong City, to build the house and other structures in the ranch headquarters. Described as a "Scotch castle" in the *Strong City Independent*, it was one of the most impressive houses in the county, and certainly the most impressive in the Strong City/Cottonwood Falls area. The house faced east and presented an imposing image when seen from the road. From the house, there were spectacular hillside views. A terraced front lawn, with retaining walls and steps, and a fountain, constructed of the same white limestone as the residence, served as a five-tiered pedestal for the massive complex. There were three upper terraces and two lower terraces edged by stone retaining walls; wrought iron fencing atop the third retaining wall of the upper terraces matched the decorative ironwork atop the roof dormers. The spring-fed fountain on the southern half of the middle upper terrace was a focal point. There is at least one reference to two fountains, but known illustrations of house and lawn show only one. One of the fountains is believed to have been added in 1882 and used by daughter Lutie Jones as a "resort for fish."¹⁷⁶ The complex also

¹⁷³ This analysis resulted from a comparison of the ca. 1895 map with the contemporary USDA soils map.

¹⁷⁴ Snell, "A Brief History of the Z Bar," 7–8.

¹⁷⁵ Snell, "A Brief History of the Z Bar," 8.

¹⁷⁶ *Strong City Independent* (June 24, 1882, and December 1, 1882). Hobbs, research notes.

included various auxiliary structures, carefully crafted of the same limestone and stylistically similar to the main house. The Spring Hill Ranch headquarters was a distinctive, impressive, and artfully developed complex.

Several outbuildings were included within the Spring Hill Ranch headquarters. The composition was carefully arranged with an eye both to appearance and function. Essential domestic uses, such as the springhouse and privy, were housed in structures conveniently located near the residence. The agricultural support outbuildings were arranged along a service road south of the house set apart somewhat from the domestic cluster. The National Historic Landmark nomination describes the cluster layout as a variant of the “Linear Multi-Unit Farm Arrangement” as illustrated by Carter and Foster in their 1941 publication *Farm Buildings*.¹⁷⁷

A tunnel connected the adjacent springhouse to the residence. The springhouse, where food was kept cool, was built partially underground; its walls were lined with a trough to receive cool water piped down the hill from the spring that inspired the name “Spring Hill.” The spring water was also used by the household. A room located above the springhouse is thought to have been used as a curing room. There was a three-seat privy located near the springhouse, and an icehouse on the hill above the residence. The stone icehouse would have been packed with prairie hay to keep ice cold in summer. Immediately to the east of the icehouse was a stone cistern.

Associated with the agricultural support cluster were the stone poultry house, which had a vaulted ceiling and a sod roof, a blacksmith shop, and a carriage house. The blacksmith shop is no longer extant. The exact use of the poultry house has not been confirmed, although a farm publication from 1889 showcased this design for a poultry house.

The barn probably attracted just as much, if not more attention, than the stylish, three story, white limestone house. Sited downhill from the house, the barn was in reality no less imposing than the house, yet was less prominent because of its lower profile. The three-story structure was one of the largest barns built in 19th-century Kansas. Measuring 60 by 110 feet in plan, the barn was built of the same stone as the house, and also featured stone quoining. The quarter-hipped gambrel roof is a striking landmark, especially when approaching the ranch headquarters from Strong City, as many would have done. A bank-type barn, it was sited so that it could be entered at the ground level on two floors. The large, wide ramps were designed to allow wagons to enter and exit the barn directly to drop and remove hay and grain. The ground floor, which was divided into stalls, also included a tack room, and was used to house and feed livestock. It is assumed that the dairy cows and horses were kept on this floor. The second floor was used for storing hay and grain. The third floor provided space for threshing and hay storage. The barn’s size was consistent with the needs associated with a large herd of livestock. During the 19th century, many ranchers kept livestock year round, grazing them through the winter. During the 20th century, ranchers began grazing transient herds during the warmer months, when they started to adopt double-stocking and early stocking practices. A corral with livestock pens adjoined the barn on the south and west sides—those not oriented toward the residence (*see figures 12 and 13*). The 19th-century configurations of these pens and corrals, however, are not known.

¹⁷⁷ Hal K. Rothman and Associates, Draft “National Historic Landmark Nomination for Spring Hill/Z Bar Ranch, Chase County, Kansas” (1997)

Jones built a very large windmill, at a cost of \$1,800, on the north side of the barn roof in 1882 (*see figures 12 and 13*). The windmill was a notable feature of the ranch headquarters, “presenting the appearance of an immense piece of Chinese fireworks” when its colored slats were turning. It was described in the 1883 publication, *The Kansas Picture Book*, as a “double wheel, thirty foot wind engine.”¹⁷⁸ It was believed to be one of the largest in the state.¹⁷⁹ Its mammoth size may not have been an asset, however. Despite its usefulness in providing power to pump water, move grain, and operate a hay chopper, root cutter, oil cake crusher, and a pair of cornburrs, the windmill was soon removed because of the fear that its substantial vibrations were damaging the barn.¹⁸⁰ The windmill itself was damaged in an 1884 windstorm, and there are known to have been other severe storms in the years immediately following. Although the 1887 lithograph depicts the windmill, it was likely removed prior to, or near that date to prevent further damage to the barn (*see figure 13*).¹⁸¹

The view of the expanded Spring Hill landscape published in 1883 also depicts the structures east and north of the ranch headquarters on the opposite side of the road between Council Grove and Strong City (*see figure 12*). A structure with a residential appearance set back some distance from the road is probably the residence that Jones had built for his family upon arrival in 1878; another farther east may have been the former Scribner cabin. In 1887, Jones had a “neat residence” building moved into town from his farm and placed on some lots west of the Congregational Church.¹⁸² The origins of the “neat residence” are not known, although it may have been the home of an earlier settler whose property Jones bought.

Deer Park Place

The depiction of Deer Park Place Ranch in Everts’ 1887 *Atlas of Kansas* includes three agricultural structures that would have occupied land that is within the current Preserve boundary (*see figure 14*). Located north and west of the Second Empire style residence, these structures included a building that may be the existing stone poultry house, and two large barns. The existing large barn to the west of the house is depicted here with two of the three gabled cupolas visible on the roof. The adjacent corrals appear to be larger than the existing one. The structure directly north of the residence appears to have been a gable-roofed barn with two gabled cupolas topped with large, ornate weather vanes. It appears adjacent to a horse corral, in approximately the same location as the current hollow-tile barn. A large round wooden water tower with a square brick base and a conical roof was located along the post-and-board fenceline to the south of the house, just off the front façade, which at that time included ornamental porches and balconies. The water tower and the porches no longer exist. Several other outbuildings are shown; their purposes have not been identified, and they no longer exist.

¹⁷⁸ Tewksbury, *The Kansas Picture Book*, 42.

¹⁷⁹ Snell, “A Brief History of the Z Bar,” 7.

¹⁸⁰ *The Strong City Independent* (February 4, 1882) quoted in Dennis Domer and Michael Swan, *Vernacular Architecture Forum: Making Urban and Rural Landscapes on the Prairie Plains* (Lawrence, KS: n.p., 1966), 100.

¹⁸¹ Copy of handwritten NPS notes, no title, 1. Julia and Edward Hobbs have not found a specific removal date while conducting their research.

¹⁸² *Strong City Independent* (April 8, 1887). Copy provided by Julia and Edward Hobbs.

There were a number of ornamental features associated with the Lantry lawn: these included Victorian carpet gardens, an urn, and possibly a sculpture, and a fountain. Located in the side yard east of the house, these features are on land outside the current Preserve boundaries.

Lower Fox Creek School

A short distance north of the Spring Hill headquarters was the one-story limestone school house built on a low hill of land donated for this purpose in 1882 by Stephen Jones. The school, however, was not depicted in the view of the expanded Spring Hill landscape published in 1883 (*see figure 12*). The stone for the school is known to have come from the Rettiger quarry, and was built by the same mason Jones had hired to build his house.¹⁸³ The one-story, gable-roofed school, like the main house at Spring Hill, was oriented toward the north-south road. Steep stone steps built into the slope of the hill led to the school house from the road, passing through a dry-laid stone wall that marked the precinct of the school yard. Two wooden privies were located to the northwest. Although little else is known about the school house precinct, at one time there may have been other structures such as a woodshed, a well, and/or a cistern.

The schoolyard was probably not developed or embellished, but was used as an informal play area by the students. Recent archeological research indicates that a stone walk or steps led from the road to the front of the school house. Other paths were likely unpaved and informal.

Other Buildings and Structures

At this time there is little information concerning other buildings or structures on either ranch, beyond the primary ranch headquarters clusters. Both may have included structures associated with the smaller farms that were bought and consolidated into the ranch. Some residences could have been moved from the site, since there is at least one newspaper reference to Jones having a residence moved from his farm to Strong City. Stone buildings in some cases may have been dismantled, the stone reused in other buildings or walls. Additionally, there were undoubtedly other specialized agricultural uses within the properties. An 1885 notice for a meat market operated by W.R. Hoffman, a business partner of Jones, indicates that there was a slaughterhouse located at the edge of Jones' pasture.¹⁸⁴

To the north of the present US Highway 50 and near the present county road, are broken brick mortar and roughly dressed limestone blocks that indicate the presence of a former corral area. This land was acquired by Lantry from the railroad in 1886 and fell along the spur rail line that was built to his quarry east of Crusher Hill.¹⁸⁵ Based on review of the ca. 1895 map, the spur line was established to support the transportation of quarried limestone, not cattle. The corral area appears to have been established later, although it is not known whether Lantry was using the spur to ship cattle in addition to stone in this earlier period. A 1901 map of the area omits the spur line altogether, suggesting that it may have fallen out of use between Lantry's death in 1895 and its first appearance in deed records in 1907 (*see figure 15*). A deed registering the sale of the property from Charles Lantry to C.C. Patten in that year mentions a corral area on the site.

¹⁸³ Snell, "A Brief History of the Z Bar," 13.

¹⁸⁴ *Strong City Independent* (October 2, 1885). Copy provided by Julia and Edward Hobbs.

¹⁸⁵ "Warranty Deed from AT&SF Railroad to Barney Lantry," from *Deed Book Q*, dated March 23, 1886, 135.

Circulation

The north/south main road (now Highway 177) connecting Spring Hill with Strong City to the south and Council Grove to the north would have been well established by this period. Various period news accounts relate travel to and from these points. It is assumed that the surface of the road would have been hard-packed earth through this period, but that it may have been repaired with native stone as needed to keep the road passable. Examination of illustrations of Spring Hill from the 19th century and photographs from the 20th century reveal that the road was aligned further to the west in the vicinity of Spring Hill until Highway 177 was widened in 1956 (*see figures 12, 13, 16, 20, and 26*). The old roadbed is today clearly visible west of the highway.

During this period, the road followed a different route between St. Anthony Cemetery and Strong City.¹⁸⁶ It turned to the southeast just north of the cemetery, continuing in this direction until reaching Fox Creek. A stone bridge provided the crossing at Fox Creek, to the northwest of Deer Park Place.¹⁸⁷ The road then headed due east to the northern edge of Strong City. Since Lantry had made his fortune by building stone bridges and other structures for railroads, it makes sense that the creek bridge near his home was built of stone. The road flooded frequently and apparently was in poor condition most of the time. Lantry is known to have covered the road with gravel from his quarry on at least one occasion.¹⁸⁸ The flooding, which continued through the 20th century, influenced development of an earth-bermed flood control structure surrounding Deer Park Place to the north and west in the early 1950s. The berm protects the cluster of residential and agricultural buildings from flood waters.¹⁸⁹

Internal ranch circulation would have included two-track roads and equestrian trails through the property. Some may have been appropriated from circulation developed during the early settlement period; others would have developed to access to the various pastures developed on the ranch. One such trail is shown on the ca. 1895 map of the consolidated ranch (*see figure 18*). Narrow, meandering cattle paths would have been worn into the earth by the grazing, feeding, and watering habits of livestock.

There was also internal circulation in both ranch headquarters areas. The terraced retaining wall system at Spring Hill incorporated a front entry drive as well as a secondary agricultural support road south of the house. *Figure 13* depicts a hitching rail—a small-scale feature that may have been developed in association with the equestrian circulation of the 19th century. Adjacent to the stone wall along the drive below the fourth terrace, the rail—if installed—would have provided visitors with a defined parking area for their horse-drawn vehicles. Near the barn there is a stone cattle chute. There is also a cattle guard on the road near the barn (*see figure 13*).

Figure 14 suggests that there was an east-west road north of the Lantry residence, as mentioned above. This road would have provided access to agricultural structures and to the rear (west) side

¹⁸⁶ This alignment is shown in Everts, *Official State Atlas of Kansas*.

¹⁸⁷ Architect Steven Jones has confirmed that historical architects at Quinn/Evans Architects working on a Historic Structure Report for the Preserve believe that the bridge dates from the Lantry era. Documents in the Chase County Highway Department give a date of 1890 for the bridge, but it is crossed through and the year 1918 added with no explanation. There was apparently a bridge in this location before 1890, but the date of origin of the existing bridge is not known.

¹⁸⁸ Julia Hobbs, telephone discussion with Keller, December 1999.

¹⁸⁹ Telephone interview of a former associate of Davis by J. Timothy Keller, June 5, 1999.

of the house. A trail near the Deer Park Place property is delineated on the ca. 1895 map of the combined ranches (*see figure 18*). Its function and destination are not known.

Circulation at Deer Park Place is depicted in the 1887 illustration (*see figure 14*). It should be noted, however, that these drawings typically do not include service circulation, and at times even omit major roads, as in the illustration of Jones' Spring Hill house (see section above). The circulation at Deer Park Place shown here includes the formal main entrance to the house, which entered from the east and terminated in a curved turnaround east of the picket fence around the lawn. A set of hitching posts and a gate indicate that this was the point at which visitors dismounted and proceeded along a straight path to the door on the west side of the house. Garden features, such as flower beds, edged the path. The driveway and path are no longer extant. The drawing also implies the presence of the lane that still runs along the edge of the yard north of the house and garden, south of the barn and poultry house.

There are still remnants of the railroad spur that once provided a rail link with the quarry and possible corral area site, as described above. A direct link to the AT&SF Railroad was important to the success of both the quarries and the cattle business, since that line "carried the largest volume of in-coming cattle of any one system...of the out-movement to market...the Santa Fe lines carried more than the others together."¹⁹⁰ This railroad spur ran north and south along the base of a terrace at the western edge of the site, and appears not to have extended north of the county road in ca. 1895 as it did later.

Boundary Demarcations and Enclosures

Enclosure and compartmentalization of the prairie landscape is perhaps the most significant event of this period. By the end of the 1880s there was no more open range in the Flint Hills.¹⁹¹ This statement should not be interpreted, however, to mean that the landscape was divided into a succession of small fields. A single pasture might encompass an entire section of land, perhaps even two, as with the Two Section pasture within the Preserve. Both utilitarian and decorative fencing was used to contain land in the 19th century. An 1883 description of the Jones Ranch (Spring Hill) in *The Kansas Picture Book* relates that the Jones land was all "enclosed with stone fence." The 1885 Kansas census describes his 7,000 acres: "the whole of which is enclosed by a stone fence, five feet high and two and a half feet thick, costing about \$20,000." Other contemporary descriptions enumerate 9,600 rods (30 miles) of stone fence, 320 rods (1 mile) of wooden fence, and 960 rods (3 miles) of wire fence.¹⁹²

According to the Andreas-Cutler *History of Kansas*, Lantry's ranch—Deer Park Place—was enclosed by nineteen miles of stone fence. An 1881 article described the stone walls of Deer Park Place as "enclosing no small portion of the bluffs" and giving the appearance of "well formed lines of fortifications."¹⁹³ There also would have been internal subdivisions to separate different ranch uses. Stone walls were used to divide the range into pastures to control cattle grazing. Some of the fences and walls may have originated during the early settlement period. There may also have been Osage orange hedges that were used to contain livestock by early

¹⁹⁰ Malin, "Introduction to the History of the Bluestem-Pasture," 16.

¹⁹¹ Isern, "Farmers, Ranchers, and Stockmen of the Flint Hills," 258.

¹⁹² Snell, "A Brief History of the Z Bar," 5; *Kansas State Census, 1885 Schedule 2*.

¹⁹³ "Independent Man," *Strong City Independent*.

settlers before barbed wire became common. Building stone walls may have been something of a “make-work” exercise as well. According to local tradition, Lantry kept his workers busy during the winter hauling stones for fences.¹⁹⁴ Approximately 21 miles of stone fencing are indicated on the ca. 1895 map of the consolidated ranch. According to the 1895 state census, the entire 13,000-acre ranch was enclosed and subdivided by fences with 72.38 miles of stone fence, 5 miles of board fence, less than .25 mile of hedge, and 8.25 miles of wire fence extant within the entire acreage.¹⁹⁵ These statistics clearly indicate the preference for native stone over barbed wire or any other material. The perimeters of the consolidated ranch were enclosed by the end of this period to protect Lantry’s investments in livestock and prevent any cattle at free range from intruding.

Stone walls were also decorative features of the terraced landscape developed to enhance the front yard of Spring Hill. Although *figure 13* depicts the wall as completely constructed of dressed stone with a smooth dressed-stone cap, at least a portion of the wall appears to have been constructed with rubble. Work done on a portion of the walls in the 1940s makes it difficult to determine definitively their original appearance, however.¹⁹⁶ As noted earlier, the middle tier of walls was topped by a wrought iron fence. *Figure 13* depicts a portion of a stone wall that appears to have been located on the eastern side of the road in front of Spring Hill. This wall may have been removed when the road was widened.

The two easternmost terraces were constructed with stone pillars that defined and framed the stair openings. Taller than the walls where they terminated at the stairs, these stone pillars would have reinforced the symmetry of the front entrance. The third terrace wall along the descent from the house continues west around the house to divide the residential uses from the agricultural uses associated with the barn. The terraces may have had a utilitarian function during deep snows and blizzards: they may have helped to reduce the effects of drifting snow, as well as providing visual points of identity in a snow-covered landscape.

The 1887 illustration of Deer Park Place depicts a horse corral adjacent to a barn (*see figure 14*). Both would have been located within the present Preserve boundaries. The corral was formed by a wooden rail enclosure that may have had stone pillars instead of wooden posts, as the dimensions of the supports appear to be more consistent with masonry than wood construction. Most of the other enclosures appear to have been of wood, a curious choice for a quarryman such as Lantry. The only stone wall in the illustration is to the north of the house.¹⁹⁷ This linear barrier separates the residential lawn from the agricultural uses north of the house. It could also potentially be a hedge, like the spiraea hedge that is in this location today.

¹⁹⁴ NPS conducted an inventory of equipment found in the Spring Hill Barn in 1998; several local people and former ranch employees were invited to attend. In addition to helping identify equipment, the participants also related historical information, (references to the information compiled following the January 28, 1998 inventory are hereinafter referred to as “Barn Assessment”).

¹⁹⁵ Julia and Edward Hobbs, Historical Data Sheet # 53 (synopsis of 1895 census); copy of handwritten NPS notes on selected Hobbs research, untitled, no date, 1; and telephone discussions of Genevieve P. Keller with Julia Hobbs in February and December 1999. The Hobbses have also found numerous contemporary newspaper accounts of wall construction associated with properties of both Lantry and Jones.

¹⁹⁶ There is a possibility that the lowest extant terrace wall section may have been added at a later date, since it has a different construction method and appearance than the other terrace walls. The stone of this wall is applied vertically as a facing material, while the other walls are constructed of dry-laid or mortared horizontal stone.

¹⁹⁷ Fred Howard, Jr., who grew up at Deer Park, recalls no stone fences or remnants (Interview by J. Timothy Keller, April 1999).

Vegetation

The 1885 Kansas census reported that Jones had about 340 acres under cultivation and in nursery trees at Spring Hill. Specifically, it was reported that 10 acres were in winter wheat, 30 in rye, 225 acres in corn, 25 in oats, 1/2 acre each in Irish and sweet potatoes, and 30 acres in sorghum. There were also 100 acres in tame grasses, and 200 acres in prairie grass.¹⁹⁸ The Jones ranch produced 2,500 bushels of corn and reported 300 tons of prairie hay cut in 1884. As noted earlier, there was also an orchard at Spring Hill that was described as having 201 apple trees, 60 peach, 106 plum, 31 cherry, and 8 pear trees. Although the apple trees were too young to be productive, the other trees were producing.¹⁹⁹ There were also raspberries (1/4 acre), blackberries (1/4 acre), and a vineyard (1 acre), as well as a 5-acre walnut grove of trees a year or more old and 6 acres in cottonwood trees. The 1887 atlas enumerated 5 acres of orchard, 200 acres of timber, and 500 acres of tame grass.²⁰⁰ A news account from 1886 related that Jones and one of his business partners, H.R. Hilton, were “sowing a car load of tame grass seed.”²⁰¹ Tame grass could be assumed to include bluegrass, clover, timothy, alfalfa, and orchard grass. Where this tame grass was planted is not known. Apparently, the practice of sowing tame grasses was widespread and encouraged in the agricultural community. F.D. Coburn, prior to becoming the secretary of the State Board of Agriculture, had predicted in 1880 that the future of wild prairie grasses for pasture and hay “were numbered.”²⁰² By 1883, a Kansas City agriculturist wrote, “The prairie grass must go. It is but a matter of a few years [sic] time when eastern Kansas will have to depend on tame grasses for hay … Prairie grass does not make permanent pasturage. As soon as a tract of land is fenced and pastured, the wild grass soon dies and gives place to weeds and the pasture becomes almost worthless.”²⁰³

Both *figures 12* and *18* suggest that there may have been stands of deciduous woody vegetation along water courses and some deciduous clumps on a few of the lower slopes of the Flint Hills within the area of the current Preserve.

The remainder was pasture for Jones’ Hereford, Short Horn, Polled Angus stock and Galloway Thoroughbred and Graded Hambletonian thoroughbred studs.²⁰⁴ *Figure 12* illustrates the productivity of the ranch during this period. This 1883 illustration features stacks of either hay or corn arranged in rows in the field directly east of the Spring Hill residence on the opposite side of the north-south road. The enclosed field just east of the stacked field may represent either an orchard or a vineyard (*see figure 12*).

In 1887, prior to his purchase of Spring Hill, Lantry owned 5,800 adjacent acres with 10 acres in orchard, 150 in timber, and 25 in tame grass. There were about 500 acres in cultivation, mostly corn, with some in wheat and oats. *Figure 14* may provide a visual impression of the ranch and its productivity in this period.

¹⁹⁸ Snell, “A Brief History of the Z Bar,” 5; *Kansas State Census 1885 Schedule 2*.

¹⁹⁹ Ibid.

²⁰⁰ Everts, *Official State Atlas of Kansas*.

²⁰¹ *Strong City Independent* (March 4, 1886). Copy provided by Julia and Edward Hobbs.

²⁰² Malin, “Introduction to the History of the Bluestem-Pasture,” 23.

²⁰³ Ibid., 24.

²⁰⁴ Everts, *Official State Atlas of Kansas*, 139.

Both *figures 12* and *13* suggest that there were ornamental plantings at Spring Hill. These illustrations support contemporary descriptions that the Jones family had formal plantings in the vicinity of the house. Because these illustrations may have been developed with some degree of artistic license, they may not be entirely accurate in representing the actual plantings of the period. It was reported that Jones had clover and bluegrass both started “nicely” in his front yard in 1882.²⁰⁵ *Figure 13* provides the most detailed 19th-century representation of the residential landscape and its ornamental plantings. This view, published in 1887, suggests that there may have been a few foundation plantings near the front porch and at regular intervals along the stone walls of the front terraces. The plantings appear to be deciduous with the exception of a pair of evergreen plantings on each side of the stairs on the second terrace descending from the house. The shape of these plantings would be consistent with that of young arborvitae or cedars. There also appears to be a pair of small weeping trees on the south side of this terrace, north and south of the two-tiered fountain. The pair may be either weeping mulberry or weeping cherry. The other terraces are depicted as unobstructed areas of open lawns enclosed by the stone retaining walls and the regularly spaced deciduous trees planted along the tops and/or bottoms of the retaining walls on each terrace. There are many accounts of lilacs and roses, but they do not appear in this illustration. They are believed to have been planted by Lantry tenants—the Benjamin Ricards family—who lived at Spring Hill sometime after Jones’ sale of the property. Ricards also may have planted trees at the top and sides of the hillside.²⁰⁶

Figure 13 also suggests a two-row plantation of trees that may have been intended to define and separate the residential precinct from more utilitarian uses such as the icehouse to the west. An examination of this illustration and of 20th-century photographs suggests a continuation of this line of planting in a semi-circular arrangement to the north and west (*see figures 16, 17, and 20*). The plantings follow the arc of the stone wall that is a continuation of the terrace wall system at the front of the house. The trees and stone wall generally follow the contour of the hillside. In what appears to be an effort to relate to the original design expressed at the front of the house, thus accentuating the verticality of the site and serving as a multi-level windbreak against winter winds. Another intentional deciduous planting is depicted west of the barn on an eastern slope.²⁰⁷ A photograph of Benninghoven family members, ca. 1921, shows the base of these cedars and suggests that the trees were already quite old.²⁰⁸

According to the 1895 state census, of the 13,000 acres owned by Lantry in 1895, only 2,000 were listed as cultivated. There were 1,000 acres of corn, 90 acres of oats, no wheat, 5 acres of Irish potatoes, 40 acres of millet and 40 of Hungarian potatoes. The census also delineates Lantry’s cultivated grasslands as including 2 acres of bluegrass (perhaps for some of his thoroughbred horses), 60 acres of alfalfa, 40 acres of orchard grass, and 1,000 acres of fenced prairie used as meadow. The census reported that there had been 200 tons of tame grass cut in

²⁰⁵ *Chase County Leader* (May 5, 1882). The grass was watered by pipes leading from the reservoir on the hill west of the house.

²⁰⁶ Julia Hobbs has a clipping from the December 2, 1994 *Council Grove Republican* in which Gladys Edney recalled that her Ricards grandparents had lived at Spring Hill and were responsible for these plantings. The Hobbs’ visited Gladys Edney before her death in 1996. Julia Hobbs believes that Ricards may have rented a farm from Jones; she has documented Ben Ricards as living on land owned by Jones in April 1887.

²⁰⁷ Sherda Williams, NPS, “Trip Report” (November 26, 1997); interview with Dean Schroer; interview with Fred Howard, Jr. Corings of walnut and cedar trees in the house vicinity indicate that these trees were likely to have been planted as part of the original Spring Hill landscape. Interviews with Dean Schroer and Fred Howard, Jr. also confirm that these trees were already well established by the 1930s.

²⁰⁸ Benninghoven Family Collection, Photo Benn-52.tif (electronic image files provided by NPS).

1894, and 500 tons of prairie cut in the same year. The ranch in 1895 had a variety of fruit trees, presumably most were planted in orchards, and all were described as bearing fruit. Reported were 1,500 apple, 50 pear, 2,000 peach, 100 plum, and 300 cherry trees. In addition, 160 acres were listed for “other varieties of trees.”²⁰⁹ Presumably this figure includes creek bottoms as well as other areas of the site.

Most of the ornamental vegetation associated with Deer Park Place would have been developed outside current Preserve boundaries. *Figure 14* indicates that there were raised carpet planting beds and an open lawn as well as a perimeter plantation of deciduous trees around the enclosed residential yard. Within the current boundary, there may have been an allée of deciduous trees along a portion of the east-west road north of the house (*see figure 14*).

²⁰⁹ Hobbs, “Historical Data Sheet #53.”

Source: The Kansas Picture Book, 1883.

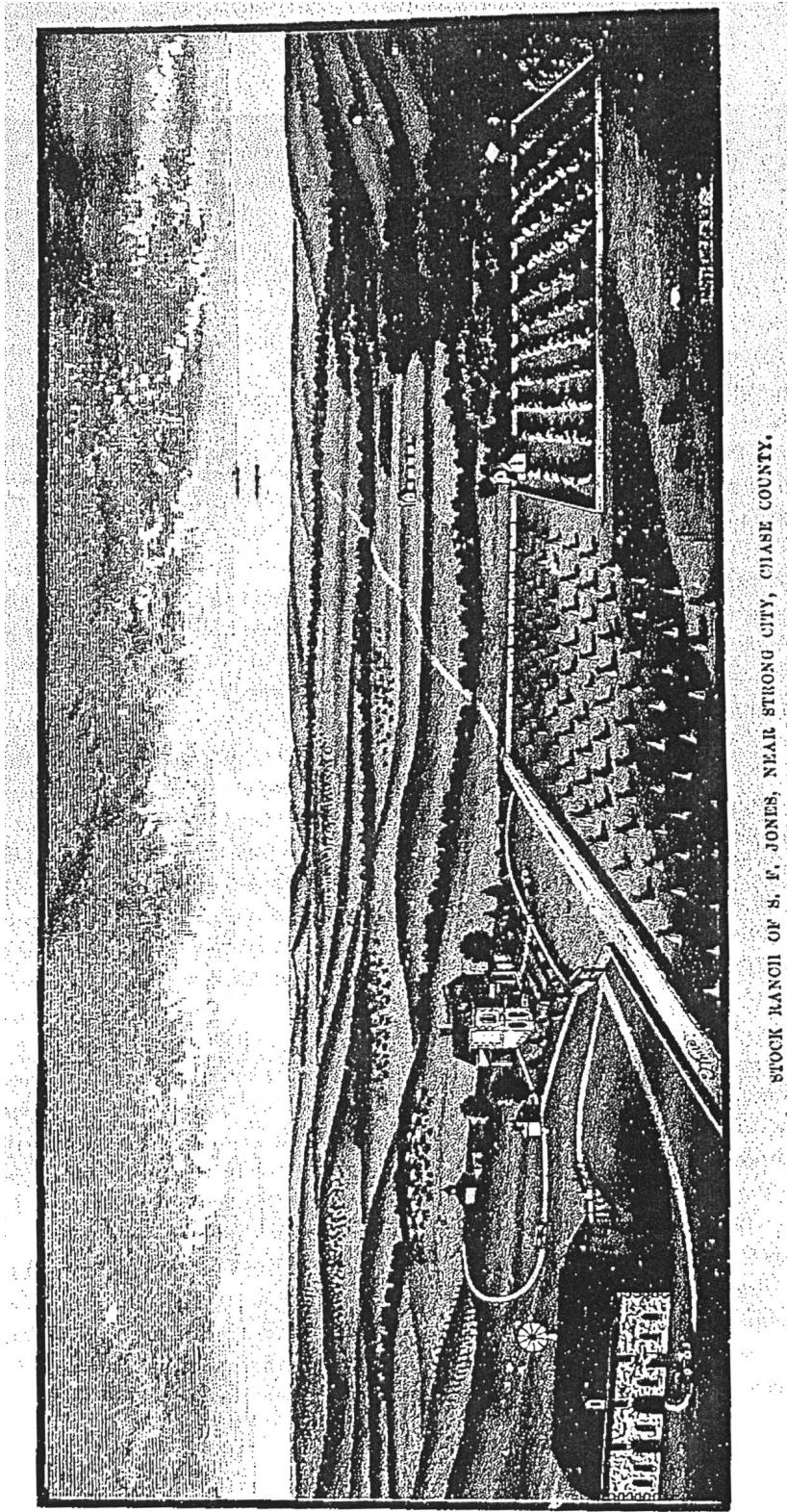


Figure 12.
Circa 1883 lithograph of Stephen Jones' Spring Hill Ranch headquarters and environs, showing the house, barn, other outbuildings, ranch roads stone walls, walled orchard, crop fields and the public road leading north. The Lower Fox Creek Schoolhouse is not visible in this image.

Source: Everts 1887 *Atlas of Kansas*.

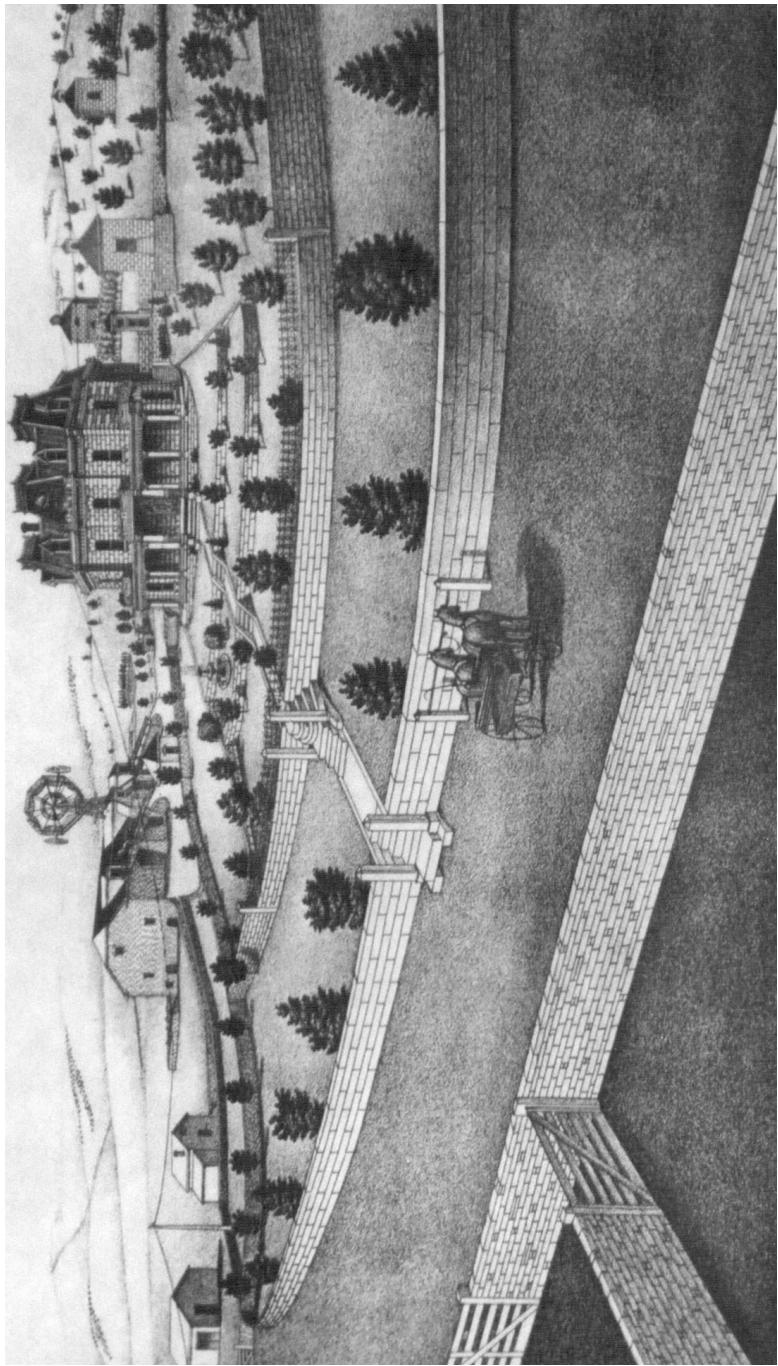


Figure I3.
Circa 1887 lithograph of the Spring Hill Ranch main house and environs. Note the barn with windmill, outbuildings, stone walls with steps, iron fencing, tree planting, fountain, and hitching post. A telegraph line extends to the left side of the house.

Source: Everts 1887 *Atlas of Kansas*.

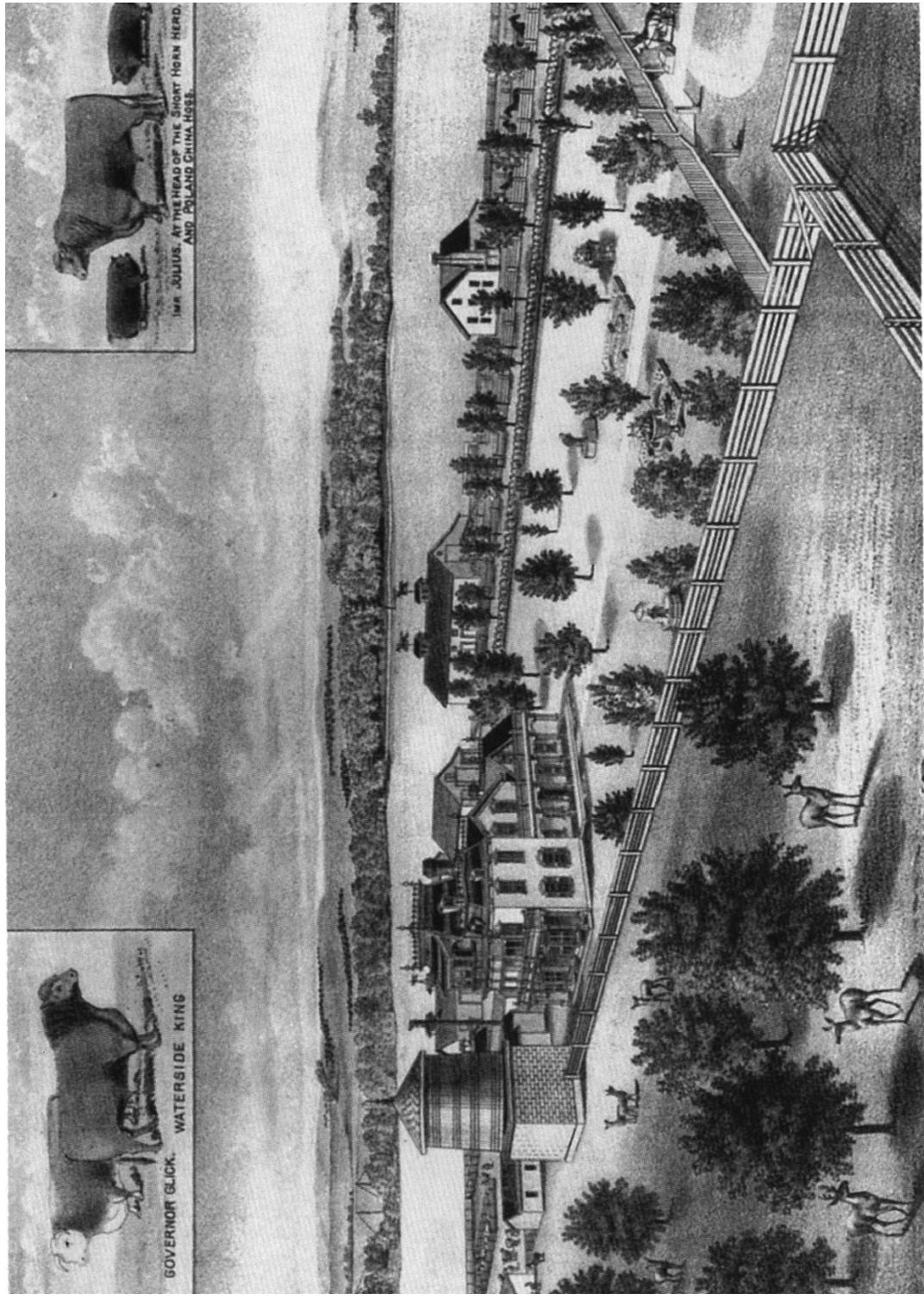
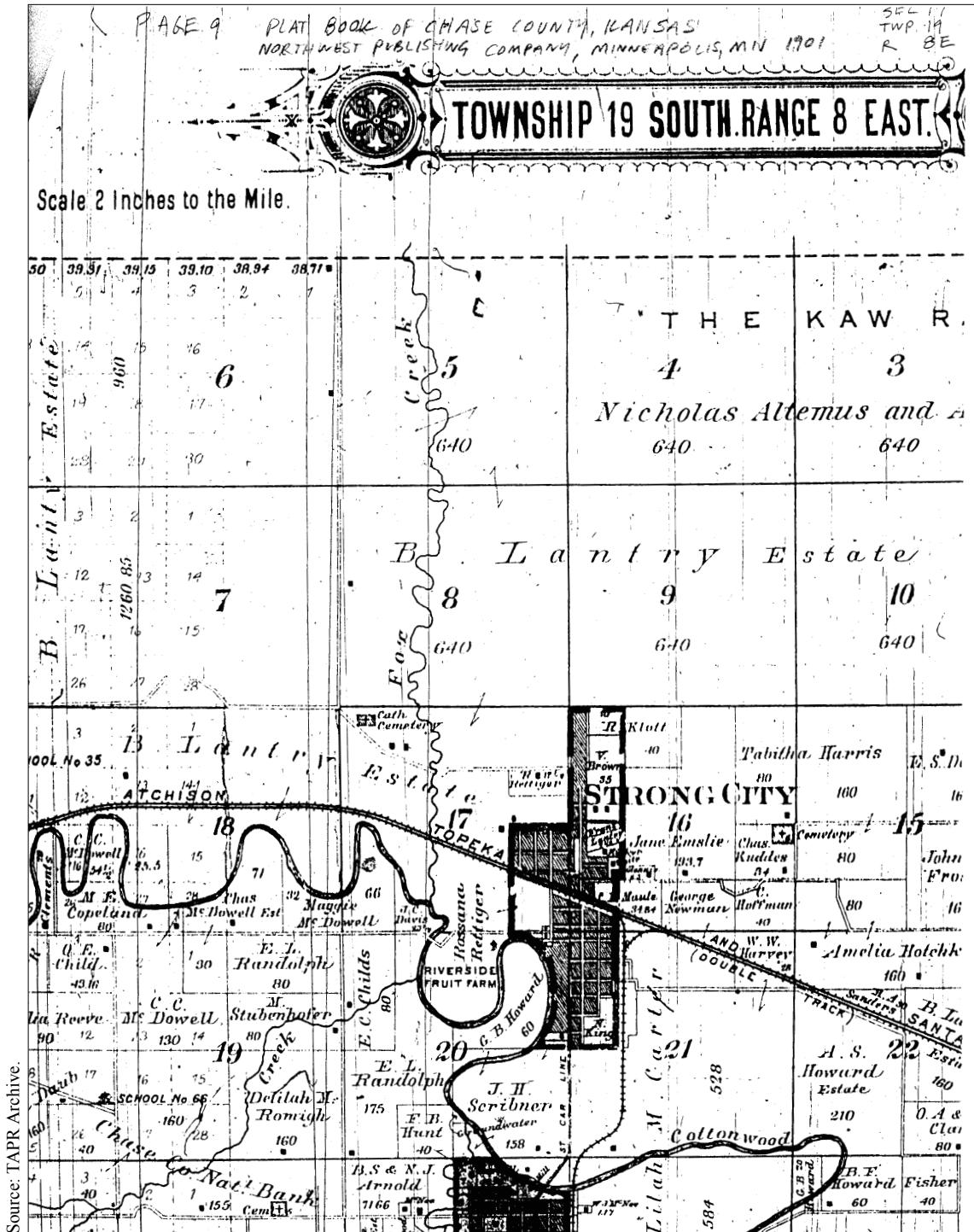


Figure 14.
Circa 1887 lithograph of Deer Park Place. Note the presence of the main house, barn and other outbuildings, wood fencing, and deer park.



Source: TAPR Archive.

Figure 15.
1901 map of Township 19 South, Range 8 East. Note the Strong City limits, AT&SF rail line, "Lantry Estate," Catholic cemetery, and Fox Creek corridor.

Source: TAPR Archive.

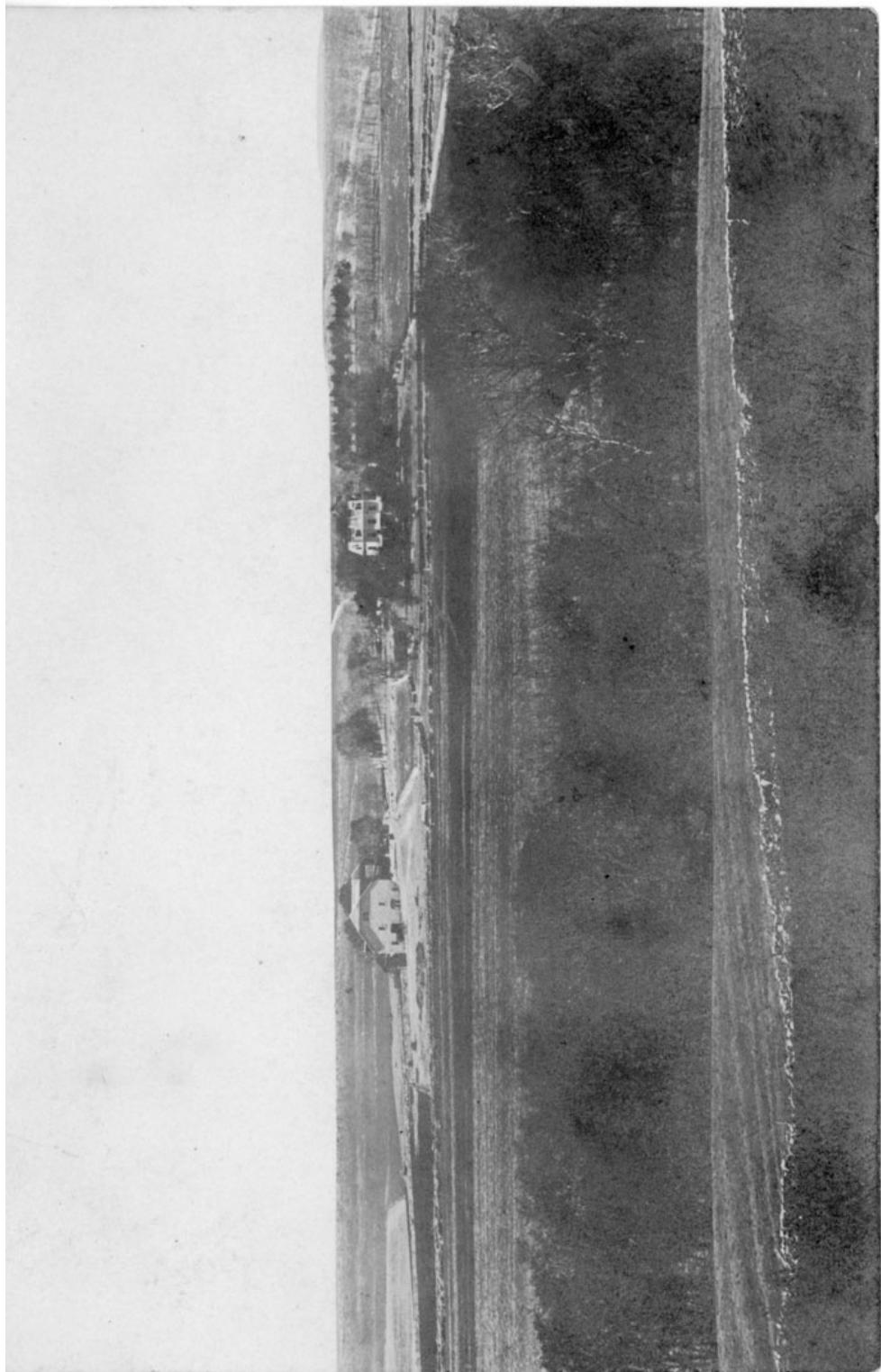


Figure 16.

Circa 1908 postcard view looking west across Fox Creek toward the Spring Hill ranch headquarters. Note the main house, barn, cedar windbreak behind and to the right of the house, and public road leading north.

Source: TAPR Archive.

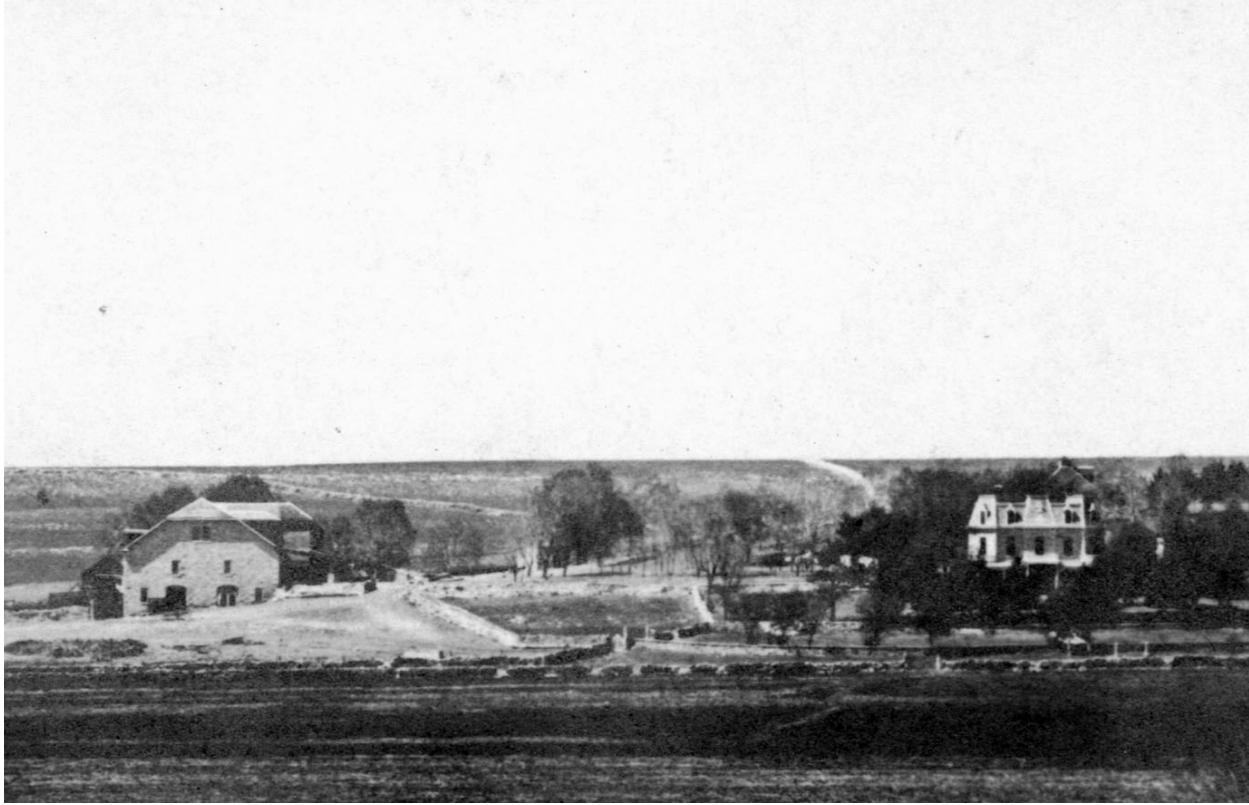


Figure 17.

Detail of 1908 postcard view showing the Spring Hill ranch complex. Note the stone-walled enclosures between the barn, road, and house, and the stone walls lining the public road. A gateway with stone gateposts is visible in the center of the photo, likely an entrance point to the ranch headquarters from the road. Visible in this postcard is the fact modifications were being made at this time the roads leading to the barn and the hillside behind the main house. Accompanying these changes in road alignments were alterations to the stone fencing patterns.

Twentieth-Century Ranching (1907–1993)

(See figures 19 through 64)

During this 20th-century period, the ranch underwent several changes in ownership and management, a division of the holdings Lantry had consolidated, and a reconsolidation. There were also dramatic economic fluctuations and major technological innovations and changes that affected the region. Despite these events, the character of the overall ranch changed only slightly over these eighty-six years. Aerial photographs available for the years 1938, 1956, 1971, and 1997 support an understanding of the property over the course of this period (*figures 19 through 21, 26-34*). The 20th century witnessed the transition from horse-drawn equipment to mechanization, and from family-based farm/ranch operations to modern corporate ranching. Although changes in internal organization and land use are clearly evident, reflecting the response of the owners to the extreme economic and environmental conditions of the 1930s, the basic character of the ranch landscape endured throughout the period. In 1993 the ranch still remained recognizable as the property first developed by Jones and Lantry.

In 1907, Charles Lantry sold most of the family land to Charles C. Patten of Lyon County, and moved to North Carolina where he was involved in railroad construction until his death in 1911. The sale of the consolidated Lantry holdings ended an era marked by profitable 19th-century ranching, and initiated three decades of agricultural uncertainty and fragmentation. Lantry's 1907 deed of sale was the first mention of the corral area developed along the rail line spur.

When Patten bought 9,682.55 acres from Lantry for \$180,636.92 in 1907, this land included much of the former Spring Hill Ranch.²¹⁰ In 1908, the remainder of the land was sold to F.W. Freeman of the Merchants National Bank in Topeka.²¹¹ Continuing a Lantry family tradition, the Pattens never lived in the Spring Hill house.²¹² Since Patten's obituary of 1922 states that he "resided at the Lantry ranch" until moving to California in 1917, the Pattens likely lived in the Deer Park Place house. Patten sold 8,602 acres of pasture to Lester B. and Beulah Urschel in 1921 for \$400,000.²¹³ This sale marked the separation of the ranch land from the farmstead. The Urschels are reported to have lived in Strong City rather than on the ranch property,²¹⁴ and to have run approximately 4,000 cows on the ranch. Keeping cows was unusual for that time; most ranchers kept steers.²¹⁵ Few records have been found pertaining to the Urschels and almost nothing is known of any changes they may have made to the land during this period.

The Benninghoven Ranch

In 1909, Otto and Flora Benninghoven purchased 1,080 acres of the Spring Hill ranch, including the Ranch headquarters, from C.C. and Nannie Patten for a purchase price of \$37,800 with \$10,000 as a down payment. Their residency lasted through the Great Depression of the 1930s.

²¹⁰ Copy of deed provided by NPS.

²¹¹ There is little information concerning Freeman ownership at this time.

²¹² There were probably tenant managers or employees living at Spring Hill, but they have not been identified.

²¹³ Copy of deeds provided by NPS.

²¹⁴ Future research efforts may result in more information about residential uses, land use, and site changes during Patten, Freeman, and Urschel ownerships.

²¹⁵ Copy of deed provided by NPS.

The Pattens continued to hold the deed for the ranch until Flora Benninghoven and her sons completely paid the outstanding loan on the property in 1917, after Otto Benninghoven's death.²¹⁶ The Benninghoven family moved their personal belongings, as well as their livestock, overland to the ranch from their former residence in May Day, Riley County, Kansas.²¹⁷ For the first time since Stephen Jones moved to Kansas City, the owners of the property were again in residence at the old Spring Hill Ranch. Like Jones and Lantry, the Benninghovens became active in the agricultural life of Chase County. Although the family ultimately lost the property, Benninghoven family members played leadership roles in the county and the township through the 1930s.

Otto Benninghoven immigrated to the United States with his parents as a young man in 1877, living first in Seward, Nebraska. Benninghoven had been born in Persia, Germany (near Düsseldorf, formerly in Prussia); the family emigrated to avoid military service for their eight sons. Otto was the oldest son; in 1889, he married the daughter of a miller from Fancy Creek, Kansas—Flora Winkler—whom he had met when he was in the wholesale flour business in Omaha. Otto and Flora Benninghoven lived for a short time in Omaha where their three sons were born, then moved to Riley County. After moving to Spring Hill in Chase County, the younger Benninghoven children attended the Lower Fox Creek School.

Following Otto Benninghoven's death in 1917, Flora Benninghoven operated the livestock ranch with the help of her three sons, Curt, Fritz, and Rhein. According to a family member, Curt Benninghoven directed the ranch operation and became a township and county leader; he held several offices, including township vice president (*see figure 35*).²¹⁸ His wife Edith Benninghoven also held county office and was active in county extension activities. The family was known to be public-spirited and involved. The Benninghovens hosted a youth 4-H camp on their property near the creek in 1932.²¹⁹ Flora Benninghoven was remembered in her 1941 obituary as a capable housekeeper whose pioneer childhood in Kansas had prepared her for managing the household at the Spring Hill Ranch.²²⁰

Curt Benninghoven also conveyed that many of his brothers' children lived and worked at the ranch.²²¹ The Benninghovens may have had other hired hands as well. A Benninghoven family photograph from this period shows a group of men, probably ranch workers, eating watermelon at the rear of the residence (*see figure 36*). A family letter related that a teacher beginning her career boarded with the Benninghovens ca. 1926.²²²

The Benninghovens raised both cattle (*see figure 37*) and sheep (*see figure 38*) on their ranch and engaged in a range of agricultural activities.²²³ Under the Benninghovens, the ranch operations diversified. They produced silage, corn, and wheat to feed their own livestock and to sell to

²¹⁶ Copy of warranty deed provided by NPS.

²¹⁷ "The Benninghoven Times," No. 2 (n.p., March 1, 1998), 3–5.

²¹⁸ Letter from Deone Benninghoven to Preserve Director, June 16, 1997 (in CLR Notebook compiled by NPS); and *Kansas Annual Reports*, 1920 and 1922.

²¹⁹ Interview with Erma Slabaugh by J. Timothy Keller (Tallgrass Prairie National Preserve, May 3, 1999); interview with Dean Schroer.

²²⁰ "Well Known Resident Dies in Kansas City," *Strong City News* (April 16, 1941). Copy of clipping provided by NPS.

²²¹ Deone Benninghoven, electronic communication, July 13, 1997. Copy in CLR notebook compiled by NPS.

²²² Letter from Florence L. Fulgham to Ms. Dodge, March 20, 1955. Copy in CLR notebook compiled by NPS.

²²³ Mary Benninghoven Canter, "The Benninghoven Family," n.p., 20–21. Copies in Benninghoven file, provided by NPS.

others. Documents, copied by the Benninghoven family and shared with NPS, also indicate that the Benninghovens participated in federal programs such as USDA corn-hog adjustments in 1934 and 1935. Copies of USDA forms for 1935 indicate that they had 1,070 acres in the program, 38.7 acres to be retired, and maximum corn acreage of 90.3 acres, yet they had had only 26 acres under contract in 1934. Curt Benninghoven's wife Edith, who raised several hundred turkeys, played a major role in county poultry production through the 1920s and 1930s (*see figure 39*). She hosted meetings of other producers at Spring Hill, which sometimes was called the "Benninghoven turkey ranch."²²⁴ Family members credit her success in poultry production with helping the family through difficult times. According to the county's 1937 annual agricultural report, the Benninghoven ranch produced 500 to 1,000 turkeys annually.²²⁵

The Benninghovens paid off the original note on the land in 1917, but later found themselves borrowing money to meet their expenses. Ultimately, they lost their land because of that indebtedness.²²⁶ Other family papers shared with NPS document various loans and liens on real estate, livestock, and equipment through the 1930s. The Sheriff of Chase County filed a sheriff's deed on April 18, 1935, transferring the ranch from the Benninghoven family to the Prudential Insurance Company of America. Evidently, Prudential had been holding a lien against the property since 1932.²²⁷ This action resulted in the family's loss of the property where they had lived since 1909. On May 7, 1935, George H. Davis purchased the ranch property from Prudential.²²⁸ Mary Benninghoven Canter related that the transfer was the result of the economic conditions of the Great Depression and that the Benninghovens "were compelled to sell."²²⁹ The date that the Benninghovens moved from the ranch has not been determined since they continued to live on the property for some time following the sale.²³⁰

The Davis/Z Bar Ranch

The new owner of the ranch, George H. Davis, was a prominent businessman from Kansas City and president of the National Chamber of Commerce. Davis had begun working in the grain industry, initially as a teenager in Kansas City, and later in New Orleans. He had formed his own grain export and storage company, and in the 1930s he operated Santa Fe Elevator A in Kansas City, reportedly the largest grain elevator in the world at that time.²³¹ Davis invested in ranchland during the Great Depression when prices were low. By 1940, his company, the Davis-Noland-Merrill Grain Company, had divested from grain and had become a major land and cattle company.

Prior to acquiring the Benninghoven ranch, Davis had purchased 10,000 acres of the old Spring Hill Ranch from Lester and Beulah Urschel; that transfer was recorded in January 1935.²³² The

²²⁴ Chase County Agent, Kansas State College of Agriculture and Applied Science, *Annual Report, 1935, for Chase County. Vols. 1935-1939* (Cottonwood Falls: Chase County Courthouse, Extension Service Office, 1935), 75.

²²⁵ Chase County Agent, Kansas State College of Agriculture and Applied Science, *Annual Report, 1937, for Chase County. Vols. 1935-1939* (Cottonwood Falls: Chase County Courthouse, Extension Service Office, 1937), 378.

²²⁶ *Register of Deed* (Chase County, Kansas, Deed Book 47), 186-187; Snell, "A Brief History of the Z Bar," 11.

²²⁷ Copy of a mortgage foreclosure, provided by NPS.

²²⁸ Copy of a deed, provided by NPS.

²²⁹ Canter, "The Benninghoven Family," 21.

²³⁰ Former associate of Davis, "Barn Assessment."

²³¹ This claim is made in almost every biographical sketch of Davis but the original source of the statement has not been documented.

²³² Copy of a deed provided by NPS.

Davis acquisitions reunited the Jones/Lantry holdings and essentially reassembled the old Spring Hill/Deer Park Place ranches first consolidated by Lantry.²³³ Davis transferred the property, which was known as the Davis Ranch, to the grain company. Davis was an astute businessman who recognized the value of purchasing land that was located in the “best grazing section in the United States.”²³⁴ The former Jones and Lantry ranch was one of several ranches owned and operated by Davis. In total, the Davis Ranch, which exceeded 70,000 acres, was the largest land holding in Chase County and in Kansas.²³⁵ The reunited Lantry holdings were part of a much larger ranching operation that included land in Morris, Wabaunsee, and Riley Counties—more than 30,000 acres of Flint Hill rangeland.

The county agent’s report for 1935, the year of the Davis purchase, described 75 percent or about 400,000 acres of the county land area as still comprised of bluestem grass. According to the agent, there were approximately 90,000 acres of cultivated land in the river and creek bottoms of Chase County and in active farm trade. In addition, there were approximately 100,000 head of Texas and New Mexico steers.²³⁶ These characteristics made Chase County ranch land a sound investment for Davis.

Davis, however, was an absentee landowner who employed a ranch manager. Fred H. Howard, Sr., served as ranch manager from 1935 to 1970. During his tenure, the ranch headquarters were located at the former Deer Park Place and not at Spring Hill (*see figures 21, 27, 54, and 55*).²³⁷ Hazel and Erma Slabaugh, employees of the ranch, and their family lived in the Spring Hill residence for more than thirty years. There may have been a period prior to their residency when there were no occupants of the Spring Hill house. Dean Schroer, a long-term neighbor of the ranch, recalls that both he and his father worked at the ranch at various times.²³⁸ He also has related that at times the ranch had about ten hands. According to Schroer, the hired hands lived in various places: three “downtown,”²³⁹ a married couple at the school house (which was divided into four rooms for them), and the remainder at Spring Hill.

The late 1930s marked a return to the cattle ranch tradition established by Jones and Lantry and a departure from the family farm style of diversified ranch management practiced by the Benninghovens. Several sources recall that there were only Herefords on the Davis Ranch. Since the management policies of the Davis Ranch allowed ranch employees to engage in general farming and gardening activities, some employees had small vegetable gardens. Various families and individuals that lived on the ranch also shared in the products of the few milk cows, hogs, chickens, and turkeys that were kept on the property. These activities were minor and were not intended to produce income for the ranch as during the Benninghoven period. All major agricultural activity of the Davis Ranch supported the cattle operation.²⁴⁰ Hereford calves, brought to the ranch by rail, fed on the rich pastures for two years before being shipped to market.

²³³ Chase County Deed Book 56, 596-598; Chase County Deed Book 57, 255. Copies provided by NPS.

²³⁴ Chase County, *Annual Report*, 1935, 3.

²³⁵ Hoots, “Growing Up,” 10.

²³⁶ Chase County, *Annual Report*, 1935, 3 and 41.

²³⁷ Message from Greg Hoots to Dena Sanford, October 16, 1997; copy provided by NPS.

²³⁸ Interview with Dean Schroer.

²³⁹ According to oral history interviews, this was the term often used to refer to the Deer Park Place ranch headquarters, due to its proximity to Strong City.

²⁴⁰ Interviews with Fred Howard, Jr., and Dean Schroer.

The corral area, which was further developed later in the century, was critical to the success of the ranch and made possible the direct rail transport of cattle to and from the ranch. It also made the ranch a destination for other area ranchers and farmers who drove their cattle to the corral area, which was owned by the railroad, but located on ranch land immediately adjacent to the railroad spur.²⁴¹ The spur was eventually extended to the north, across the county road.

As manager, Fred Howard concentrated on pasture management, hay production, and harvest to support the extensive cattle operation. The operation produced silage and feed crops on about 10 percent of the total Chase County ranch acreage that Davis owned. The ranch also purchased hay from neighboring farms. The general management practice was to have western calves shipped by rail to Strong City to feed for two years at the ranch, where the cattle could fatten more easily in the Flint Hills than in the drier southwest. Cattle were moved between the various pastures of the ten different ranches owned by the company. Cowboys on horseback moved cattle on overland drives, often of ten to twenty miles, although some drives were longer. A photograph from 1938 shows “3000 steers, 25 miles out” (*see figure 40*).²⁴² The last major cattle drive of this type on the ranch occurred in the late 1940s.²⁴³

The ranch has always been divided into several major pastures. How these were named and designated historically before this period is not known. The various pastures that existed during this period developed as follows, beginning in the northwestern corner of the Preserve and working south and then east:

West Branch Pasture (1,559 acres)—is a result of a mid-20th-century division; West Branch and Gas House Pastures were unified into a single 4,000-acre pasture before this time and referred to as the “big pasture,” which was cut in two sometime after Fred Howard Jr. left home. The “big pasture” appears in approximately the same configuration in ca. 1895 as Fred Howard, Jr. describes it. In ca. 1895, it was enclosed almost entirely by stone fences, with some crop fields along Palmer Creek in the northern portion.

Gas House Pasture (2,214 acres)—the source of the pasture’s name is not currently known, but it was only known as such from the mid-20th-century division of the “big pasture.” It is possible that it could be named for a gas well site, or for a gas-powered stove, such as the type remembered by Carl Hansen that was used to prevent cattle watering tanks in the pastures from freezing in winter. Gas came from a well on the ranch.

Windmill Pasture (1,075 acres)—may have contained windmills at one time. It is not known when the name came into use. However, windmills were very common in the Flint Hills before the mid-20th century and used to pump water into tanks for the cattle. Thousands of windmills built in Beatrice, Nebraska were purchased for use in the Flint Hills. One ranch hand was fond of telling out-of-towners that the windmills were “fans to keep the cattle cool in the summertime.” By the end of the 20th century, the windmills were all but abandoned, replaced by stock ponds

²⁴¹ Julia Hobbs related in a telephone discussion with Genevieve P. Keller that her research of 1870s newspapers is still ongoing and that she has not identified a date for the spur. She has been puzzled by an account that Jones was having cattle unloaded at the station in 1878 because she would have thought the stockyard and spur to be in place at that time. She has located a reference to Lantry’s new switching tracks being put in at the quarry for a new contract as well as other references to quarries.

²⁴² “3,000 steers, 25 miles out.” Collection of Fred Howard, Jr., 5/16/38.

²⁴³ Hoots, “Growing Up,” 12.

that were subsidized through government programs. On the ca. 1895 map, this pasture's boundaries are stone-walled and in the same alignment as today.

West Traps Pasture (476 acres)—it is not known when this pasture was first called the West Traps. However, the pasture boundary today appears to be aligned with an early stone wall boundary shown on the ca. 1895 map. It is not clear whether this pasture's name pre-dated the naming of the East Traps Pasture, which first became known by this name in the mid-20th century. Palmer Creek extends through this pasture. “Traps” may be a term for a smaller pasture, in which cattle were kept or sorted after being brought in from the larger range.

Red House Pasture (1,032 acres)—appears to have been named for the Red House ruin, the site of a former farmstead located within the pasture boundary. The date of origin of this name is unknown, but is likely associated with this period or earlier.

Crusher Hill Pasture (1,308 acres)—includes boundaries on its east side, and along the eastern part of the north and south boundaries, which appear to be the same today as on the ca. 1895 map. It is not known when the name “Crusher Hill” came into use. The pasture is named for the large hill that dominates the pasture's eastern side. Crusher Hill was itself named for Barney Lantry's quarry and stone crusher located just south of the existing Preserve. A railroad spur split from the main line west of the Fox Creek bridge, and led to the quarry. Carl Hansen noted that the building of US Highway 50 destroyed all evidence of the spur in this area.²⁴⁴ According to Hansen, when the quarry was active, thousands of tons of rock were crushed and shipped out as ballast for the Santa Fe railroad, as well as “dimension rocks” which went to San Francisco for what they called the China Basin. After the quarry went out of use, the site was converted into Crofoot's feed lot at an unknown date. Cattle pens were built into the former quarry pit.

East Traps Pasture (650 acres)—adjacent to Fox Creek, this was referred to as the “hilltop pastures” at one time. It was divided into two pastures. Stone walls cross this pasture in two places today. On the ca. 1895 map, this pasture appears to have been divided by the southern of these two walls, as the northern one is not delineated (*see figure 18*). See West Traps Pasture, above, for an explanation of the term “traps.”

Brome Pasture (445 acres)—is located in the bottomland along the west side of Fox Creek and originally was used to grow brome grasses for winter silage. It is likely that this is not an old name, as the area was plowed for crops such as corn from at least ca. 1895 until the mid-20th century.

Two Section Pasture (1,273 acres)—is named for the fact that it encompasses two entire sections. This division appears in much the same way on the ca. 1895 map, with two small areas of bottomland on the western edge that appear to be in crops.

Other pastures that are not recognized today were mentioned by the interviewees who participated in the oral histories. For instance, the **Griffith Pasture** is said to have been located just west of Crusher Hill, over the hill, according to Fred Howard, Jr. It was smaller than some of

²⁴⁴ Until 1960, US Highway 50 was known as Route 50 (Personal communication, Bill Fillmore to Robert King, November 6, 2003).

the other pastures, but is not on the current map. It is not clear whether any pasture demarcations are present in this area on the ca. 1895 map.

South of the current East Traps pasture and adjacent to Two Section Pasture was, Fred Howard, Jr. recalls, a “**Cow Meadow**.” Located north of the Lantry house, it was where the dairy cows from the ranch were put to pasture. Approaching from the south, one had to pass through the cow meadow on a gravel road to reach the gate accessing Two Section. The ca. 1895 map shows this “meadow” located on the three lots to the north of Deer Park Place and along the western boundary of Two Section, bounded by a stone wall on the east and possible fences on the north and west.

Carl Hansen noted that, turning north off the county road at the west edge of Strong City, a lane would bring the cattle into what were once called the **Wilson Pastures**. Z Bar Cattle were in the pastures east of Fox Creek. It is not clear where the Wilson pastures were and whether they are on Preserve land today.

In 1950, the Davis-Noland-Merrill Grain Company was restructured. Prior to his death, Davis established a trust that gave two percent of the ranch business to four business associates, with Davis controlling the remaining ninety-two percent designated as an educational trust fund. In 1955, the year that Davis died, deeds were recorded transferring ownership of the various parcels comprising the ranch to the Davis-Noland-Merrill Grain Company.²⁴⁵ The change in ownership was accompanied by a name change to the Davis-Noland-Merrill Grain Company Ranch. In the same year, the company merged with the Z Bar Cattle Company.²⁴⁶ At the same time, the ranch was renamed the “Z Bar Ranch.” Davis had also been a partner in a cattle company named the Z Bar Cattle Company, which had used the “Z” as its brand. Consequently, the ranch was sometimes called the Z Bar Ranch before the official name change, since its cattle were branded with the distinctive “Z.” The entire operation came to be called the Z Bar Ranch and Cattle Company following Davis’s death.

As the 20th century progressed, the former Spring Hill Ranch became increasingly valued for its historic and architectural significance, and was nominated to the National Register of Historic Places in 1971.²⁴⁷ The nomination did not include the entire property, but only the smaller area containing the Spring Hill house, barn, and associated outbuildings in the domestic cluster.

The Z Bar Ranch was sold to Boatmen’s First National Bank of Kansas City on November 26, 1986.²⁴⁸ The bank held the trusts created by George and Elizabeth Davis in their wills. The cattle and ranch operation continued through the mid-1980s when stockholders voted to dissolve the corporation.

Following Fred Howard, Sr.’s death in 1970, the former Lantry house—Deer Park Place—where Howard had lived and its immediate environs were sold. Two barns and a poultry house

²⁴⁵ Copies of four deeds provided by NPS.

²⁴⁶ Bayer (no other publication information available), 7; Copy of recorded merger document from the State of Missouri, Secretary of State, 1975, provided by NPS.

²⁴⁷ The property was listed as a National Historic Landmark in 1997.

²⁴⁸ Copy of deed provided by NPS.

remained as part of the Z Bar Ranch property. There were at least two subsequent owners and a bank repossession before the former Deer Park Place was bought by the current owners, the Cahoons, and renovated as a bed and breakfast operation.

Plans for Protecting the Tallgrass Prairie

In June 1988, Boatmen's First National Bank signed an option with the National Audubon Society for the purchase of 11,000 acres, but the future of the ranch was not determined for several years. The option to acquire the Z Bar for a tallgrass preserve was not made public until January 1989. News that a national park was being considered sparked immediate controversy that continued throughout this interim period. Ultimately, efforts to protect the prairie through purchase by a non-profit conservation group were successful. Through the late 1980s and early 1990s negotiations continued within the Kansas Congressional delegation and various constituents and constituent groups. A 1991 NPS special resource study concluded that the ranch possessed nationally significant natural and cultural resources and that it also had excellent potential for inclusion in the National Park System. In 1994, more than a century of private ranch ownership ended with the sale of the ranch to the National Park Trust.

Land Use

The overall land use changed little during this nearly century-long period, despite several changes in ownership. The ranch remained primarily pastoral, characterized by large open expanses of prairie, tree-covered stream banks, and rocky slopes (*see figure 41*). Panoramic views from the Benninghoven family collection document the timeless character of this ranching landscape (*see figure 42*). The ranching and residential uses established by Jones and Lantry in the 19th century endured through most of the 20th century. During the first fifteen years following the Benninghoven purchase, the ranch relied primarily on horse- and mule-drawn equipment (*see figure 43*). Later the operation became more mechanized (*see figure 44*).

Horseback riding on the range never disappeared entirely and remained an important part of ranch life through the entire period (*see figure 45*).²⁴⁹ The ranch's last manager and his wife, Don and Peg Jenkins, who lived at Spring Hill in the 1980s, vividly recalled riding through tallgrass on the Preserve rangeland. Peg Jenkins remembered riding to the top of the East Traps Pasture to enjoy the view toward the Spring Hill Ranch headquarters. She reminisced in an interview that at times the towering grass was so tall that she could cross it over the saddle of her horse. She also related that the Z Bar Ranch policy was to provide employees with horses for use on the ranch; employees did not keep their own horses on the property.²⁵⁰

Despite changes in ownership, large-scale land use remained remarkably stable through this period and, in fact, differed only slightly from the Jones and Lantry period. Pasturing of livestock and crop cultivation remained similar through the Z Bar period, although over time there has been a decrease in cropped land and less grain crop diversity. A photograph from the Benninghoven family indicates that the area east of the Spring Hill residence was in use as a

²⁴⁹ Interview with Peg Jenkins by J. Timothy Keller (Council Grove: May 2, 1999). Don and Peg Jenkins lived at Spring Hill as managers. They followed Fred Howard and Gerald Slabaugh in that position.

²⁵⁰ Interview with Peg Jenkins.

pasture during the early 20th century; the same area had apparently comprised a garden, an alfalfa field, and a large cornfield near the end of Lantry's ownership (*see figure 48*).²⁵¹ Twentieth-century aerial photographs of the area indicate that the 19th-century cropped fields along Fox Creek were reclaimed as pastures during this period, some of which are included in today's Brome Pasture.

Changes in agricultural technology and feeding practices have decreased dependence on producing a large amount of silage and grains on site during the 20th century. As a result, the amount of pastureland has increased, while the amount of cropped land has decreased. Cropped land remained an important land use, however. A number of photographs from the Benninghoven family show the evolving technology in grain harvesting (*see figures 43 and 44*).

There were continued residential uses at both the former Spring Hill and Deer Park Place headquarters during most of this period. The Pattens moved out of the Deer Park house in 1922–23 when the property was acquired by the Urschels; according to oral history interviews, the Pattens moved to California and bought land in Los Angeles County when it was still farmland, eventually making a fortune. The Urschels lived in Strong City rather than on the ranch.²⁵² The Benninghoven purchase of a portion of the Spring Hill ranch brought about the return of an owner's family to the former Jones residence. Following the Davis purchase, ranch manager Fred Howard, Sr., established headquarters at the former Lantry ranch where he was in residence from 1935–70. Following his death, the headquarters was moved to the Spring Hill main house where the new manager, Gerald Slabaugh, was living. Gerald Slabaugh has been described as Howard, Sr.'s right hand man. Slabaugh's brother Hazel, who also worked on the ranch, had lived in the headquarters house prior to his brother. The residences at both ranch headquarters were thus occupied for most of the 20th-century ranching period by either an owner or a ranch manager. There were other tenant/ranch hand houses on each property, including two at the Lantry headquarters. One small house was located northeast of the cluster, and may have been there from Lantry's residency in the 1880s. A house appears in this general location on the 1887 illustration, although it is not known if it is the same house described by Fred Howard, Jr. as the mid-20th century home of his brother Buss. Another two-story house, also no longer on the site, was located close to where the loop drive intersected with the main road. According to Howard, Hazel and Erma Slabaugh lived in this house for a time before moving to the Spring Hill house. During the family's tenure at the ranch, the Benninghovens built an additional house south of the Spring Hill headquarters, possibly for Curt Benninghoven, while his brother Fritz lived in the main house. Another house was apparently moved to a location just north of that house in the late 1930s or 1940s for use as ranch employee housing. While the Lantry tenant houses were removed many years ago, it is not known precisely what the fate of the houses at Spring Hill were before acquisition of the property by the NPT.²⁵³ The existing Ranch Hand House likely survives from this period, but little is currently known about its history.

²⁵¹ "B. Lantry Estate," ca. 1895 electronic image provided by NPS.

²⁵² Message from Dena Sanford via Sherda Williams to Genevieve Keller, Steve Jones, and Tonya Bradley, February 17, 1999.

²⁵³ The chronology of moving, construction, and demolition of these two houses remains unclear. Interviews conducted in the spring of 1999 with a former associate of Davis do not support the transcript of the "Barn Assessment." The conclusions of this CLR are based on the more recent interview. The later information appears to explain the necessity for removal of a portion of stone wall to facilitate moving one of the houses to the Spring Hill location. NPS may be able to resolve this conflict definitively at a later date.

During a 1998 visit to the Preserve, Floyd Fisher, a former employee of the Benninghovens, reminisced about the use of the land during their ownership and residency.²⁵⁴ Fisher first worked for the Benninghovens in 1924 as a fourteen-year-old wheat harvester. He worked for them again in 1925, and later in 1933. Fisher confirmed family accounts that the Benninghovens raised hogs, sheep, and cattle. Unlike Jones and Lantry, who kept thoroughbred stock, the Benninghovens, he remembered, had mixed breeds of cattle. The Benninghovens kept livestock in the stone barn that had been built for Jones. Fisher could not recall any additional shelters for sheep, although he remembered that there were several hundred on the property.²⁵⁵ The Benninghovens pastured their sheep on the hills that lay on the eastern side of the highway.²⁵⁶

From the 19th century until about 1914, seeps were dug out to make cattle watering places when surface water was scarce; windmills and water tanks were visible in the landscape, pumping and storing water from wells for household use and for cattle watering. Around 1920, landowners in the Flint Hills began building stock ponds to water their cattle. This accelerated in the 1930s with a new consciousness about drought, and the rise of federal assistance programs for such construction projects. The Chase County annual agricultural report for 1934 mentions the development of farm ponds in the county.²⁵⁷ According to oral history interviews, the oldest stock pond on the ranch is in Windmill Pasture near the Tour Road, built in the 1930s using a drag line. According to a former associate of Davis, various ponds were developed on the ranch during the 1930s; both Fred Howard, Jr., and Dean Schroer agreed with the statement that the majority of the pond construction occurred after the 1930s when mechanized equipment facilitated construction.²⁵⁸ The early ponds were small, constructed using horses and “fresnos.”²⁵⁹ Howard especially remembered the construction “by hand” of one of these ponds. Early ponds were developed in the areas where it was most essential to provide water to livestock. According to the 1998 dam inventory, two of the ponds, which have all been numbered in the study—#s 23 and 25—were built in the 1930s in the West Branch pasture and located on springs feeding Palmer Creek. Development of ponds eliminated the need to haul water to remote areas of the ranch.²⁶⁰ Ten ponds—#s 13, 14, 15, 16, 18, 19, 20, 21, 22, and 24—were developed in the 1940s; seven—#s 4, 5, 8, 9, 10, 11, and 17—in the 1950s, one—#6—in the 1970s, five—#s 2, 3, 7, 12, and 26—in the 1980s, and one—#1—in the 1990s (*see figure 24*). The later ponds, which were developed using bulldozers, were constructed by the Soil Conservation Service (SCS) or with SCS assistance. It is possible that at least some of the earlier ponds were enlarged or made deeper over time. A former associate of Davis, however, related that he did not believe this practice occurred frequently.²⁶¹

According to Erma Slabaugh, who lived in the Spring Hill residence following the Benninghovens, the hired hands on the ranch kept chickens. It is possible that additional

²⁵⁴ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher, July 20, 1998; copy provided as electronic communication from NPS.

²⁵⁵ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher.

²⁵⁶ Former associate of Davis, “Barn Assessment.”

²⁵⁷ Chase County, *Annual Report, 1935*, 45.

²⁵⁸ Interviews with Dean Schroer; with a former associate of Davis (Lenexa, KS: May 1, 1999); and with Fred Howard, Jr., conducted by J. Timothy Keller.

²⁵⁹ According to a former associate of Davis, a fresno was a metal scoop used for scraping soil that could be dumped forward when full.

²⁶⁰ Message from Greg Hoots to Dena Sanford, NPS-MWRO, 10/16/97.

²⁶¹ Telephone interview with a former associate of Davis by J. Timothy Keller (June 5, 1999).

structures were built on the property to accommodate the chickens; for instance, Slabaugh remembered that there was a small wooden chicken house, probably a “brooder house” west of the residence. The structure, which is no longer extant, was visible from the back porch. It was supplied with natural gas to provide necessary heat to the young chicks.²⁶² Erma Slabaugh also recalled having been told that the existing stone poultry house was used as a “cowboy bedroom.”²⁶³

By the 1950s, “cows,” or older female cattle, began to graze at the ranch. Previously the practice of keeping cows had been considered “disgraceful.” Many claimed that grazing cows ruined the grass because their grazing habits differed from those of steers.

Ranchers generally ran steers at first and then added yearling heifers, which they kept until they were two-years old. During this period, there were usually 400 to 700 head of cattle on the ranch. In 1957, however, the ranch discontinued wintering two-year-olds. By the 1980s, when food supplements were widely used, cattle were once again kept on the ranch year-round, as they had been in the 19th century, with seasonal ranching conducted for yearlings in the fall and winter.²⁶⁴ Year-round ranching was not yet common on other ranches in the area by this time, however.

Utility development and natural resource extraction also occurred during this period. Gas wells were developed on the property in the 1930s or 1940s.²⁶⁵ Gas was supplied to the Z Bar/Spring Hill Ranch headquarters as well as being pumped to nearby towns.²⁶⁶ Copies of a number of gas and oil leases and electric line easements related to the ranch are in the possession of NPS. In 1938, George and Elizabeth Davis granted a right-of-way to the Kansas Electric Power Company to erect and maintain electric transmission lines in Section 10, Township 19S, Range 8E.²⁶⁷ Electricity reached the ranch shortly after World War II, in 1946 or 1947, according to a source at Rural Electric. This delay may have occurred due to a wartime shortage of materials. In 1948, a paid right-of-way to Cities Service Gas Company was granted to construct and maintain a pipeline through Section 7, the northern half of Section 8, and the northwest quarter of Section 9, of Township 19, Range 8E.²⁶⁸ In 1960, the Davis-Noland-Merrill Grain Company granted a right-of-way to the Hauke Pipe Line to construct and maintain a pipeline through the ranch.²⁶⁹ In 1989, Boatmen’s First National Bank of Kansas City, as holders of the trusts established by the wills of George and Elizabeth Davis, entered into gas and oil leases for the ranch land.²⁷⁰ Review of these documents reveals that there were approximately thirty gas wells with pipelines scattered through the ranch at that time, mostly in the northern half of the Preserve. In 1957, the Davis-Noland-Merrill Grain Company granted a perpetual right-of-way and easement to the municipality of Strong City to develop sanitary sewer lines on the ranch property near Strong City.²⁷¹ In 1986, Williams Telecommunication Company, the successor to Cities Service Gas

²⁶² Interview with Erma Slabaugh by Keller.

²⁶³ “ERMA SLAUBAUGH [sic], 10/5/94,” n.p., interviewer unidentified, copy provided by NPS.

²⁶⁴ Don Jenkins, “Barn Assessment.”

²⁶⁵ Former associate of Davis, quoted in “Barn Assessment.”

²⁶⁶ Lehmann, tour of Preserve for Land and Community Associates.

²⁶⁷ *Chase County Deed Book M—Misc.*, 527. Copy provided by NPS.

²⁶⁸ *Chase County Deed Book P—Misc.*, 465. Copy provided by NPS.

²⁶⁹ *Chase County Deed Book L-2*, 221. Copy provided by NPS.

²⁷⁰ “Oil and Gas Lease,” *Chase County Deed Book L-88*, 67–81; and associated Exhibits A & B that describe the locations of the leases. Copies provided by NPS.

²⁷¹ *Chase County Deed Book L-2*, 221. Copy provided by NPS. The easement was acquired at a cost of \$1.00.

Company, which had owned a right-of-way through the ranch since 1947, amended the right-of-way to allow construction and maintenance of commercial communication cables and systems in parts of Section 7, 8, and 9, Township 19S, Range 8E.²⁷²

The Lower Fox Creek School

The Lower Fox Creek School continued in operation until 1930; it is not likely that the school changed substantially in character during the early years of the 20th century (*see figure 25*). According to notes from a 1994 interview with Marguerite Buffon, a former teacher and student, there were two outhouses or privies at the school during this period. Buffon confirmed this information in her May 1999 interview for the CLR.²⁷³ Buffon was the school's last teacher. During her term, she had four students, including her younger sister Bernice. She started teaching at age 17 after completing her normal training at Cottonwood High School.

Marguerite Buffon believes that the privies were both "two-seaters." Presumably, the structure to the south was for the girls, and to the north was for the boys. It is not known if these structures were built in 1882 when the school was constructed, or more recently. The origin of the existing, gable-roofed, small board-and-batten structure is not currently known, but it has been suggested that the extant privy may have been moved onto the site from another location to support interpretation of the school house. During the period of its active use, there was also a shed-roofed, frame coal house that "hooked directly to the west wall of the school house." The coal house may have replaced a wood shed, although it is possible that the school always burned coal. Buffon also recalled that a cistern was located north of the school house.²⁷⁴

Buffon recalled that she used the school environs as part of her instruction. Once a month the class would walk south to a tributary of Fox Creek for math and science. They also ate their noon meal outside in good weather, although she recalled that she had "something hot" cooking on the stove every day. The students sat on the stone steps to eat lunch. She described the school yard as "like a prairie" with no shrubs and many wildflowers. She could particularly remember the buffalo apples, wild onions, and Easter lilies in the prairie vegetation. Once a year, the school children would take a "hay rack ride" on a horse-drawn hay wagon. Buffon recalled that sometimes the school sponsored soup suppers and invited the parents. There were never many students in the small school; most walked to school. Buffon remembered that when she was a child, for a time all the students were girls. One of the teachers, who rode a horse to school, promised to teach the girls to ride if they would wear the proper clothing, but Buffon did not recall whether any lesson actually took place.

School was held from 9am to 4pm each day, eight months a year, with the school term ending before planting started in April. Buffon could not remember any school closings because of cold weather. The flagpole was on the north side, in the northeast corner of the site, not the south side as it is now. There was a temporary maypole erected for May Day celebrations that occurred at the school, although the school term was officially over by that date. There was no play

²⁷² An agreement for Tract N 3535. Copy provided by NPS.

²⁷³ Interview with Marguerite Buffon by J. Timothy Keller (Lower Fox Creek School House: May 1, 1999).

²⁷⁴ Three-page, typed interview notes provided with CLR materials; interviewer unidentified, copy provided by NPS; it appears that this portion of the interview with the subheading "SCHOOL" is a continuation of the Marguerite Buffon interview of 10/19/1994.

equipment. In fact, Buffon does not recall that there was much outdoor play for the students, other than “running games” and “Annie over.”

Buffon remembered the stone steps leading up the hillside to the school house from the highway, and recognized that the steps and drive have been altered. She also remembered the original stone wall that edged the east side of the road; it was removed when Highway 177 was widened in the 1950s. There was another stone wall along the northern side of the school yard, and a woven wire fence along the western and southern sides. The students went through the fence to reach the stream, she recalled. Buffon thought that the pump mechanism for the well was the same as when she was a student and teacher. Buffon also believed that there was a wooden well platform when she was a student.²⁷⁵

According to Dean Schroer, whose family has lived northeast of the ranch since 1929, he kept twenty to twenty-five sheep in the Lower Fox Creek schoolyard during the 1930s after the school had closed. He also recalled that a hired man who worked for his family lived in the school, which had been divided into four rooms. Gas lines were run to the school during that time.²⁷⁶ The school district disbanded in 1946–47 and the school house property reverted to the ranch as stipulated in the original agreement with Jones.²⁷⁷ Following this reversion in ownership, the structure was used to store hay, and its original roof was destroyed in a storm.

In 1968, the fourteen Garden Clubs of the Mid-East District of Kansas chose the Lower Fox Creek Schoolhouse as a restoration project, despite the school still being owned by Z Bar Cattle Company. The Garden Clubs, which entered into a lease with the company for the school, was responsible for restructuring the stone steps in front of the doors. Club notes reveal that the stones had been “drug down over the hill to make room for trucks to unload hay,” and that “The large stone steps [were] drug up the hill and put back in their original position.”²⁷⁸ The notes also give the rationale for the project: “We had watched these beautiful little schools crumble. Vandals and thieves hauled off the beautiful stonework and bulldozers pushed them over. This one on Prairie Parkway [Highway 177]; a bit of our heritage standing strong and high. We had to have it.”²⁷⁹ The clubs worked on the project through 1969 and 1970. Mrs. Fred Howard, Jr., chaired the project. The Garden Club was responsible for installing the swing set and the flagpole. At one time, the Kansas State Teachers College at Emporia had considered having the school house moved to their campus.²⁸⁰

Response to Natural Environment

Throughout the 20th century, ranch owners and managers continued to respond to the Flint Hills environment in much the same way that previous owners had. Grazing remained the major land use, and crops were cultivated on bottomlands. There were annual burns to regenerate the natural grasslands. According to NPS staff conducting a tour of the Preserve, there have been annual

²⁷⁵ Interview with Buffon by Keller, May 1, 1999.

²⁷⁶ Dean Schroer, “Barn Assessment.”

²⁷⁷ Snell, “A Brief History of the Z Bar,” 13.

²⁷⁸ Untitled notes in CLR notebook compiled by NPS.

²⁷⁹ Untitled notes in CLR notebook compiled by NPS.

²⁸⁰ Copy of undated news clipping from the *Chase County Leader-News*, CLR notebook compiled by NPS.

burns in the Flint Hills for the last fifty to sixty years.²⁸¹ The 1930s, however, like the 1860s, were a time of drought—the infamous Dustbowl—and burns were discontinued during extreme droughts. Water shortages throughout the region resulted in diminished quality and area of grassland, and a lack of drinking water for pastured livestock. Families like the Benninghovens tried to adapt by diversifying and branching out into other agricultural activities such as turkey production.

Many people have been puzzled and intrigued by the several stone piles or stone cairns on the hillside east of the former Spring Hill Ranch headquarters on the east side of Fox Creek. These formations reportedly date from the Benninghoven period.²⁸² Archeologists have discounted any prehistoric associations. Some people have surmised that the Benninghovens may have created the cairns as part of their sheep tending, since these features are often associated with areas that have a tradition of sheepherding. It is also possible that the stones may have simply been collected from the hillside to be used for some unknown purpose or to remove them from inconvenient locations. The history of the stone piles remains a mystery.

Watering troughs, water tanks, and spring boxes are found throughout the ranch (*see figure 47*).²⁸³ A concrete spring box was developed at the Red House site during this period. Water tanks were typically comprised of a poured-in-place concrete container to hold the water that flowed from a spring or other water source. Metal pipe railings at their perimeters prevented cattle from slipping into the water. There were also more shallow concrete drinking troughs established for the cattle. As the technology for creating ponds improved over the course of the 20th century, it appears that the ranch increasingly depended on ponds to water its livestock, eventually creating a network of twenty-six ponds (*see figure 24*).

The water supply for the ranch operations was routed into the Spring Hill Ranch headquarters from a pump house to the east across Highway 177. It flowed through a two-inch iron/steel supply line that entered the barn on the east and exited on the west beneath the barn floor. One branch extended to a large cistern on the north side of the barn; another ran downhill and outside to the south barnyard; and a third extended to a stock tank in the west barnyard. At some point, a branch was added to provide water to the ranch house.²⁸⁴ These water supply pipes continue to exist today.

Clusters of Buildings and Structures

The former Spring Hill ranch headquarters continued in use throughout this period, with 20th-century additions and alterations to support ongoing agriculture (*figure 49*). During the latter part of this period, the Spring Hill residence housed ranch managers and other employees, although Benninghoven family members lived in the house during their family's ownership. Routine repairs were made, although there were some periods of neglect. Restoration of the ranch house was attempted during the 1980s.

²⁸¹ Lehmann, tour of Preserve for Land and Community Associates.

²⁸² Jones, *Archeological Overview*, 37.

²⁸³ Several photographs in the personal collection of Fred Howard, Jr., depict concrete watering structures at various ranch locations.

²⁸⁴ US Government memorandum to Manager, Midwest Archeological Center, November 21, 1997, copy provided by NPS.

Spring Hill's 19th-century stone barn, with its ramped second floor entries, continued to be used throughout this period (*see figure 50*). Two cement stave silos were constructed south of the barn during the 20th century (*see figure 51*). The major changes during this period likely involved the construction and demolition of two houses south of the Spring Hill Ranch headquarters that had been built for two of the Benninghoven brothers. The Curt Benninghoven house, which had a front porch, that a former employee remembered as being "not too big" is visible in the background of a photograph in the Fred Howard, Jr. collection (*see figure 52*).²⁸⁵ It appears that the house was a small, gable-roofed wooden structure, painted white. The photograph suggests that the house was oriented toward Highway 177. Its yard was well defined with fairly large deciduous trees, probably oaks. Several fruit trees are discernible as are shrubs, possibly lilacs, in the front yard. A garage or shed was located to the rear of the house. Sometime after 1989, the two houses were demolished; the windows and doors are stored in the Spring Hill barn.²⁸⁶ It is likely that these houses and were associated with minor auxiliary structures.

During their long tenure, the Benninghovens clearly made other physical changes to the ranch structures, but there is no reliable record of most of these. The family used and converted the 19th-century structures on the site to meet their family and ranch and farm needs. It is known that they converted the former icehouse on top of the hill to a work shed. Later, the barn was altered to accommodate a granary needed for the expanded ranch operations of the Davis-Z Bar Ranch as it made the transition to keeping livestock over the winter. Structural supports were also added to handle the additional weight of loaded grain-hauling trucks when the ranch changed from horsepower to mechanization. The scratch house adjacent to the stone chicken house appears to have been constructed during this period.

The corral area on the railroad spur in the vicinity of Deer Park Place that was in place by 1907 was later extended north of the county road at an unspecified date. The corral area was accessible by both the gravel county road and the adjacent rail spur that connected to the main AT&SF Railroad line in Strong City.

Cattle were brought to the corral area for three reasons: 1) to be shipped to the Flint Hills by rail in the spring to be pastured and fattened on the local prairie grasses over the summer; 2) to be driven by cowboys on horseback or by truck from local ranches, loaded onto rail cars, and shipped to market in the fall; and 3) to be unloaded briefly and fed and watered during long-distance travel.

A 1938 aerial photograph and a ca. 1950 photograph clearly depict the layout of the corral area with individual corrals and pens evident (*see figures 19, 21, and 64*).²⁸⁷ The fence along the northern perimeter of the corral area formed a V-shaped funnel to receive cattle and encourage their movement southward into two large holding pens, each with a large concrete livestock watering tank. There was also a loading ramp at the northern end of the corral area near the gravel road; the ramp was used for unloading cattle brought by truck from surrounding ranches.

²⁸⁵ Message from Dena Sanford, NPS-MWSO to Floyd Fisher (July 20, 1998); copy provided as electronic communication from NPS.

²⁸⁶ Peg Jenkins, "Barn Assessment."

²⁸⁷ This was also depicted in a sketch that was prepared during an oral history conducted with local resident Carl Hansen. Interview with Carl Hansen by Barbara W. Sommer, Cottonwood Falls, Kansas (November 27, 2001).

An internal alley provided access to an enclosed scale pen at the southern end of the corral area. According to a former weigh master, usually twelve steers were driven into the scale pen at one time and weighed as a group.²⁸⁸ These steers were then moved into one of the smaller holding pens and usually grouped by ownership. A series of smaller alleys between pens were used to move cattle into one of the two loading ramps on the west side of the corral area adjacent to the railroad spur. The double ramps allowed two rail cars to be loaded simultaneously. The 1938 and 1956 aerial photographs clearly show the two large preliminary holding pens at the north end of the yard where cattle were watered and given some space for movement. They also show a number of smaller pens. There were possibly as many as twelve pens that could be tightly packed with livestock before they were moved to rail cars. A few deciduous trees had been allowed to grow up or remain in the corral area, apparently for shade, but the site was mostly clear of trees in both 1938 and 1956. The 1956 photograph also includes eight rail cars lined up on the spur adjacent to the corral area; their alignment illustrates how two cars could have been loaded at the same time.²⁸⁹

Adjacent to the track of the northern spur are two box cars that the ranch purchased from the railroad, possibly as early as the 1920s, once they had become outdated. These were used by the ranch for storage of salt, “cake”—an inexpensive cattle feed supplement of extruded corn or soybean used as a winter supplement—and newspapers. This adaptive reuse of outdated rail cars was popular in the Midwest during the early 20th century. The box cars were not affiliated with the corral area operation, but were sited to take advantage of the spur for unloading shipments of these products brought in by rail.

A comparison of aerial photographs from 1938 and 1971 reveals much the same configuration for the corral area (*see figures 19 and 28*). However, there was considerably more vegetation within the corral area, possibly indicating a decline in use. Beginning in the 1960s, according to a former associate of Davis, railroad transport declined as truck transport of cattle increased. As a result, use of the corral area also waned. He recalled that during the rail period, the corral area had at times held as many as 1,000 head of cattle. The increasing popularity of trucking did not mean complete abandonment of the corral area; cattle from other ranches continued to be driven there to be loaded onto trucks for several years following the end of rail transport. The rail spur was removed and a two-track road following its alignment was used by the trucks. The yard also continued to be used for some time as a collection point for Z Bar Ranch cattle being driven from the Two Section and Crusher Hill pastures for transport. The ramp at the north end was used for loading cattle onto trucks for shipping away from the ranch.²⁹⁰ For further information on the corral area, see the “Corral Area Project” modification project that was completed adjunct to this CLR by OCULUS (now JMA), May 2002.

New structures were also added to the landscape during the Davis and Z Bar Ranch periods. The small house known as a ranch hand residence, at the western end of the Z Bar/Spring Hill Ranch headquarters, was probably moved to the ranch from property in Morris County; the date of its move is not known.²⁹¹ A stone wall on the eastern side of the house was removed to facilitate relocating the house, and trees were cut to clear its new site. The Z Bar Ranch also moved a

²⁸⁸ Interview with a former associate of Davis by J. Timothy Keller (May 1, 1999).

²⁸⁹ SCS, USDA, aerial photography, AXZ, -26-16, 1938; and GS-VNJ, 1-39, 1956, and CS7-85 (1971).

²⁹⁰ Telephone interview with a former associate of Davis by J. Timothy Keller (June 5, 1999).

²⁹¹ Interview with Fred Howard, Jr.

second house to the site, although the specific date of the move is not known.²⁹² Fred Howard, Sr., had a Quonset hut constructed on the site ca. 1945 or 1946; it was not army surplus, however, as some have stated.²⁹³ Well pumps were installed east of the main residence, near Fox Creek, ca. the 1940s.²⁹⁴ Howard was responsible for locating the two boxcars next to the spur line near Deer Park Place and another east of the Spring Hill headquarters. The cars provided storage for cattle feed. The flagpole was installed during Fred Howard, Sr.'s tenure as well, probably during the 1950s-1960s.²⁹⁵

Howard was also responsible for engineering the construction of approximately twelve cattle pens and a like number of cattle watering structures at various locations on the ranch.²⁹⁶ The corral area on the western side of the Two Section Pasture was built in the late 1950s. Another corral was located in the Gas House Pasture. These corrals were used for spraying cattle, and for working calves. At times temporary stockade-type enclosures were built in the pastures to use for spraying cattle. They were constructed of narrow, vertical, stripped tree branches or trunks lashed together to form a standing structure (*see figure 53*).²⁹⁷ Ranch hands never loaded cattle out of the pens but instead drove them to the headquarters to be weighed. The portable corrals south of the barn's stone corral were probably built in the 1960s.²⁹⁸

During this period, cattle were moved into the outer area defined by portable metal corrals; they were then moved into the stone corral at the western end of the barn.²⁹⁹ The cattle squeezed in a triangular pen down through the chute shed. At the chute shed, the cattle were vaccinated, dehorned, and "back poured" with worm implant before they were herded across the scales on the eastern side of the chute shed. They were then loaded on a truck at the southeast corner of the corrals or held in the corral at the northwest corner before being returned to pasture. Sick cattle were doctored in the chute in the barn.³⁰⁰

Change that occurred in association with the former Spring Hill Ranch agricultural buildings near the end of this period included the addition of the cement stave silos south of the barn, which are clearly visible in a 1956 aerial photograph (*see figure 26*). At least one of the silos appears to be present in the 1938 aerial (*see figure 20*). This photographic evidence is consistent with the fact that cement stave silos were characteristic of the first half of the 20th century. In the 1980s, the terrace behind the Spring Hill main house was built with concrete staves taken from the silo that was removed at that time.³⁰¹ According to a former associate of Davis, there were no windmills in use on the ranch after 1947, although one of the pastures continued to be known as the Windmill Pasture.³⁰² Windmills likely were in use before this time to power well pumps for

²⁹² Message from Dena Sanford, NPS-MWSO to Floyd Fisher (July 20, 1998); copy provided as electronic communication from NPS.

²⁹³ Dean Schroer and a former associate of Davis, "Barn Assessment."

²⁹⁴ Former associate of Davis, "Barn Assessment."

²⁹⁵ Dean Schroer and a former associate of Davis, "Barn Assessment."

²⁹⁶ Correspondence of Greg Hoots to Dena Sanford, NPS-MWRO, October 16, 1997.

²⁹⁷ A photograph in the Fred Howard, Jr. collection depicts a spraying enclosure from one of the pastures.

²⁹⁸ Former associate of Davis, "Barn Assessment."

²⁹⁹ The use of the metal corrals marked a change from the post and horizontal board wooden corrals of the Benninghovens. The contrast is particularly evident in comparing a photograph (Benn-2.tif) of the Benninghoven Family Collection with photographs of the corral from the Fred Howard, Jr., Collection. Electronic image files provided by NPS.

³⁰⁰ Interview with a former associate of Davis by Keller.

³⁰¹ Pat Jenkins, "Barn Assessment."

³⁰² Former associate of Davis, "Barn Assessment."

cattle watering tanks. The stock pond in Windmill Pasture was constructed ca.1940, possibly to replace an earlier windmill-driven system.

During the 20th century, hog houses existed in the bottomland to the east of the highway, across from the Spring Hill Ranch headquarters. At some time during this period, there were wagons in what is now the parking lot area east of the barn.³⁰³ During the 1940s, four or five trench silos were developed at various sites around the ranch; more efficient and less expensive than traditional silos, they became common in this region.³⁰⁴ The silos were used to store silage, grain, and mineral supplements for yearlings on the ranch. The trench located southeast of the headquarters on a site now covered by the widened Highway 177 was described as the largest trench silo in the county.³⁰⁵ There was also a trash dump east of the ranch headquarters along Fox Creek. The dump may be investigated archeologically to yield important information concerning the history of the ranch and its occupants. A gas pump, which was probably owned by a fuel company, was installed ca. 1947.³⁰⁶

The scale house in the barn corral was installed in the 1970s; ranch hands poured the cement for its platform. The scale was purchased from the Santa Fe Railroad when the railroad ceased shipping cattle and closed their stockyard operations. The scale is not the one that was used at the corral area near Deer Park Place however. Because the ranch had done so much business with the railroad, the scale was transported to the ranch as a favor.³⁰⁷ A concrete feed trough was constructed to the north of the present US Highway 50 and the gravel county road. According to Fred Howard, Jr., the trough, which ran the length of the site and was adjacent to the old railroad spur alignment, was not part of the cattle yard. It was developed in the 1970s as part of a feedlot operation that postdated the corral area and had no relationship to the railroad spur and the history of rail transport of cattle in this vicinity.

The former Deer Park Place headquarters evolved into a well-maintained and orderly ranch complex between the 1930s and the 1970s when it served as the headquarters for the Davis-Z Bar. Aerial and ground photographs in the Fred Howard, Jr., collection document its evolution. A comparison of aerial photography from 1938, 1956, 1971, and 1997, as well as a 1940s oblique aerial photograph reveals striking similarities to the 1887 atlas plan (*see figures 21, 27, 30, 34, and 54*). There were changes in the 20th century, however, including the addition of a long shed forming the north end of the corral adjacent to the largest barn. The long shed appears to have been added by the 1940s, but does not appear in the 1938 aerial. There were two ranch hand houses built within the headquarters area (the exact dates of construction are unknown but the northeastern house is visible on the 1877 illustration and both are apparent in the 1938 aerial photography). These dwellings—one located in the northeast corner of the cluster and the other in the southeast corner—were removed between 1971 and 1997. Ranch employee Gerald Slabaugh and his wife, who served as nanny to the Howard children, lived in the house in the southeast corner.

³⁰³ Dean Schroer, "Barn Assessment."

³⁰⁴ Isern, "Farmers, Ranchers, and Stockmen of the Flint Hills," 262.

³⁰⁵ Dean Schroer and Jesse Miser, "Barn Assessment," and Fisher.

³⁰⁶ Former associate of Davis, "Barn Assessment;" in a separate interview, Fred Fisher did not recall use of the silage pit south of the house.

³⁰⁷ Former associate of Davis, "Barn Assessment."

The corral area surrounding the large barn to the west of the house appears to have been enlarged and enhanced, probably in the 1940s. Wire fencing may have been replaced with board fencing at that time (*see figures 54 and 55*). The well-maintained, white painted board fences are distinctly visible. There also appears to be a fence enclosing the house yard along the north and east sides. It is obvious that there was considerable attention paid to providing the Davis-Z Bar Ranch with an impressive headquarters. As with Spring Hill, aerial photographs and oral history reveal a significant continuity of cluster arrangement from the 19th century through the 1970s.

Circulation

During this period, horse trails and two-track roads continued to connect pastures with the more developed portions of the ranch. The corral area was also accessible from the gravel road, and cattle were brought to and from the corral area by trucks that stopped near a cattle ramp at the north end of the complex adjacent to the gravel road. Fisher described the rail spur to the Santa Fe Railroad corral area near the creek as used by “everybody” during this period.³⁰⁸ This statement has been corroborated by a former associate of Davis, and by Fred Howard, Jr., in other oral interviews. The railroad spur extended approximately fifty to seventy-five feet north of the existing boxcars. Before 1930, the spur had corrals and loading chutes along the same alignment that had been developed in the 19th century for quarry use.³⁰⁹ The railroad spur north of the two existing boxcars was removed in the 1980s and the right-of-way reverted to the ranch.³¹⁰ A short section of earthen railroad bed survived immediately north of the present US Highway 50 and south of the east-west gravel county road that was the main connection between Route 177 and Strong City; there are still ties in the gravel road itself. Only the berm was retained; the track and ties were removed.

“Cow paths” would have been a part of the prairie landscape as they had been in previous periods. As the Benninghovens and others began to own and use automobiles and trucks and drive them on the rangeland, these forms of transportation began to replace horse- and mule-drawn wagons (*see figures 56 and 57*). Although it is likely that some new roads were developed to accommodate trucks, it is also certain that a number of the old roads and trails continued to be used. In addition, some new roads may have been established in association with the development of gas and oil leases and utility installations on the ranch. It appears that where possible, new roads continued to follow ridge tops, which usually provided a good rock base and fewer potholes or mudholes.³¹¹ Some of the old roads and trails, however, particularly those servicing former house sites or other discontinued uses, may have been abandoned. For most of the period, the alignments of ranch roads still in use remained much the same, although they may have shifted alignment slightly from time to time to avoid areas made difficult to traverse due to wet conditions. By the end of the period, however, when gravel was more easily moved in larger trucks, the road system became more formal as gravel was added to low or wet areas on ranch roads.³¹²

³⁰⁸ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher, July 20, 1998; copy provided as electronic communication from NPS.

³⁰⁹ Former associate of Davis, “Barn Assessment.”

³¹⁰ Former associate of Davis, “Barn Assessment.”

³¹¹ Lehmann, tour of Preserve for Land and Community Associates.

³¹² Interview with Dean Schroer.

During this period, the route extending north-south that had provided the traditional transportation corridor between Council Grove and Strong City became Highway 177. A ca. 1908 post card reveals changes being made to the entrance from the highway into the Spring Hill Ranch headquarters area to the east and north of the barn. The post card clearly shows a large area of roughened earth, which appears to indicate grading activities. The grading also appears to support the establishment of the existing route leading toward the front entrance of the barn, with a large level open space developed to the east of the barn.

The highway itself was slightly realigned, paved and upgraded later; it was widened and the roadbed moved to the east in 1955–56 in front of the Spring Hill residence. In 1955, the State Highway Commission of the State of Kansas condemned ranchlands to widen Highway 177.³¹³ The Commission also condemned approximately one acre of the cemetery land owned by the Roman Catholic Diocese in the same year. The widening affected the appearance of the front terraces at Spring Hill and altered the traditional front landing approach to the residence by removing the wall on the east side of the road. The road upgrade and widening also led to the removal of the large trench silo to the southeast. At the same time, Highway 177 was shifted approximately one lane width to the east in the area adjacent to the Lower Fox Creek School. The historic road alignment between the Spring Hill residence and the school is still evident in 1971 aerial photographs of the area (*see figure 28*).

Between 1938 and 1956 a new east-west road was developed through Strong City, intersecting Highway 177 to its west. The 1956 and 1971 aerial photographs show that the road provided an underpass for both the AT&SF rail line to the corral area and a north-south road connecting Deer Park Place to the gravel road (*see figures 27, 28, and 30*).

By 1938, the streets of Strong City had extended out to Deer Park Place (*see figure 21*). The ranch headquarters' entry drive appears to have changed orientation, shifting to the south to make a slightly skewed continuation of one of the north-south town streets. Deer Park Place's internal 19th-century circulation is still apparent, though, and the farm road to the north of the house continues to exist.

Vegetation

The 20th century witnessed a considerable decrease in crop cultivation and riparian vegetation. The decrease is apparent as early as 1938 when the first known aerial photographs were made (*see figures 19 through 21*). A comparison with the ca. 1895 Lantry estate plan reveals considerably less crop cultivation and vegetation along creeks (*see figure 18*). The most apparent decreases in cultivation within the Preserve occurred west of the Highway 177 alignment and on the south side of Palmer Creek.

Very little is known about the pre-Benninghoven period, although it is assumed that grazed upland pastures and cultivated bottomland—despite a decrease in quantity—continued to be the dominant vegetation types during the early years of the 20th century. Benninghoven photographs indicate that prairie hay was harvested during this period, first by horse-drawn machinery and later by mechanized equipment (*see figures 43 and 44*). While the Benninghoven collection

³¹³ Condemnation papers. File copies provided by NPS.

provides excellent photographic documentation of ranch life, many are not identified by location and have not been definitively linked to particular sites within the Preserve.

Burning occurred through most of the 20th century on Preserve lands, as it did throughout the surrounding area, with neighboring ranches often coordinating their burn schedules and sharing personnel and resources to accomplish the task. During the 1980s, the Z Bar coordinated their burns with three neighboring ranches to the north and west. Burning typically occurred in the early spring. Burning regimes varied depending upon the way the cattle were grazed; early- and double-stocked cattle grazing practices required the grass to be burned each year before the cattle were brought in, under the belief that lush new growth promotes maximum weight gains. Year-round grazed areas, in contrast, appear to have not been burned every year. Instead, they were burned for two to three consecutive years out of a longer period, primarily to control woody growth. About 75 percent of ranches in Chase County are currently double-stocked, and the rest are grazed year-round.

Oral interviews confirmed that the Benninghovens engaged in prairie burns during their ownership. It was pointed out, however, that during the worst of the Dustbowl years conditions were too dry and hazardous for burning. There is no specific account of the effects of the Dustbowl of the 1930s on the biotic communities of the Preserve, but it is likely that the rangeland was negatively affected in much the same way as other prairie areas. With the intensive grazing that occurred at times during this period, there was inevitably a reduction in and/or alteration of native plant species.

During the Davis-Z Bar ownership, the ranch—like its neighbors—double-stocked cattle and had a policy of burning the prairie annually in spring. It was not, however, successful in meeting this goal every year because of the weather. Ranch personnel protected areas that they did not want to burn, although they usually burned all the rangeland each year so that the pastures would be grazed evenly. Until the 1960s, most Flint Hills ranches were burned in late March under the belief that early burning warmed the soil and quickened early growth. It later shifted to April when it was thought this would control weeds more effectively. Sometimes cattle were brought into newly burned pastures, but usually they waited for new growth to sprout. Sometimes ranch personnel burned half a pasture, moved cattle to that half, and then burned the other half. They usually backfired around the cedars at the Z Bar/Spring Hill Ranch headquarters to keep the fire away from buildings and structures.³¹⁴ Generally, ranches cooperated with their neighbors to develop a compatible schedule for burning. Cooperation also took into consideration the wind direction.

In an interview, a former ranch employee recalled that most of the bottomland along the creek was under cultivation during Benninghoven ownership. He could not relate, however, where specific crops were planted. He also believed that the Benninghovens practiced crop rotation.³¹⁵ According to a former associate of Davis, agricultural fields were used for growing feed in the late 1930s and 1940s. Beginning in the early 1960s, the ranch gradually switched to growing

³¹⁴ Interviews with Dean Schroer, Fred Howard, Jr., and a former associate of Davis provided information concerning burning practices.

³¹⁵ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher, July 20, 1998; copy provided as electronic communication from NPS.

brome on the eastern side of Highway 177.³¹⁶ Fred Howard, Jr., recalled in an interview that the entire area from Deer Park Place to the former Spring Hill Ranch headquarters was planted in corn. Other fields were planted in alfalfa, but the locations of these fields have not been identified. During this period, the ranch did not sell grain; instead, it kept its own products for silage.³¹⁷

In his published reminiscences and chronology of the ranch, Fred Howard, Jr., recounted stories of harvesting hay using a “Go Devil,” a piece of equipment that was powered by two mules, one hitched to each side of the implement.³¹⁸ When the implement was full of raked hay, it was driven to a spot in the field where a stationary baler was located, and the hay would be fed into the baler. The mules, not having been trained to have machinery located between them, often would not work in unison. Apparently, the name was derived from the frequent commands of “Go Devil” that the operator gave the mules. The ranch also practiced some “double cropping.” This practice involved drilling small grain such as wheat or rye between cornrows for use as a cover crop.³¹⁹

An account of the Benninghoven family by Mary Benninghoven Canter describes the Spring Hill headquarters as still possessing the basic characteristics of the Jones era during their tenure. This description is consistent with a family photograph that shows very little change (*see figure 59*). The most significant difference is that, while *figure 12* represents deciduous vegetation, the majority of vegetation on the terraces east of the house in the photograph is coniferous. Of course, it is not certain that the terraces ever were planted as depicted in *figure 13*. Canter described the three open terraces in front of the house. She also mentioned that roses and lilacs “once grew on these terraces” but did not state if roses and lilacs were there when the Benninghovens lived there. Marguerite Buffon, a former teacher and area resident, remembered that the lilacs were “just beautiful.” She also recalled the front walkway as “all stone” and not grass-covered.³²⁰ There also may have been a round flowerbed in the area where the fountain had been located on the front terrace during the Jones era.

There were still some fruit trees, likely including apples, during the Benninghoven tenure, as at least one photograph shows (*see figure 60*). The location of the orchard during this period has not been determined. According to the county agent’s reports, most Chase County farms had lost their historic orchards by the 1920s. The 1920 annual report for Chase County states that “The old orchards are pretty well died out for lack of care. It is uphill business to get the men to do anything with these. They have been let go so long it would hardly be worth it.”³²¹

³¹⁶ Former associate of Davis, “Barn Assessment.”

³¹⁷ Message from Greg Hoots to Dena Sanford, December 9, 1998. NPS files, Midwest Systems Support Office, Omaha, NE; copy provided by NPS.

³¹⁸ Hoots, “Growing Up,” 11-12.

³¹⁹ Don Jenkins, “Barn Assessment.”

³²⁰ Interview with Marguerite Buffon, entitled “MAR BUFFTON [sic] OCT 19, 1994,” interviewer unidentified. Transcript copy provided by NPS. Her recollections are consistent with the findings of NPS historical landscape architect Sherda Williams, who probed the front walk area with an 18-inch metal probe during a site visit September 15–19, 1997. Williams consistently recorded resistance, indicating a hard, submerged surface in the historic locations of the walks. The notes are not entirely clear, but Marguerite Buffon may have recalled such a flowerbed.

³²¹ *Kansas Annual Report* (1920).

According to Fred Fisher, “the junipers [Eastern redcedars] west of the house, in numbers, look about the same.”³²² Photographs believed to date from the early 1940s show the house environs as overgrown with vegetation (*see figure 61*). These photographs may have been taken near the time Hazel and Erma Slabaugh moved to the property. The house and its environs were obviously not in the best condition when the Slabaughs moved to the former Spring Hill headquarters. Erma Slabaugh recalled in a 1994 interview that the “front door was off the hinges” when she first moved into the house with her husband Hazel, a cowboy and top ranch hand, who had worked previously with Fred Howard, Sr., on the Crocker Ranch. Erma Slabaugh related that the stone walkway to the house was covered with grass during the time she lived there. She also revealed that ranch hands developed gardens east of the barn where the present parking lot is located.³²³

In the 1980s, the horse pasture within the stone wall immediately surrounding the headquarters area included the area of cedars and the area to the west of the Ranch Hand House. The pasture had a pond at the south end, “down near the barn corrals.”³²⁴ There was a productive walnut tree east of the barn; no date for its removal has been determined.³²⁵

It is possible that Curt Benninghoven had a garden near his house south of the Spring Hill Ranch headquarters. Later ranch families would have continued to cultivate vegetable gardens throughout this period but there is no substantiated information concerning the locations, or crops grown in these gardens. It is also likely that some residents continued to care for any ornamental vegetation that had survived from the Lantry and Jones landscapes. A former employee recalled that he was “pretty near sure” that they had a garden there but he did not remember a garden at the main ranch house.³²⁶ It is also likely that these residents planted some ornamental species themselves. Between 1983 and 1987, Peg Jenkins, an employee of the ranch, planted the two lilacs at the base of the path to the springhouse at the Spring Hill headquarters.³²⁷ A photograph from 1946 shows the landscape character of the front terraces still representing much of the original design of an open terraced yard (*see figure 62*). It cannot be determined with certainty (given the limited range of the photograph), but it appears that trees and shrubs within the terraces do not reflect the regular interval spacing believed to have been present in the Jones era and evident in *figure 62*.

A transcript of an interview with a representative of the Garden Clubs mentioned some of the vegetation that was on the Lower Fox Creek School site in the late 1960s. She mentioned that there was a cottonwood tree shading the front yard and that sumac, “its leaves scarlet as a cardinal,” bordered the north side of the school house. She also mentioned that many wildflowers were “scattered” throughout the area. She also related that the clubs’ plans were for the landscape to be “as natural as possible.”³²⁸

³²² Benninghoven Family Collection, Photo Benn-52.tif (electronic image file provided by NPS). This photo, ca. 1930s, shows two young Benninghoven couples with large Eastern redcedars as a backdrop.

³²³ Interview with Erma Slabaugh entitled, “ERMA SLAUBAUGH [sic] 10/5/94.”

³²⁴ Peg and Don Jenkins, “Barn Assessment.”

³²⁵ Dean Schroer and Don Jenkins, “Barn Assessment.”

³²⁶ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher (July 20, 1998). Copy provided as electronic communication from NPS.

³²⁷ Peg Jenkins, “Barn Assessment.”

³²⁸ CLR notebook compiled by NPS.

Boundary Demarcations

The stone retaining walls of the residential terraces survived through this period. A Benninghoven family photograph shows the stone pillars at the gate entrances as well as a utilitarian, cross-braced, three-board wooden gate (*see figure 59*). While it is not known if the wall segments visible in the Benninghoven photograph appear as they did in the 19th century, it is certain that much of the terrace wall system was reworked in the 1940s.³²⁹ A 1946 photograph probably depicts their appearance following these efforts (*see figure 62*). Although it is believed that the walls originally were dry-laid, the reworking employed the use of mortar, and appears to have changed the height of the walls, as well as the coursing. It also appears that additional, rougher-surfaced stones may have been added to the original stones. The character of the terrace walls changed considerably with the reworking, losing their 19th-century workmanship. The finished result appears to have been of lesser quality and to have lost some of the feeling of the original design.

Many of the 19th-century stone fences that divided pastures and delineated boundaries survived. There may have been stone markers on the ranch's rangeland (*see figure 63*). The Benninghovens continued to use the 19th-century stone fences, but repaired them with post and wire.³³⁰ The Urschels, who "ran hogs in the flood plain" during their ownership, had woven wire fencing installed to control the range of the hogs. Through the 1950s and 1960s, many of the old stone fences were dismantled; the stone from the fences was used as riprap for new dams and other construction on the ranch.³³¹ By the 1980s, some of the remaining old stone fences were reinforced with barbed wire.³³² Also some fences were reduced in height; the stone portions were then removed and replaced with barbed wire. When this occurred, wooden or metal posts were added to support the barbed wire additions. Alternatively, horseshoes were attached to some gates so that the fence wire could be tightened.³³³ In places there were also "wing fences" used to stop cattle and herd them along a fenceline and through a gate. The welded fence that extends along the drive from the new NPS parking lot to the barn, adjacent to Highway 177, may have been fabricated by either Gerald Slabaugh or Fred Howard. If it was made by Howard, it would have been installed prior to his death in 1970.³³⁴

³²⁹ Interview with Dean Schroer.

³³⁰ Message from Dena Sanford, NPS-MWSO, to Floyd Fisher, July 20, 1998; copy provided as electronic communication from NPS.

³³¹ Don Jenkins, "Barn Assessment."

³³² Don Jenkins, "Barn Assessment."

³³³ Lehmann, tour of Preserve for Land and Community Associates. Some gates have the characteristic tall wooden gateposts with a wooden cross bar at a height tall enough for mounted riders and trucks to pass through. These gates were used to stabilize fence systems.

³³⁴ Dean Schroer, "Barn Assessment."

Source: TAPR Archive.



Figure 19.

Detail from a 1938 aerial photograph showing the southern portion of what is now Tallgrass Prairie National Preserve. Note the highway's east-west alignment north of the railroad corridor, with (from left to right) a large curve to the north, the Catholic cemetery, and the grid of Strong City.



Source: TAPR Archive.

Figure 20.

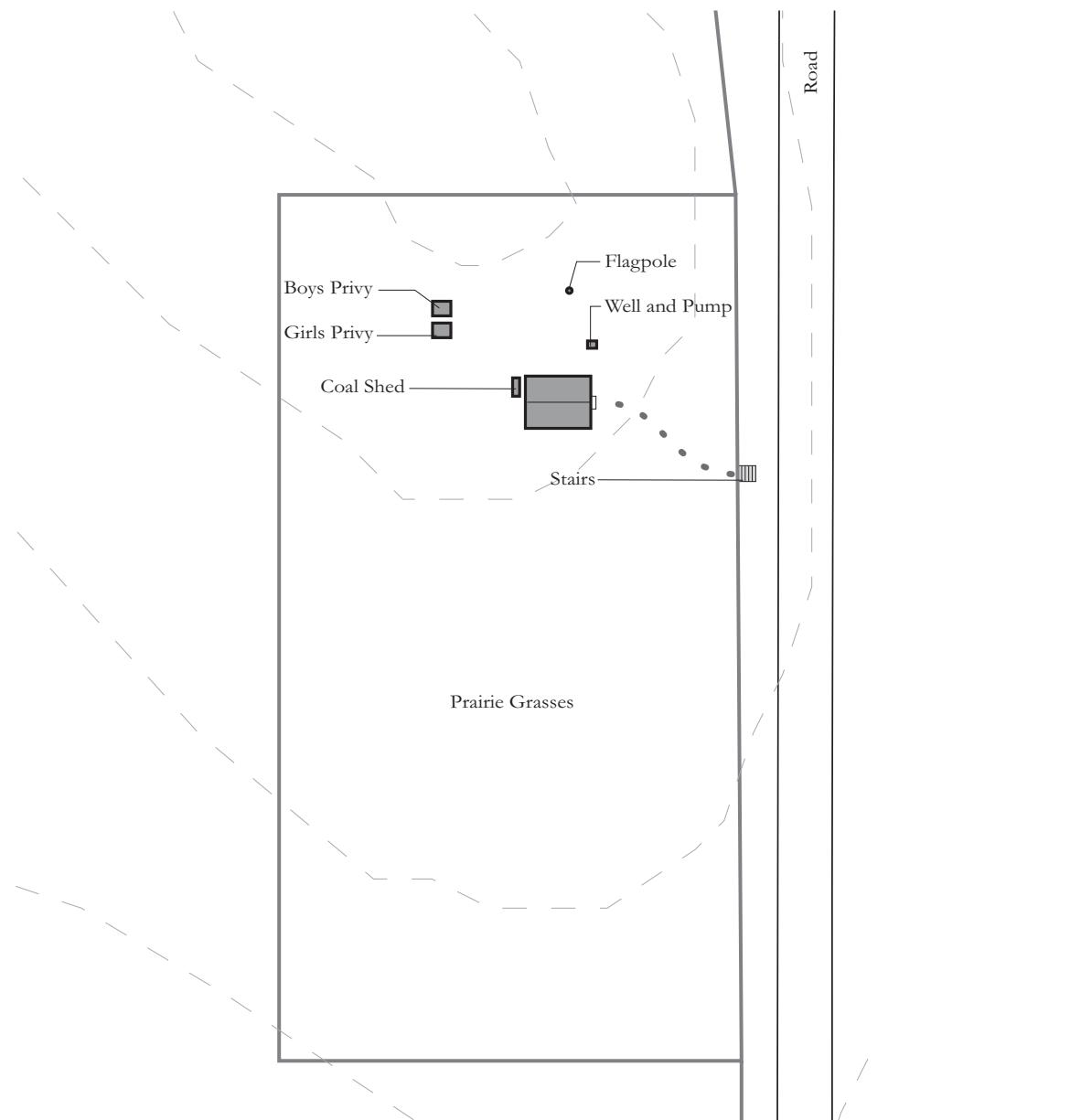
Detail from a 1938 aerial photograph showing the former Spring Hill Ranch headquarters. While this print is of poor quality, it is possible to discern the highway leading north towards Council Grove, the cedar windbreak, the main house and barn, a pond to the left of these buildings, and fenced corrals and/or crop fields.



Source: TAPR Archive.

Figure 21.

Detail from a 1938 aerial photograph showing the former Deer Park Place headquarters. The edge of the grid of Strong City streets is visible in the lower right corner, just southeast of the ranch headquarters. The berm surrounding the headquarters is also visible.



Primary Sources:

USDA Soil Conservation Service. Aerial Photographs, 1938, 1956, and 1971.
 Wolfenbarger & Nimz. "Spring Hill Ranch National Historic Landmark Nomination," 1996.
 National Park Service (NPS). Infra-red Aerial Photographs, 1997.
 Jones, B.A. Draft Archeological Overview and Assessment for Tallgrass Prairie National Preserve, Chase County, Kansas, 1998.
 Tallgrass Historians L.C. "Tallgrass Prairie National Preserve Legislative History, 1920-1996," 1998.
 NPS. Tallgrass Prairie National Preserve Map (on USGS 7.5 minute quadrangle base).
 National Park Trust (NPT). Transcribed map illustrating current road and pond locations with approximate construction dates (USGS 7.5 minute quadrangle base).
 NPS, MWSO-CR, Archeological Base Map-TAPR.
 Keller, J. Timothy. Oral Interviews of Orville Burris, Marguerite Buffon, and Dean Shorter, May 1, 1999.
 Keller, J. Timothy. Oral Interviews of Don and Peg Jenkins, Fred Howard Jr., and Erma Slabaugh, May 2, 1999.

Key:

Paved Road/ Highway	
Foot Trail	
Stone Fence/Wall	
Topography Line	
Structure	

Not to Scale

Map prepared by Land and Community Associates, May 1999.
 This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 25. Lower Fox Creek School Site: Conjectural Locations of Features

Twentieth-century ranching (1907-1993)

Cultural Landscape Report

October 2004

Source: TAPR Archive.



Figure 26.

Detail from a 1956 aerial photograph showing the Z Bar/Spring Hill Ranch headquarters. The main public road is just visible at the right edge of the photo; the house is at right center. Also note the cedar wind-break, barn, corrals, outbuildings including pole barn and quonset, and access drives.

Source: TAPR Archive.



Figure 27.

Detail from a 1956 aerial photograph showing Deer Park Place. Note the flood control berm edging the field to the left of and above the ranch complex.



Source: TAPR Archive.

Figure 28.

Detail from 1971 aerial photograph showing the southern portion of what is now Tallgrass Prairie National Preserve. Note the new road configurations, with the new north-south and east-west highways; the trace of the road between the Lower Fox Creek School and Z Bar/Spring Hill Ranch headquarters; and the old east-west county road realigned, with its westernmost portion no longer in use.

Source: TAPR Archive.



Figure 29.

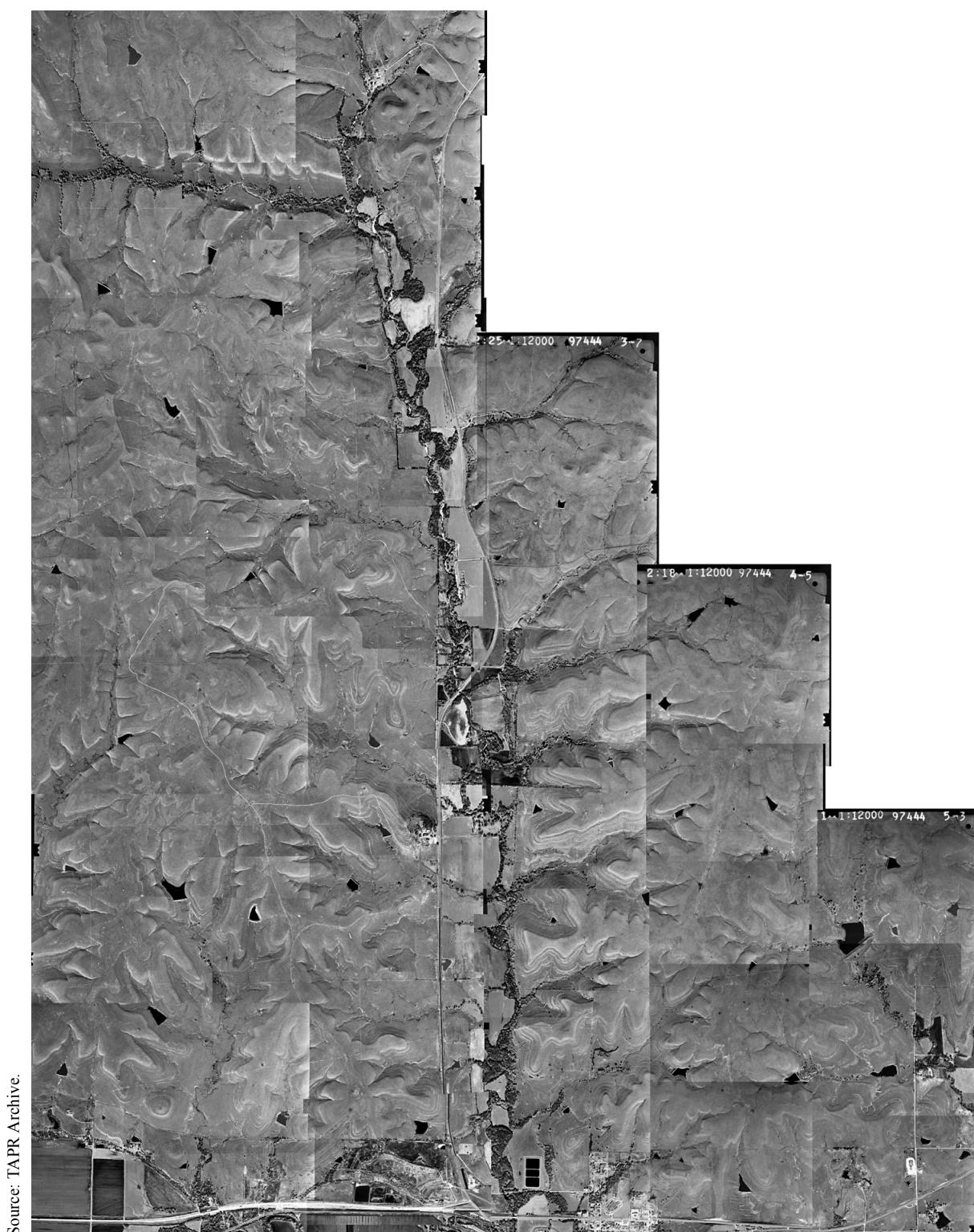
Detail from a 1971 aerial photograph showing the Z Bar/Spring Hill Ranch headquarters.

Source: TAPR Archive.



Figure 30.

Detail from a 1971 aerial photograph showing the former Deer Park Place ranch headquarters.



Source: TAPR Archive.

Figure 31.

Area currently included in Tallgrass Prairie National Preserve: 1997 aerial photograph. Note the Fox Creek corridor and Highway 177 at center, Palmer Creek at upper left, Strong City at lower center.

Source: TAPR Archive.



Figure 32.

Detail from 1997 aerial photograph showing the southern portion of Tallgrass Prairie National Preserve. The later 20th century addition of municipal waste ponds are visible at center right.

Source: TAPR Archive.



Figure 33.

Detail from a 1997 aerial photograph showing the Z Bar/Spring Hill Ranch headquarters. Note main house, highway, cedar windbreak, barn, outbuildings, corrals, access roads, and parking are east of the barn.

Source: TAPR Archive.



Figure 34.

Detail from a 1997 aerial photograph showing Deer Park Place. Note the Strong City grid, the flood control berm, and the cluster of ranch buildings around the loop drive.

Source: Collection of Deone Benninghoven.



Figure 35.

Curt Benninghoven at the rear of the Benninghoven residence with a killed coyote. Date unknown, ca. 1910-1935.

Source: Collection of Deone Benninghoven.



Figure 36.

Ranch hands eating watermelon at the rear of the Benninghoven residence. Date unknown, ca. 1910-1935.



Source: Collection of Deone Benninghoven.

Figure 37.
Cattle in the corral on the
Benninghoven ranch. Date unknown,
ca. 1910-1935.



Source: Collection of Deone Benninghoven.

Figure 38.
The Benninghovens maintained an
extensive sheep grazing operation.
Date unknown, ca. 1910-1935.



Source: Collection of Deone Benninghoven.

Figure 39.
The ranch diversified during the
1930s: Edith Benninghoven was a
major turkey producer.

Source: Collection of Fred Howard, Jr.



Figure 40.

Photograph of a cattle drive from the Davis Ranch, 1938, captioned “3000 steers, 25 miles out.”

Source: Collection of Deone Benninghoven.



Figure 41.

The ranch remained primarily pastoral during the Benninghoven period, ca. 1909-1935, with large open expanses of prairie, tree-covered stream banks, and rocky slopes.

Source: Collection of Deone Benninghoven.



Figure 42.

Panoramic views from the Benninghoven family collection document the timeless character of the landscape; this was taken ca. 1909-1935.

Source: Collection of Deone Benninghoven.



Source: Collection of Deone Benninghoven.



Source: Collection of Deone Benninghoven.



Figure 43.

During the first fifteen years following the Benninghoven purchase, the ranch relied primarily on horse- and mule-drawn equipment. This photo was taken ca. 1909-1924.

Figure 44.

Gradually, the Benninghoven ranching operation became more mechanized, as in this photo, ca. 1925-1935.

Figure 45.

Riding the range on horseback remained an important part of ranch life through this period. Date of photograph unknown, ca. 1909-1935.

Source: Marguerite Buffon.



Figure 46.
Children, possibly students from the Lower Fox Creek School, on the rocks at a nearby road cut. Date unknown; before 1930.

Source: Collection of Fred Howard, Jr.



Figure 47.
Concrete springbox/water trough at ranch. Date unknown, ca. 1950s.

Source: Collection of Deone Benninghoven.



Figure 48.
The area across the highway from the Spring Hill residence was in use as a pasture when this Benninghoven family photograph was taken, ca. 1909-1935.



Source: Collection of Edith Seyfert Kinucan.

Figure 49.

The Z Bar/Spring Hill Ranch headquarters remained intact through the 20th century, with some additions and alterations supporting continued agricultural use.



Source: Collection of Edith Seyfert Kinucan.

Figure 50.

The 19th-century stone barn, with its ramped second floor entries, continued in use through the 20th century. This view is from the northeast.



Source: Collection of Deone Benninghoven.

Figure 51.

Two concrete stave silos were constructed south of the barn. Undated photograph, ca. 1930s.

Source: Collection of Fred Howard, Jr.

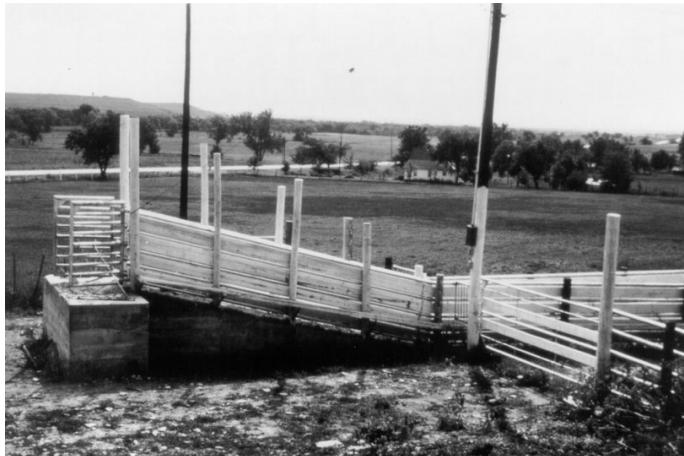


Figure 52.

This photograph from ca. 1950 of a loading chute near the Spring Hill barn shows a tenant house in the background.

Source: Collection of Fred Howard, Jr.



Figure 53.

Enclosures were created within pastures for various purposes: here, for spraying cattle, ca. 1940.

Source: Collection of Fred Howard, Jr.

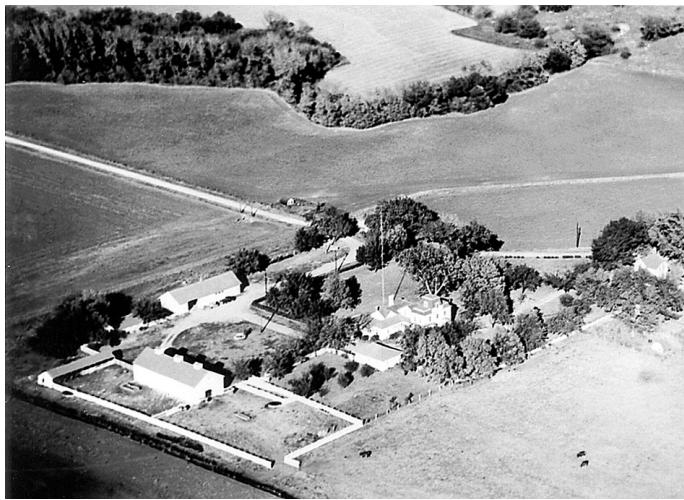


Figure 54.

Oblique aerial photograph of Deer Park Place ranch complex, ca. 1940.

Source: Collection of Fred Howard, Jr.

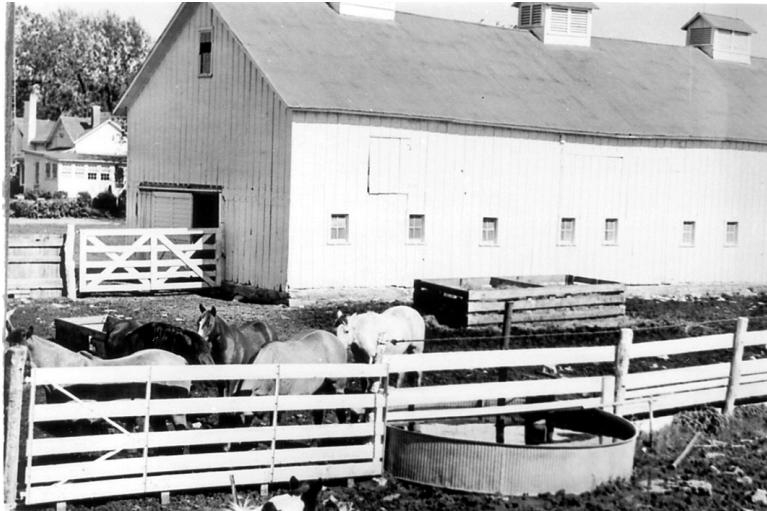


Figure 55.

Deer Park Place barn and corral, with horses, ca. 1940.

Source: Collection of Deone Benninghoven.

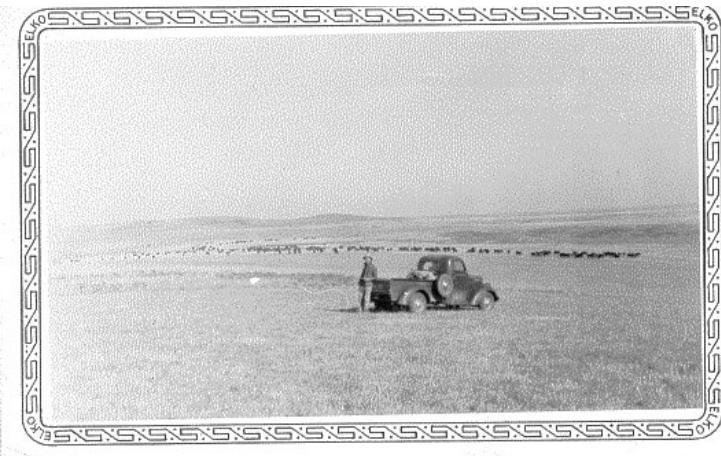


Figure 56.

Automotive transportation was introduced to ranching operations in the 20th century.

Source: Collection of Deone Benninghoven.



Figure 57.

Trucks, which began to replace horse- and mule-drawn wagons, followed two-track roads across the range lands.

Source: Collection of Wit Adair.



Figure 58.

Barn and stone wall at Z Bar/Spring Hill Ranch headquarters, ca. 1938. Note the two silos to the left of the barn.

Source: Collection of Edith Seyfert Kinucan.



Figure 59.

Stone retaining walls and terraces surrounding Z Bar/Spring Hill Ranch headquarters, ca. 1940.

Source: Collection of Deone Benninghoven.

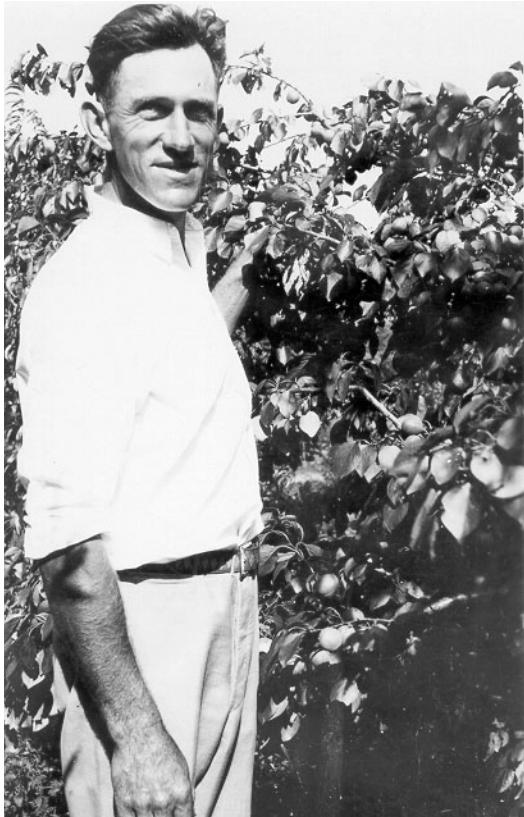


Figure 60.

There were fruit trees during the Benninghoven tenure; Fritz Benninghoven is pictured here with an orchard tree. Date unknown, ca. 1909-1935.

Source: Collection of Edith Seyfert Kinucan.



Figure 61.

Front entrance of the Z Bar/Spring Hill Ranch main house. The date is unknown, but is believed to be after the Benninghoven residency (post-1935).

Source: KSHS, *Flint Hills Special*.



Figure 62.

The eastern elevation of the Spring Hill residence, showing the three upper terraces, 1946.

Source: Collection of Deone Benninghoven.



Figure 63.

A photograph of a possible rock cairn in the East Traps Pasture. Date unknown.

Source: Granada Studios; personal collection, Orville Burris.



Figure 64.

Fencing and chutes in the corral area, used to move cattle into and out of rail cars, fall 1950.

National Park Trust (1994–1999)

(See figures 65 to 73)

After years of negotiation, the National Park Trust (NPT)—a private organization—acquired 10,894 acres—the majority of the combined former ranches of Barney Lantry and Stephen Jones in 1994 to conserve the open land and its remnant tallgrass prairie community. The NPT purchase included the Z Bar/Spring Hill Ranch headquarters, the Lower Fox Creek School, and a portion of the Deer Park Place headquarters. The intention was to conserve the tallgrass ecosystem, preserve the historic buildings, and interpret the heritage of the ranch for the education and enjoyment of future generations.³³⁵ The NPS would partner with the NPT in this endeavor.

Legislation in support of a preserve was introduced by US Representatives Pat Roberts and Jan Meyers, and Senators Nancy Kassebaum and Robert Dole. Although Congress ultimately authorized the tallgrass preserve to preserve, protect, and interpret a portion of the tallgrass prairie ecosystem of the North American Great Plains, the proposals became involved in partisan politics. Both the House and the Senate, however, eventually approved a bill that President Clinton signed into law as part of the Omnibus Parks and Public Lands Management Act on November 12, 1996. The *New York Times* described the effort to establish Tallgrass Prairie National Preserve in this way: “After more than 40 years of lobbying by scientists and conservationists, Congress agreed to protect a small part of what was once North America’s most expansive ecosystem.”³³⁶ The Preserve was authorized under Subtitle A of Title X, Miscellaneous, of P.L. 104-333. The legislation permitted the Department of the Interior to own no more than 180 acres by donation and to manage the Preserve in conjunction with the NPT, the majority property owner. These provisions were essential for the legislation to pass.

The act also established a thirteen-member Tallgrass Prairie National Preserve Advisory Committee to be appointed by the Secretary of the Interior. Members of the committee must include representatives of the NPT; three representatives of local landowners, cattle ranchers or other agricultural interests; three representatives of conservation or historic preservation interests; one person each to be recommended by the Chase County Commissioners, Strong City and Cottonwood Falls officials, and the Governor of Kansas; and one range management specialist representing Kansas institutions of higher education. The committee’s role, as mandated by law, is to advise the NPS on matters concerning the development, management, and interpretation of the Preserve, including offering timely advice during the development of the General Management Plan/Environmental Impact Statement (GMP) for the Preserve, which was also named a National Historic Landmark in 1997.³³⁷

³³⁵ Tallgrass Historians L.C., “Tallgrass Prairie National Preserve Legislative History, 1920–1997” (n.p.: 1998). This paper provides detailed information on the history of creating a tallgrass prairie national park and the legislative and public process that preceded the creation of the Preserve. This unpublished paper was prepared under contract with NPS.

³³⁶ “At New Prairie Preserve, Old Debate Resurfaces,” *New York Times* (Jan. 26, 1997). Copy provided by NPS.

³³⁷ Tallgrass Historians, “Tallgrass Prairie National Preserve Legislative History, 1920–1997,” 48–49.

Land Use

The NPT and NPS share joint management of the site. They have begun to develop policies and implement programs to preserve and interpret the Preserve as an example of a tallgrass prairie ecosystem, as well as the historic and cultural values represented by the Z Bar/Spring Hill Ranch.³³⁸ Despite the change in ownership from private ranching to national preserve, land use has not changed as drastically as some opponents of the Preserve had feared, since cattle grazing continues over much of the Preserve through long-term leases. In 2002, the US Government received title to the Z Bar/Spring Hill Ranch headquarters area (totaling 29.9 acres) and the Lower Fox Creek School site (totaling 2.357). In 2003, two small parcels associated with the road access to the Lower Fox Creek School House from the County Road north of the school house (totaling 1.2 acres) was donated to the US Government. The NPT retains title to the remainder of the Preserve.

In March 1995, the NPT renegotiated cattle operations on the ranch; the NPT leases more than 98 percent of the Preserve on a 35-year grazing lease.³³⁹ The lease provides for annual adjustments and the termination of all or part of the lease through a buy-back provision. The lease on 10,734 acres (all but 160 acres of the Preserve) allows annual burns and an early intensive grazing regime on all but approximately 490 acres of bottomland along Fox Creek. That area, which was formerly cultivated, is planted primarily in perennial brome pasture with some areas in second-growth native grasses. NPT also leases annually for crop production five parcels of land (approximately 43 acres) in the southern part of the Preserve near US Highway 50.³⁴⁰

There are no longer residential uses on the ranch; the former residential buildings are being used for administration, research, interpretation, and museum sales. The Z Bar/Spring Hill Ranch headquarters is open for public visitation and NPS offers bus tours of the prairie at scheduled times during the warmer months. The sixty-seven acres lying between the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School House have been removed from grazing and are currently managed by NPS and the NPT to afford visitors the opportunity to experience the prairie on the 1.75-mile-long Southwind Nature Trail.

Oil and gas exploration and development rights to the property are held by a private party in trust for 35 years as a result of an agreement with NPT at the time of purchase. The working interest in the oil and gas exploration lease was resold in 1999. No explorations or development occurred during this period.

Response to Natural Environment

The acquisition of land for the Preserve was in response to local, regional and national desires to protect a portion of the tallgrass prairie ecosystem of the North American Great Plains, and more specifically this site. Debates have continued to the present day between ranchers and environmentalists over the management of the Preserve. There have been concerns over the

³³⁸ Tallgrass Prairie National Preserve Cultural Landscape Report Provision, November 20, 1997.

³³⁹ *Kansas City Star* (March 10, 1995). Copy provided by NPS.

³⁴⁰ NPS, Draft "General Management Plan/Environmental Impact Statement" for Tallgrass Prairie National Preserve (1999), 79.

effect of the Preserve on the local economy and on the ranching industry itself. Some have been concerned that taking this pastureland out of production would inflate the price of grazing leases on non-Preserve land.

However, the establishment of the Preserve has also resulted in limited passive recreation use of the site. Birdwatchers and other naturalists are attracted to the large expanse of protected land and its wildlife resources. Prairie chickens, ducks, and other species of waterfowl visit the Preserve's grassland and ponds. Beavers have established dams and lodges on Fox Creek, affecting trees in the Preserve, and muskrats have been recorded in one pond.

Clusters of Buildings and Structures

At the time of the purchase, the Preserve included a number of buildings and structures, including the Z Bar/Spring Hill Ranch headquarters, agricultural structures at Deer Park Place, the Lower Fox Creek School House, and other scattered structures, such as boxcars that had been moved onto the site to hold grain supplements for livestock. The Z Bar/Spring Hill Ranch headquarters buildings and structures included the three-story Second Empire limestone main house; the three-story stone barn; the arch-roofed, limestone poultry house; attached scratch house and equipment shed; stone outhouse; stone cistern; stone curing room/springhouse; stone icehouse; two stone corrals; two 20th-century metal sheds; a stone garage; and a small 20th-century ranch house. The Deer Park Place portion of the Preserve retains a stone, 19th-century poultry house and two 20th-century barns. There have been few exterior changes to buildings and structures since acquisition (*see figures 69, 70, and 71*).

In 1997, two buried steel fuel tanks were removed from the Preserve. The first tank, with an approximate capacity of 500 gallons, was located immediately outside the east wall of the stone chicken house. A second similar tank was located immediately east of the chicken house. No significant archeological features or materials were exposed during the two tank removals, nor were any significant features located in the south and west barnyards when the water supply system for the ranch was examined at that time. However, a trench dug by Preserve employees revealed the presence of a line of clay drain tile line that had been laid prior to and parallel with the existing iron/steel pipes. The origin and extent of the clay tile line was not determined.³⁴¹ Other evidence of former uses include the garbage dump near Fox Creek.

Circulation

Site circulation changed only slightly after 1993. A parking lot was added near the entrance to Spring Hill from Highway 177 for visitors to the headquarters. Interpretive bus tours began to be conducted daily, except Tuesdays, through the rangeland on roads that, for the most part, follow the alignments of traditional two-track roads. Gravel was added to the road surface and an overlook developed. Other changes include the abandonment of the railroad spur between the main line of the AT&SF and the corral area and alteration of the school house access road entrance by KDOT in the late 1990s from just south of the school to approximately 0.5 mile north for safety reasons.

³⁴¹ US Government memorandum to Manager, Midwest Archeological Center (November 21, 1997), 3. Copy provided by NPS.

Boundary Demarcations

Although some stone fences have been removed, shortened, and reinforced with wire and metal or wooden posts, the ranch still retains miles of dry-laid stone fences as well as post and wire and barbed wire fencing. Toward the end of the 1990s, the Preserve had a total of about 36.3 miles of stone fence: approximately 15.8 miles of boundary fence, 0.5 miles of ornamental fence, and 20 miles of internal pasture fence (*see figure 72*).³⁴² There are also many miles of barbed wire fence originating before 1993 that continue to be maintained. By 1915, post and wire accounted for 56 percent of all fencing.³⁴³

Vegetation

Examination and comparison of aerial photography from 1997 with previous years reveals that there was a considerable decrease in the number of acres in crop cultivation and in riparian vegetation through the 1990s (*see figures 19, 28, and 31*). The comparison of 1997 with ca. 1895 reveals a marked decrease in riparian vegetation in a century of ranching (*see figure 18*). More land probably returned to prairie grasses during this period than at any time since the early settlement period, although the effects of long-term grazing have likely resulted in loss of vegetative species diversity.³⁴⁴

According to NPS staff at the Preserve, big bluestem, Indian grass, little bluestem, and switch grasses currently dominate.³⁴⁵ There remain only a few patches of cultivated land in riparian areas, specifically the bottomland near Fox Creek that is planted in non-native, smooth brome. Stands of native trees—bur oak, sycamore, and western buckeye—grow along creeks as they did prior to Euro-American settlement. Since most of the riparian forest has been used as pasture, there is little understory. A recent survey conducted of the Preserve flora produced a preliminary list of 400 species of plants. The species observed included the most common grasses: big bluestem, Indian, sideoats grama, little bluestem, and switch grass. Other plant species such as pussytoes, field pansy and blue wild indigo, butterfly milkweed, purple prairie clover and wavyleaf thistle, gayfeather, snow-on-the-mountain, and blue sage were also recorded. Along springs and near streams and ponds are found native wetland plants such as arrowhead, cardinal flower, and a variety of sedges were observed.³⁴⁶

NPS staff has related that they are working to reduce introduced grasses, particularly Caucasian bluestem that was brought over to the United States from Russia in 1929. Unwanted species of grass continue to be introduced to the Flint Hills prairie in cattle feed and in hay near feed lots.³⁴⁷ However, in general, the quality of the prairie vegetation and native plant diversity continues to be relatively high.

In 1997, David Hartnett, director of the Konza Prairie Research Natural Area in nearby Manhattan, Kansas, commented on the quality of the existing prairie. He remarked, “One can

³⁴² Message from Sherda Williams to Genevieve Keller, Steve Jones, and Tonya Bradley, February 25, 1999.

³⁴³ Domer, *Vernacular Architecture Forum*, 68.

³⁴⁴ Jones, *Archeological Overview*, 6.

³⁴⁵ Lehmann, tour of Preserve for Land and Community Associates.

³⁴⁶ *News 2* (Issue 5, September/October 1995).

³⁴⁷ Lehmann, tour of Preserve for Land and Community Associates.

argue that the ranchers have been here grazing cattle on the prairie for 150 years and it's still tallgrass prairie." He continued, "That's a sound testimony to their stewardship of the land. Is it the same prairie that was here 150 years ago? The real answer is, we don't really know." According to Ron Klataske, the west-central regional vice-president of the National Audubon Society, the Preserve is a "native grassland and it has many components of native prairie but it is not a pristine prairie at this point. Many of the plant and animal components of native prairie aren't there."³⁴⁸ Despite these questions concerning prairie integrity, the prairie, with its range of native plants, continues to dominate the Preserve landscape as it has for thousands of years (*see figure 73*).

³⁴⁸ "The Roundup," *News 2* (Issue 5, September/October 1995).

Source: NPS.



Figure 67.

Circa-1950 corral in Two Section Pasture; photograph taken in 1997.

Source: NPS.



Figure 68.

Typical stone fenceline with barbed wire and wooden post fence addition, 1997.

Source: Land and Community Associates, Inc.



Figure 69.

View to the north toward the Z Bar/Spring Hill Ranch headquarters, 1998.

Source: NPS.



Figure 70.

View of the steps going up the terraces toward the east entrance of the Z Bar/Spring Hill main house, 1997.

Source: NPS.



Figure 71.

Detail of the hand-operated water pump at Lower Fox Creek School House, 1997.

Source: Land and Community Associates, Inc.



Figure 72.

Typical 19th-century stone fence with 20th-century metal gate, 1998.

Source: NPS.



Figure 73.

View toward a mature Osage orange hedgerow in the Two Section Pasture, 1997.

Chapter 3 / Existing Conditions Documentation



3. EXISTING CONDITIONS DOCUMENTATION

Introduction

Many detailed and engaging studies have recently been prepared by and for the National Park Service (NPS) to support an understanding of the history, current use, and potential future uses of the landscape that comprises Tallgrass Prairie National Preserve. This Cultural Landscape Report (CLR) is one component of a broad and involved planning process intended to ensure, in the most careful manner possible, the perpetuation of the site's significance as it evolves from a privately-managed ranching property to a historic site open and interpreted to the public. This chapter of the CLR documents, through a combination of narrative text, photographs, and maps, the current configuration and condition of the Preserve landscape. Through field investigation, review of available documentation, and consideration of many cultural, natural, and social issues, this chapter describes the landscape as a series of interrelated features, systems, and conditions. In addition to the documentation of interrelated characteristics and qualities of the landscape, this chapter provides an inventory of individual components, or features. The inventory forms the basis for a condition assessment of Preserve landscape features, with a focus on those at the Z Bar/Spring Hill Ranch headquarters, which is included at the end of the chapter.

This existing conditions chapter is introduced by a description of the Preserve's current environmental context and setting. Much of the information presented in the Environmental Context section below is derived from other NPS documents relating to the Preserve, including the Archeological Overview and Assessment, General Management Plan (GMP), Historic Resources Study, and other public documents, such as the *Soil Survey of Chase County, Kansas*. Information is drawn and compiled from these secondary sources to lay the foundation for understanding Preserve resources. It is the intention of this CLR to synthesize this information with an eye to understanding the interrelated forces that have shaped, and continue to shape, the Preserve.

Environmental Context and Setting

Tallgrass Prairie National Preserve is located in the central portion of eastern Kansas, approximately 65 miles northeast of Wichita, 75 miles southwest of Topeka, and 125 miles southwest of Kansas City. The nearly 11,000 acre Preserve falls within the north-central portion of Chase County, 3 miles north of the county seat at Cottonwood Falls.

Geology and Soils

Chase County is included within the Central Lowlands, a landform that characterizes the eastern third of the state. Specifically, it is part of the Flint Hills Physiographic Province, a north-south trending landform located between the Smoky Hills Uplands and Great Bend Prairie to the west, and the Glaciated Region and the Osage Plains to the east. The Flint Hills geological region extends for some two hundred miles between east-central Kansas and northern Oklahoma. The hills are a unique landform within Kansas, formed by a belt of limestone and chert that has weathered more slowly than the surrounding land. The Flint Hills are named for the chert or flint rock that is exposed along the brows of many ridges. The area possesses clay soils with abundant flinty gravels that have impeded erosion in upland areas.

Elevations across the Flint Hills generally range from 1,100 to 1,500 feet above mean sea level (MSL), and the side slopes of the landforms can be quite steep. Four of the six soil associations identified within the county occur within the Preserve. Florence-Labette soils cover most of the uplands east of Fox Creek. The Florence-Labette association soils, most often identified with the Flint Hills, are found in areas that are gently sloping to strongly sloping, as well as in some gently sloping or steep, rocky areas along drainageways. These soils are deep to moderately deep and possess a subsoil of cherty or silty clay. The Clime-Sogn soils, which have a silty clay subsoil, occur on gentle to steep slopes primarily on the west side of Fox Creek. Reading-Tully soils, which are nearly level to sloping and are occasionally deep, with a subsoil of silty clay loam or clay, are found in the bottom of the Fox Creek valley. Chase-Osage soils—nearly level, deep bottomland soils with silty clay subsoils—occur in the lower reaches of Fox Creek near the extreme southern boundary of the Preserve.¹

Hydrology

The Cottonwood River drains the majority of the county. The Cottonwood empties into the Neosho River in adjacent Lyon County to the east. Water supplies vary over the county; in most cases, water for domestic use is available from dug wells. The most successful wells are dug along the shallow alluvial deposits of drainageways; wells are difficult to establish successfully on the uplands. Water for livestock is typically supplied by stock ponds, created by damming intermittent drainageways and by constructing watering tanks at springs. Springs and seeps have traditionally been used to supply domestic water and feed stock ponds.

The Preserve contains three permanent streams. The largest, Fox Creek, flows south along the eastern side of the Preserve. It joins the Cottonwood River slightly below the southern Preserve boundary near Strong City. Palmer Creek, a Fox Creek tributary, flows west to east in the northern part of the Preserve. Diamond Creek, which flows south outside the boundary of the Preserve and empties into the Cottonwood River, drains the western edge of the Preserve. There are also some intermittent seasonal streams, as well as more than a dozen springs within the Preserve. The springs generally are located midway up the east-facing slopes of hills where beds of uplifted limestone are exposed. Some are simple seeps, others are flowing springs.² Beds of limestone are highly permeable and porous, capable of storing and transmitting groundwater. By contrast, shale beds are highly impermeable, and retard the flow of groundwater. Seeps and springs may form where contacts between overlying limestone and underlying shale beds occur along slopes, hillsides, or embankments. Shales can also impart acidity and concentrations of iron, making water non-potable.

Precipitation within the county ranges on average from 32 to 34 inches annually, which is favorable for growing most crops. Notably within the county:

The percent of possible sunshine, the growing season temperatures, and the seasonal distribution of precipitation all contribute to a high production potential for the area. Midwestern United States, including Chase County, has a continental climate characterized by wide daily and annual temperature ranges, light wintertime precipitation, and a pronounced rainfall peak in the warmer season...A changeable weather pattern is the rule in that area, especially in fall, winter, and spring. Low pressure storms, which frequent the Midwest during these seasons, contribute to the

¹ US Department of Agriculture Soil Conservation Service in cooperation with Kansas Agricultural Experiment Station, *Soil Survey of Chase County, Kansas* (Washington: US Government Printing Office, June, 1974); and Bruce A. Jones, *Archeological Overview and Assessment for Tallgrass Prairie National Preserve, Chase County, Kansas* (Lincoln, NE: US Department of Interior, National Park Service, Midwest Archeological Center, Technical Report No. 61, 1999), 4–5.

² Jones, *Archeological Overview*, 46.

marked day-to-day weather variations...Precipitation is heaviest late in spring and early in summer, and rainfall in both May and June averages more than 4 inches. About 71 percent of the average annual precipitation falls during the growing season, April through September. Only 9 percent falls during the period December through February. This distribution favors the growth of warm-season crops and grasses.³

Despite the rainfall, the steeply sloping topography and stony, erodible soils associated with much of the Flint Hills region are not conducive to crop farming except along the stream corridors and bottomlands. In response to local soil conditions, cattle ranching has evolved as the

most important enterprise in the county. Much of the range is used for summer grazing of livestock. Cultivated areas are used mainly for the production of feed. Corn, sorghum, alfalfa, and brome grass are produced in the county and are used mainly for feed. Some cash-grain crops, such as wheat and soybeans, are also grown. Raising beef cattle is the main livestock enterprise. Production of swine, sheep, and poultry, and processing of dairy products are of lesser importance. The full feeding of cattle makes up a major part of the economy of the county.”⁴

Chase County is on the boundary between two vegetative communities—tall bluestem prairie characterizes the majority of the county, but it is edged to the east by a mosaic of bluestem prairie and oak-hickory forest. “Big bluestem is the primary grass in Chase County...Big bluestem and its drier sibling, little bluestem, comprise nearly 70 percent of natural prairie vegetation. These species predominate, lending the Flint Hills the appellation ‘Bluestem Hills.’”⁵ Grasses dominate, but are not the only plants found within the region. Shrubs as well as herbaceous forbs, including composites and legumes, also characterize the prairie. Trees—cottonwood, elm, walnut, and sycamore—form riparian woodlands in areas of reliable groundwater such as along the margins of drainageways, springs, seeps, and particularly river bottoms.

Site Description

(See figures 74 through 77)

Established in 1996 “to preserve, protect, and interpret for the public an example of a tallgrass prairie ecosystem...and to preserve and interpret for the public the historic and cultural values represented on the Z Bar/Spring Hill Ranch,” Tallgrass Prairie National Preserve is located within a region of east-central Kansas that contains a large percentage of the surviving tallgrass prairie in the Central Lowlands Province of the Interior Plains of North America.⁶ The Preserve is characterized by gently rolling grasslands, marked by more steeply sloped hills flecked with rock outcrops. Fox Creek and its tributaries cross the Preserve; other water resources include numerous stock ponds, springs, and seeps, as well as intermittent drainageways that carry overland flow. In addition to the prominent Z Bar/Spring Hill Ranch and Lower Fox Creek School, there are numerous cultural resources that reveal the rich history of this landscape.

³ James T. Neill, *Soil Survey of Chase County, Kansas* (USDA Soil Conservation Service in cooperation with the Kansas Agricultural Experiment Station, Washington: US Government Printing Office, June 1974), 62.

⁴ Neill, *Soil Survey of Chase County, Kansas*, 1.

⁵ Hal K. Rothman and Daniel J. Holder, *Tallgrass Prairie National Preserve Historic Resource Study* (Omaha: NPS, 2000), 9-15.

⁶ National Park Service, “General Management Plan, Environmental Impact Statement” (Washington: US Dept. of Interior, 2000), iii; Jones, *Archeological Overview*, 2. W.E. Shoewe, “The Geography of Kansas, Part II, Physical Geography,” *Transactions of the Kansas Academy of Science* 52 (1949): 262-289.

Presently owned primarily by the National Park Trust (NPT) with some acreage in federal ownership, the Preserve is co-managed by NPT and NPS. Tallgrass Prairie National Preserve is considered an important example of a prairie ecosystem with prominent cultural features derived from a long-standing heritage of cattle ranching. Visitor access is currently limited to the area immediately around the Z Bar/Spring Hill Ranch headquarters, the Lower Fox Creek School House, a nature trail area located between them, and a 3.5-mile gravel Tour Road leading to a prominent overlook northwest of the ranch.

The Preserve is generally L-shaped, with the longest dimension running north/south and parallel to Kansas State Highway 177, which divides the Preserve into eastern and western sections (*see figure 74*). The northwestern portion of the Preserve occupies the majority of Sections 7, 18, 19, 30, and 31 within Township 18 South, Range 8 East. The southwestern portion of the Preserve occupies most of Sections 6 and 7, Township 19 South, Range 8 East. The northeastern section of the Preserve occupies a portion of Section 32, Township 18 South, Range 8 East; the southeastern portion of the Preserve occupies most of Sections 5, 8, 9, 10, and 17 within Township 19 South, Range 8 East.

Grass-covered rolling hills and bluffs, etched by drainageways, and bottomlands permeated by Fox Creek and its wooded margins characterize the Preserve. Elevations range from approximately 1,200 feet above MSL along Fox Creek to 1,450 feet atop hills and bluffs. Hills and bluffs throughout the Preserve are striking landforms that afford expansive views of the Preserve and its resources.

The primary geology associated with the Preserve includes the Permian-age limestone bluffs, banded with deposits of chert, or flint. Elaborating on the general discussion of soils presented earlier in this chapter, the soils found specifically within the Preserve include Alluvial land and Reading soils; Clime-Sogn, Labette-Dwight, and Labette-Sogn complexes; Dwight, Ivan, Kahola and Reading silt loams; Irwin, Labette, Martin, Smolan, and Tully silty clay loams; Martin-Gullied land complex; Tully cherty silty clay loam; and Zoar silty clay (*see figure 3, Chapter Two*). Silt loams support agricultural crops, which are generally grains and grasses grown as feed for livestock, while cherty silty clay loam and silty clay loams support native range. Tall grasses are native to Alluvial land and Reading soils while the Ivan series, primarily found along Fox Creek, supports hardwoods and an understory of native grasses and other woody species. Alluvial land and Ivan soils are frequently flooded. Reading and Kahola soils are located along low stream terraces, and flood occasionally, but floodwaters seldom damage the crops or the soils. Clime-sogn soils are deep, moderately well-drained calcareous soils located on the uplands, that are appropriate for range. Labette, Dwight, Irwin, Smolan, and Martin soils are deep, moderately well drained soils on uplands, suitable for range. Dwight soils are also appropriate for limited cultivation. Soils may be deep in the bottomlands of larger tributaries, but are relatively thin over the remainder of the preserve. Erosion is the greatest limitation of the upland soils, and prevention requires careful land management. Erosion and quarrying have resulted in a number of exposed limestone beds.⁷

The bottomlands of larger tributaries such as Fox and Palmer Creeks have deeper soils and have traditionally been cultivated as cropland. Currently, brome grass is under cultivation along the Fox Creek bottomlands within the Preserve.

The tallgrass prairie that dominates the Preserve is comprised of native bluestem grasses and other vegetation, influenced for more than one hundred years by cultural uses and management strategies associated with cattle ranching. Grazing, introduced fire, and non-indigenous species are factors likely to have altered the tallgrass prairie ecosystem since the prehistoric period; however, the actual change in diversity, density, and vigor of the vegetation over the years is presently unknown. As noted in the Prairie Community Summary of 1997:

⁷ Neill, *Soil Survey of Chase County, Kansas*.

The pastures of the [Preserve] are burned annually in early spring, usually in mid to late March if weather permits. The burns are carefully controlled to remove the above ground remains of the past year's grasses and forbs. Clean burns are effective in destroying invading shrubs and tree saplings along wooded borders but leave little standing dead material or litter for shelter, escape, or nesting cover for wildlife. Clean burns may also inhibit the growth of spring forbs. Following re-growth of grasses in late April, the pastures are intensively grazed by cattle until mid- to late July. The fencing patterns, scattered stock ponds, and strategic placement of salt blocks or licks encourages an even pattern of grazing that promotes a homogeneous vegetative cover.⁸

Fire is an important component of prairie ecology, arising through natural occurrences such as lightning; however, it has also traditionally been utilized as a management tool in support of cattle ranching. Fire is considered essential to the maintenance of the tallgrass prairie ecosystem. A study undertaken by the Midwest Region of the NPS maintains that "without periodic fire, a gradual replacement of prairie species with woodland species occurs."⁹ The Preserve, traditionally burned annually in spring to support cattle grazing, is now being more selectively burned as part of a management strategy aimed at increasing biodiversity within the ecosystem.¹⁰

The Preserve is organized into a series of pastures edged by combinations of rock and post and wire fencing that generally conform to the alignment of the section, range, and township lines. Metal gates with cattle guards allow for vehicular access between pastures, and into the pastures from adjoining roads. Remnants of intensive stock handling sites and corrals exist over various portions of the Preserve.

Kansas State Highway 177 runs north to south for approximately 2.5 miles through the center of the Preserve. This well-traveled road, also known as the Flint Hills Scenic Byway, connects Strong City and Cottonwood Falls to the south with Council Grove, the seat of Morris County, to the north. The Preserve's main entrance for visitors is located along the highway at the Z Bar/Spring Hill Ranch headquarters. A modest entrance drive is edged by a visitor parking lot. The entrance drive is connected to farm access roads that lead to various portions of the western half of the Preserve. These routes are generally not accessible to visitors, although the NPS maintains a tour bus route that travels approximately 2.5 miles through the preserve to a scenic overlook. The remainder of the Preserve's access routes are two-track ranch roads that connect fenced and walled pastures and stock ponds within both the eastern and western portions of the preserve. Pedestrians, including preserve visitors, are afforded access to two recently-developed interpretive trails; the first is a walking tour of the ranch headquarters area—the "Prairie and the People" tour. The second—the Southwind Nature Trail—forms a loop between the ranch headquarters and the Lower Fox Creek School House.

One of the most prominent and accessible resources within the Preserve is the 30-acre Z Bar/Spring Hill Ranch headquarters. Completed circa 1881 under the ownership of cattle rancher Stephen F. Jones, the limestone ranch house, dependencies, and barn now house a visitor contact station for NPS interpretation of Tallgrass Prairie National Preserve, and some NPS and NPT administrative offices. Approximately one-half mile north of the ranch headquarters along Highway 177 is the Lower Fox Creek School House (*see figure 76*). Constructed in 1882, the limestone building once served families associated with the ranch as well as the larger community. It was restored between 1968 and 1971, and later placed on the National Register of Historic Places for its association with

⁸ Thomas A. Eddy, "Prairie Community Summary of 1997 and 1998, Vegetation Sampling on the Tallgrass Prairie National Preserve" (Emporia, KS: Division of Biological Sciences, Emporia State University, 1999), 12-13.

⁹ National Park Service, "Opportunities to Enhance and Maintain the Tallgrass Prairie Ecosystem Within the Boundaries of Tallgrass Prairie National Preserve" (Lincoln, NE: NPS, 1998), 3.

¹⁰ NPS, "Opportunities to Enhance and Maintain the Tallgrass Prairie Ecosystem," 3.

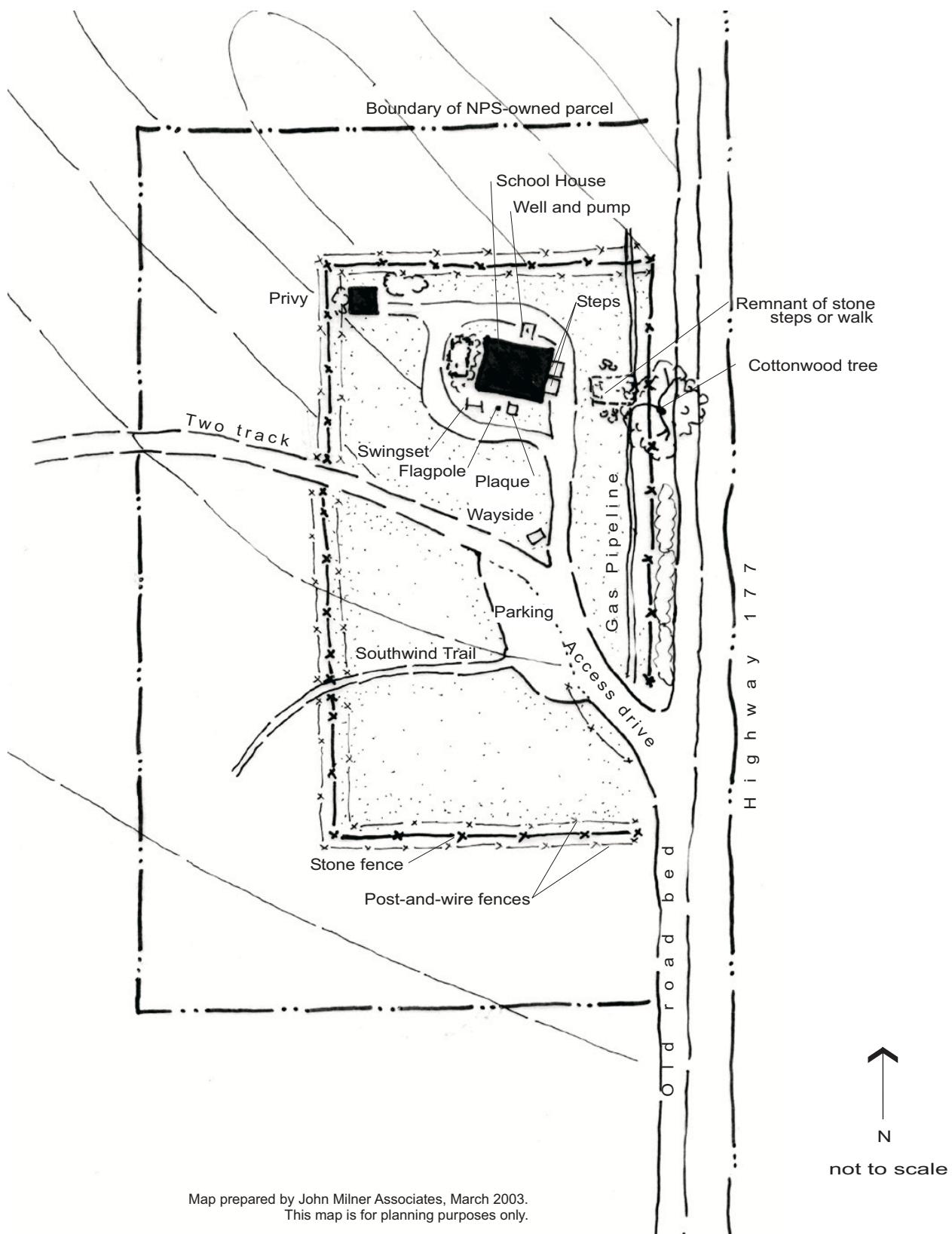
organized education in the rural prairie. A third complex of buildings and structures exists within the southern portion of the Preserve near US Highway 50. The complex, known as Deer Park Place, (*see figure 77*) was established by Barney Lantry during the last quarter of the 19th century. It includes a Victorian dwelling, a late 19th-century board-and-batten sided barn, and a limestone poultry house and barn dating from the 20th century. The dwelling, which was used as ranch headquarters for a time, remains in private ownership and is operated as a bed-and-breakfast inn. The outbuildings are currently owned by the NPT. The NPS headquarters and administrative offices for the Preserve are located in a leased building in Cottonwood Falls.

Structures and small-scale features associated with ranching operations dot the Preserve landscape. These include railroad boxcars used for storage; silos; evidence of former rail line spurs; stock ponds with earthen berm dams and engineered spillways; spring boxes; salt licks; cow paths; troughs; water bins; and snubbing posts. As noted above, fencing is utilized to delineate pastures throughout the Preserve. The materials and composition of the fencing varies tremendously; the different types are described in detail within the small-scale features section later in this chapter. Structures and small-scale features associated with other land uses—utilities and mineral extraction—are also found throughout the landscape. These include electrical substations, aboveground pumps and other features at natural gas wells, pipelines and meters, electrical transmission lines, and posts marking the alignment of a buried gas pipeline and telecommunications line.

In addition to the natural resources and prominent cultural features described above, the Preserve is known to include partially exposed and below-ground prehistoric and historic archeological resources. Prehistoric sites are composed of quarry/workshops and occupation sites. Historic quarries are also found throughout the Preserve, as are structural depressions, middens, limestone foundations, limestone walls, corral remains, and loading chutes possibly relating to pre-1881 occupation of homesteads. There are also features, such as cairns, of unknown origin.¹¹

The following sections describe the individual features that comprise the Preserve landscape organized by type, including Spatial Organization and Views; Responses to Natural Features and Systems; Land Uses and Activities; Circulation; Vegetation; Buildings and Structures; Small-scale Features; Utilities; and Archeological Sites.

¹¹ Jones, *Archeological Overview*, 25-31.

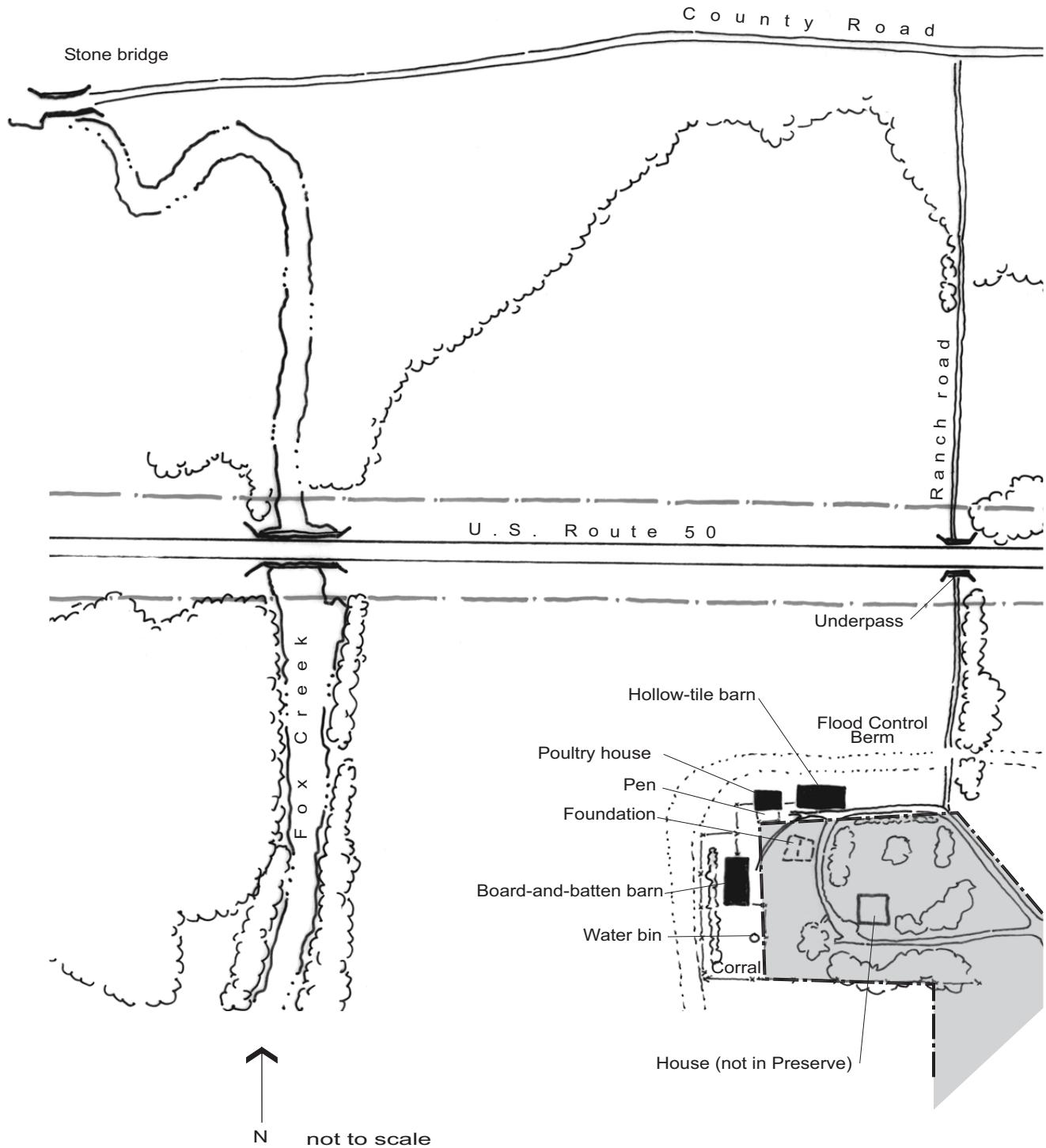


Tallgrass Prairie National Preserve

Figure 76. Detail: Lower Fox Creek School
Existing Conditions 2001

Cultural Landscape Report

October 2004



Map prepared by John Milner Associates, March 2003.
This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 77. Detail: Deer Park Place
Existing Conditions 2001

October 2004

Cultural Landscape Report

Existing Conditions Documentation by Landscape Characteristic

Spatial Organization and Views

(See figure 78; and figure 24, Chapter Two for pasture configurations)

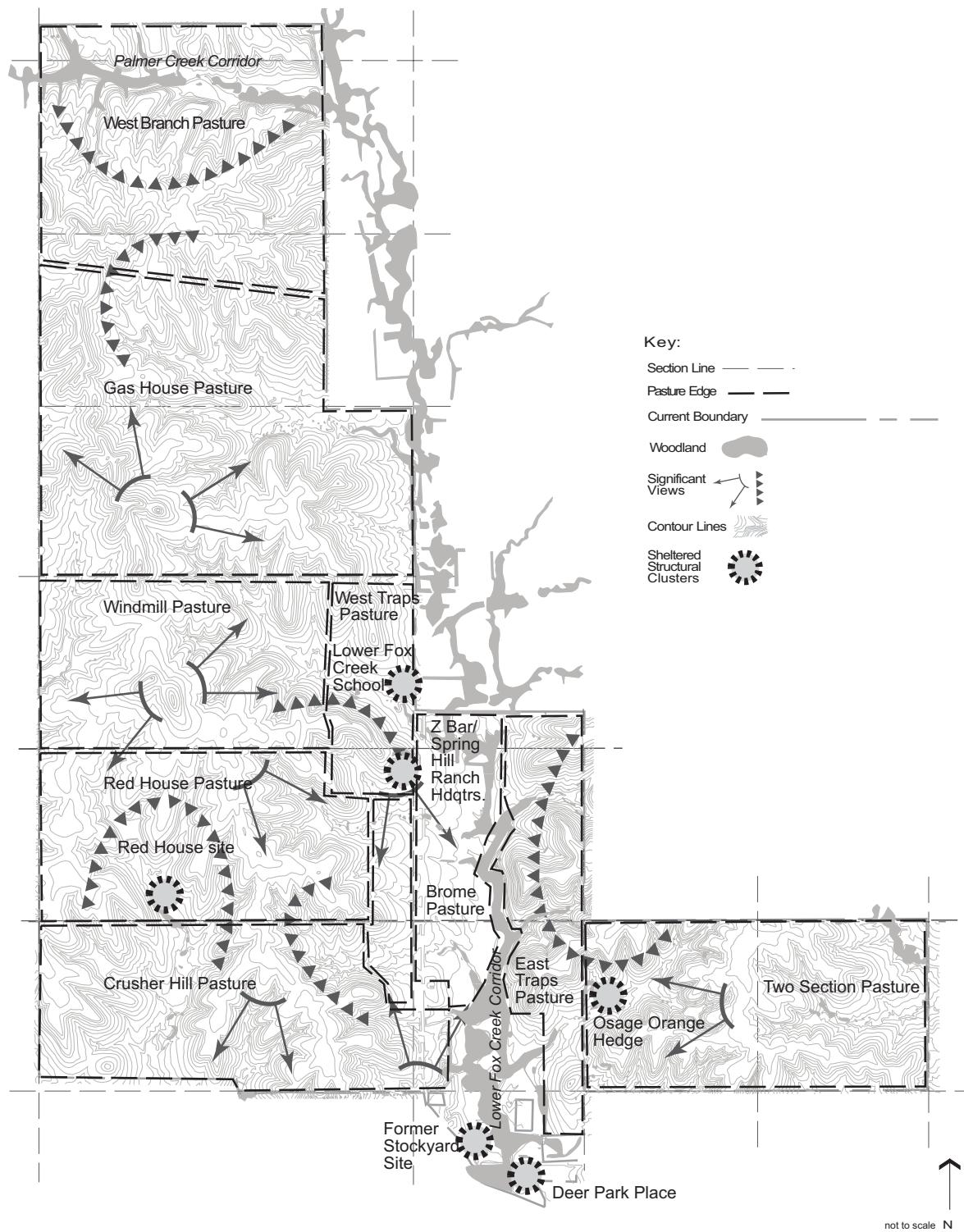
Tallgrass Prairie National Preserve includes many of the types of topographic and landform features and systems that define the unique Flint Hills physiographic region. Hill and ridge systems with relatively flat or gently sloped margins are edged by moderate to steep concave slopes developed on underlying limestone and shale layers. Limestone layers, with chert deposits resistant to erosion, have formed the upper plateaus, ridges, and hilltops, while softer shale layers have eroded to form stream valleys and drainages. This system of benches and slopes, known as terraced topography, forms the basis for the spatial organization of the Preserve. The organic forms of the local topography, clearly visible due to the relatively low blanket of prairie vegetation, stand in contrast to the gridded system of land ownership, pastures, croplands, and associated perimeter fencing that otherwise characterizes the Preserve's patterns of spatial organization.

Overall Spatial Organization of the Preserve and its Environs

The Preserve and its environs are organized spatially by two major hill and ridge systems extending north to south, divided by the Fox Creek valley. The Preserve's western pastures are part of the western hill system, approximately two to three miles wide. To the east of Fox Creek, the Preserve's eastern pastures fall along the southernmost terminus of an eastern ridge and hill system, also about two to three miles in width. The northeastern corner of the Preserve includes the western slopes of the Stout Creek stream valley. Each of these landforms is described in more detail later in this section.

The Fox Creek valley is a major space-defining feature within the park. This well-defined corridor is less than one-half mile wide at the Preserve's northern boundary. The corridor widens to about one mile as the creek exits the Preserve near its confluence with the Cottonwood River.

A number of cultural features and systems contribute to the spatial organization of the Preserve. Generally aligned with the cardinal directions, these features include state and county highways and roads, clusters of buildings and structures, utility lines, and pastures with fencelines of both stone and post and wire. These systems form regular, orthogonal spaces that contrast greatly with the rolling, broad expanses of the prairie's topographic and landform-based spaces.



Map prepared by John Milner Associates, April 2001.
This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 78.
Spatial Organization and Views

Cultural Landscape Report

Fox Creek Corridor

The Fox Creek corridor extends from above the Preserve's northern boundary to its southern margin. The average difference in elevation between the stream valley bottomlands and the rim of the hill and ridge systems to either side is about 100 feet. This wooded, linear system forms an edge to adjacent open spaces. Internally, the space is characterized by gentle east-facing slopes associated with the western hill and ridge system, and steep west-facing slopes associated with the eastern hill and ridge system. Ridges and knees extend west from the eastern hill and ridge system. These smaller landforms are incised by smaller stream and drainage valleys; this incised topography covers an area about one mile long and one-half mile wide. Similarly, there is a series of smaller stream valleys and drainages on the western side of Fox Creek. These valleys are fewer in number, shorter—one mile to less than one-half mile—and generally broader—one-half mile to over a mile in width, than those associated with the eastern margin of Fox Creek.

The Fox Creek corridor meanders through relatively level bottomlands, averaging about one-half mile in width. The creek channel is etched deeply into the floodplain. To either side of the waterway are riparian woodlands of varying density and thickness. The creek and woods divide the bottomlands into two linear spaces edged by the slopes of the flanking hill and ridge systems. Meanders and tree cover also create smaller spaces within the larger linear system. Highway 177 parallels Fox Creek for much of its length within and beyond the Preserve boundaries. Within the Preserve, the highway generally marks the western edge of the creek bottomlands.

Views within the Fox Creek corridor include: long views extending north and south from the bottom of the valley and into the smaller side valleys, and toward the rims and high points along the hills flanking the stream valley; short interior views within smaller areas defined by treelines and wooded areas along the stream; and short views within the smaller stream valleys edging the stream corridor.

Cultural features, including the Lower Fox Creek School, Z Bar/Spring Hill Ranch headquarters, Strong City, St. Anthony Cemetery, and Highway 177 are visible from many locations within the stream valley, particularly west of Fox Creek.

Eastern and Western Hill and Ridge Systems

Two upland systems, located east and west of Fox Creek, and composed of hills and ridges, run roughly north to south through the Preserve. At their edges, these landforms include an undulating and highly articulated rim about 100 feet above the floor of the Fox Creek valley. The central north-south trending ridge of each system is a mile wide, edged by gentle slopes extending away from a narrow elevated band with high points 100 feet above the plateau. Highly articulated knees extend away from the central ridge for up to one mile. These knees range from one-half mile to only a few hundred feet in width.

The open character and higher elevation of the ridges allow for expansive views of the surrounding landscape. Views extend across the plateau and into the Fox Creek valley, the Cottonwood River valley, and beyond the Preserve boundary into adjacent lands.

Cultural features, including those mentioned above, as well as post and wire fences, stone fences, gas wells and pipelines, and Strong City are visible from many locations along the plateaus.

These plateau systems are described in the following sections as components of the individual pastures that comprise the Preserve.

Two Section Pasture

Two Section Pasture forms much of the eastern side of the Preserve. The eastern portion of Two Section Pasture forms a concave bowl. Two stream corridors, located in the east-central and northeastern parts of the pasture, form low points. To the west, the land rises to meet a north/south trending ridge that extends across the pasture near the line between Sections 9 and 10. A two-track ranch road and an overhead electrical transmission line command the apex of the ridgeline. From the top there are long views available in all directions. The ridgeline falls away again to the west as it approaches the Fox Creek corridor. Here, the topography is more steeply sloped and divided by numerous drainages. The north trending ridgeline includes extensions across the south-central portion of Section 9, and its northwestern corner. Views from the ridgetop in the northwestern corner of Section 9 are expansive and dramatic.

East Traps Pasture

East Traps Pasture extends along the eastern margin of the Preserve between Sections 32 (Township 18S), 5, 8, and 17 (Township 19S). The Pasture includes three ridgeline extensions along its eastern edge. The ridgetops of these extensions afford dramatic views; the northern ridge in particular allows for panoramic views of the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School House that are unparalleled. This view provides unique perspective on the siting and spatial organization of these cultural complexes.

The side slopes of the ridges within East Traps Pasture form the remainder of the pasture. In some cases the slopes are quite steep, particularly as they approach the Fox Creek valley. Woodland associated with the creek edges the pasture to the west. Preserve boundary fencing edges the pasture to the north and east.

Brome Pasture

Brome Pasture includes land to the east of Highway 177 and to the west of Fox Creek. It parallels East Traps Pasture for the majority of its length. This relatively level area falls largely within the Fox Creek floodplain and bottomlands and has been utilized in the recent past to cultivate brome grass. Much of the pasture is in open vegetative cover. The riparian woods associated with Fox Creek edge the pasture to the north, east, and south. Preserve fencing forms an edge along Highway 177 to the west, and along the Preserve's northern boundary. This area also includes remnant cultural features associated with former habitation sites such as stone fences and foundations, and features associated with ranching operations such as stock ponds, two-track roads, and cross pasture fencing.

Crusher Hill Pasture

Crusher Hill Pasture occupies the extent of Section 7, Township 19S west of Highway 177 in the southern corner of the Preserve. Portions of two ridgelines occupy the pasture. The first, which includes two branches, falls within the central portion of the section; the second edges the pasture to the west. The tops of these ridgelines afford views in many directions. They form the edges to three concave spaces located west, south, and east of the central ridgeline.

Stone and post and wire fencing edges the pasture to the west, south, and east, near the Preserve boundary along Highway 177. The former alignment of an abandoned roadway is also evident within this pasture. It is edged in part by a rock wall, built in a sweeping arc. There are few other features located within the pasture that serve to form space.

Red House Pasture

The ridgelines occupying the central and western portions of Crusher Hill Pasture broaden out within adjacent Red House Pasture to the north. Wide and relatively level along their apexes, these ridges cover almost half of the pasture, and co-join to the north within Windmill Pasture. Set within the sheltered valley between them in the southwestern portion of the pasture are cultural features and ruins associated with a former dwelling complex known as the Red House. Concave spaces also occur in the eastern portion of the pasture. Perimeter fencing edges the pasture on all sides, and also forms smaller pasture spaces to the east along Highway 177. Large earthen trench silos are located within the pasture to the east near the highway.

Windmill Pasture

The two broad ridgelines characterizing Red House Pasture extend into Windmill Pasture, where they form one extensive system of high points and relatively level plains set above the surrounding terrain. Over the eastern half of the area the land falls away from the ridgeline to the east, forming a broad concave bowl-like space to the northwest of the ranch headquarters and the Lower Fox Creek School. Perimeter fencing edges Windmill Pasture on all sides. A portion of the section is fenced to form West Traps Pasture, which occupies approximately one-fourth of Section 31, Township 18S.

West Traps Pasture

This north/south trending pasture is edged by stone fencing to the north, east, south and west. The pasture is subdivided into two spaces near its center, between the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School site, by a rock fence. This pasture includes relatively steeply sloped terrain along drainageways emptying into Fox Creek, and two stock ponds. The space is edged to the west by the western ridgeline system. The Lower Fox Creek School, a county road, and the Z Bar/Spring Hill Ranch headquarters edge the pasture to the east.

Gas House Pasture

Gas House Pasture occupies most of Sections 19 and 30, Township 18S to the north of Windmill Pasture in the western portion of the Preserve. It is characterized by portions of the Preserve's western ridgeline, including the high point currently utilized for the Tour Road overlook, and perimeter fencing. A large concave space falls away to the east of the ridgeline, and a second exists along the lower eastern edge of the pasture. Two-tracks follow the higher elevations. Numerous drainageways etch valleys through the pasture within the lower bowl-like spaces. The eastern boundary of the Preserve along Gas House and West Branch Pastures is edged by a gas line and the property boundary is in view of Fox Creek.

West Branch Pasture

West Branch Pasture generally occupies Section 18, Township 18S. Here, the western ridge, which is not as prominent in this area, forms much of the southern portion of the pasture, but begins to fall away toward Palmer Creek to the north. Extensions of the ridgeline are edged by steeply sloped valleys along the Palmer Creek bottomlands. The break between the landforms is accentuated by stone perimeter fencing and the riparian woodlands that edge the stream valley.

Palmer Creek

Palmer Creek flows west to east through the northern reaches of the Preserve. The stream valley is edged by riparian woods and steeply sloped banks. Erosion and exposed tree roots are evident along the banks. Stone and post and wire fences extend north/south in several locations, forming a series of smaller open spaces and woodland in contrast with much of the remainder of the Preserve.

Inventory of Spatial Organization and Views

- Pastures
 - West Branch Pasture
 - Gas House Pasture
 - Windmill Pasture
 - Red House Pasture
 - Crusher Hill Pasture
 - West Traps Pasture
 - Brome Pasture
 - East Traps Pasture
 - Two Section Pasture
- Palmer Creek corridor
- Fox Creek corridor
- Fenced pastures along Palmer Creek corridor
- Lower Fox Creek School House precinct
- Z Bar/Spring Hill Ranch headquarters
- Deer Park Place
- Former corral area
- Red House ruins area
- Former settlement site, Two Section Pasture
- Expansive views from Tour Road overlook
- Expansive views from Z Bar/Spring Hill Ranch headquarters to Fox Creek, Flint Hills, Lower Fox Creek School
- Views west from ridgeline, central portion Two Section Pasture
- Views west, southwest, and south from ridgeline along Preserve boundary, Sections 5, 8, and 9, Township 19S, Range 8E
- Views east from Highway 177
- Views south toward Red House site from ridgeline, Red House Pasture, Crusher Hill Pasture
- Views east from ridgeline, Crusher Hill Pasture, portion of Red House Pasture
- Views north from Tour Road, Windmill Pasture
- Views southeast from northern portion Red House Pasture
- Views southwest and northeast from Tour Road, Windmill Pasture
- Views southeast and east from main ranch road, Gas House Pasture
- Views toward Palmer Creek corridor from ridgeline, West Branch Pasture

Responses to Natural Features and Systems

(*see photographs 1-10*)

The prairie landscape of the Flint Hills is characterized by the ever-changing topographic relationship of the stony upland plateaus and the sinuous lines etched by perennial and intermittent drainageways that form seams between them. Within the Preserve, there are four perennially-flowing streams: Palmer Creek, Fox Creek, Stouts Creek, and its tributary—West Branch. Additionally, the site includes numerous springs and seeps that feed drainageways, and other intermittent drainages that carry overland flow associated with precipitation. The region's natural resources, particularly its tallgrass prairie vegetation, numerous sources of potable water, and accessible deposits of limestone and chert, have supported cultural uses for thousands of years. Evidence for the long-standing relationship between natural resources and cultural use and occupation is abundant within the Preserve.

Since few above ground resources or documentary descriptions of the landscape survive from periods preceding the 19th century, the ways in which inhabitants took care of their needs can only be imagined or discerned through archeological analysis. As discussed in Chapter 2, Site History, primary among those needs would have been access to fresh water, building and tool-making materials, sources of food consisting of both plant and animal life, and the ability to defend occupied sites from attack.

Those who visited and occupied the site during prehistoric periods most likely utilized the creeks and springs as a source of water and possibly food (*see photograph 1*). Food resources were likely plentiful, and included numerous types of edible and medicinal plants, and various animals, such as bison, that could be hunted for their meat, bones, and hides. Agriculture may have been practiced on a limited basis within the bottomlands along the stream corridors. The materials utilized by locally indigenous or seasonal occupants for construction purposes may have included wood from riparian woodlands along the streams, stone, and bison hides (*see photograph 2*).

Based on archeological evidence, the Flint Hills were a very important source of stone for the tools used by prehistoric peoples. Numerous quarry and workshop sites have already been identified within the Preserve.

It is not known to what extent the upland knolls, with their panoramic views of the surrounding countryside, were used for defense, allowing for advance warning of potential attack, or for religious activities.

Evidence of the relationship between historic settlement, land use, and natural resources is abundant over the extent of the Preserve. This includes water-related responses, such as the siting of the Z Bar/Spring Hill Ranch headquarters on a knoll with commanding views and access to fresh water sources; the establishment of spring boxes to tap perennial springs (*see photograph 3*); and the development of earthen dams along perennial and intermittent drainageways to form stock ponds (*see photograph 4*). Also visible are many remnants of stone quarrying activities in areas of prominent limestone deposits and use of the stone to form pasture fences. As a result, the geological history is “written” in the succeeding layers of rock visible in the fences as they climb the hills.¹² Over the broad expanse of the Preserve, perhaps the most significant response to natural features was the division of the land into pastures for grazing livestock. Suitable for grazing, but too stony and steep for crop farming, the uplands underlain by limestone soils support rich and highly nutritious grasslands. The soils and topography found in association with creek bottoms made

¹² Personal communication, Sherda Williams, NPS, Omaha, May 2001.

these areas more suitable for cultivation of crops. The traditional division of agricultural land uses clearly reflects these natural conditions.

The necessity of movement across the dramatic topography of the prairie resulted in specific responses such as the siting of paths and two-track roads along ridgelines; and the establishment of low-water crossings to ford streams (*see photograph 5*).

Other examples of historic responses to natural features include culverts used in some locations to carry water beneath circulation systems (*see photograph 6*); the extensive planting of cedar trees to the north and west of the Z Bar/Spring Hill Ranch headquarters to form a windbreak (*see photograph 7*); the establishment of a berm around Deer Park Place to protect it against flooding (*see photograph 8*); the use of existing landforms to establish trench silos to the south of the ranch headquarters precinct; and establishment of trash dumps along drainageways.

In addition, the prevalent use of limestone to construct buildings, outbuildings, and pasture fencing, and the use of fence posts made from rot-resistant Osage orange branches are examples of historic site-specific responses to natural resources (*see photograph 9*).

The original purpose of the rock cairns located atop a knoll to the east of the Z Bar/Spring Hill Ranch headquarters has yet to be identified, but may relate to previous attempts at sheep farming (*see photograph 10*).

More contemporary responses to natural features include the establishment of a Tour Road overlook along one of the Preserve's high points to allow for expansive views of the prairie, and the establishment of an earthen dam in the Fox Creek bottomlands as a flood control measure. On an adjacent site, the community of Strong City has established municipal wastewater treatment ponds within the Fox Creek bottomlands area. The treated effluent is discharged into Fox Creek.

Inventory of Natural Systems and Features, and Responses to Natural Systems and Features

Natural Systems and Features

- Stone outcrops
- Palmer Creek
- Fox Creek
- Stouts Creek
- West Branch of Stout Creek
- 7 Springs

Responses to Natural Systems and Features

- Rock cairns, East Traps pasture
- Limestone quarry site, Township 18S, Range 8E, Section 19, east-central portion
- Limestone quarry site, Township 18S, Range 8E, Section 30, northeast portion
- Limestone quarry site, Township 18S, Range 8E, Section 30, west-central portion
- Limestone quarry site, Township 18S, Range 8E, Section 31, north-western edge
- Limestone quarry site, Township 19S, Range 8E, Section 5, southeastern corner
- Cultivated bottomlands

- Flood control structure
- Dump, northeast of Z Bar/Spring Hill Ranch headquarters
- Dump along southern site boundary
- Trench silos, Township 19S, Range 8E, Section 6

Responses to Natural Features and Systems

Source: John Milner Associates, Inc.



Photograph 1.
View of Fox Creek.

Source: John Milner Associates, Inc.



Photograph 2.
View of riparian woodlands from
East Traps Pasture.

Source: John Milner Associates, Inc.



Photograph 3.
Spring box at stock pond in Crusher
Hill Pasture.

Response to Natural Features and Systems

Source: John Milner Associates, Inc.



Photograph 4.
Stock pond #4, Windmill Pasture.

Source: John Milner Associates, Inc.



Photograph 5.
Low-water crossing at Fox Creek.

Source: John Milner Associates, Inc.



Photograph 6.
Culvert under former railroad spur line, Highway 177 corridor.

Response to Natural Features and Systems

Source: John Milner Associates, Inc.



Photograph 7.

View of ranch from knoll in East Traps pasture showing cedar plantings to the north and west of the Z Bar/Spring Hill Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 8.

Two-track road running beneath US Highway 50 near Deer Park Place.

Source: John Milner Associates, Inc.



Photograph 9.

Example of Osage orange fence posts, Two Section Pasture.

Response to Natural Features and Systems

Source: John Milner Associates, Inc.



Photograph 10.

Rock cairns located atop a knoll to the east of the Z Bar/Spring Hill Ranch headquarters.

Land Uses and Activities

(See figure 79 and photographs 11 to 18)

Existing land uses within the Preserve range from agriculture, including pasture and crop land, administration, visitor services, commercial, museum/interpretive, open space/undeveloped, utility, service/support/storage, and mineral extraction.¹³ Easements exist over portions of the Preserve to allow for utility uses, and leases regulate many of the agricultural and mineral extraction uses. The individual land uses occur within the Preserve as follows:

Agriculture (pasture): Large expanses of open fields, with scattered stock ponds, are maintained in tallgrass prairie pasture where cattle are brought to graze between May and July. Currently, a 35-year lease allows early intensive grazing over all but approximately 950 acres of the Preserve. The land excluded is mostly located along the Fox Creek bottomlands (*see photograph 11*).

Agriculture (crop land): A limited number of small fields that support crop farming, approximately 43 acres in total, are located primarily in the southern portion of the Preserve along US Highway 50 (*see photograph 12*). Cultivated brome grass pastures are generally concentrated east of Highway 177 and west of Fox Creek.

Administration: some NPS and NPT administrative offices are currently housed in the buildings located within the Z Bar/Spring Hill Ranch headquarters.

Visitor services: Rest rooms and orientation information are currently available within the Z Bar/Spring Hill Ranch headquarters buildings (*see photograph 13*).

Commercial: The Z Bar/Spring Hill Ranch main house includes a Park Education Resource Center, offering Preserve-themed items for sale that is operated by the NPT.

¹³ The land use designations used in this report are defined as follows:

Agriculture (pasture): planted or cultivated areas kept open for or through grazing by livestock;

Agriculture (crop land): planted or cultivated areas in which stands of vegetation are managed to yield products for consumption by humans or domestic animals and/or livestock;

Administration: buildings, structures, or other locations utilized for park management operations;

Visitor services: buildings, structures, or other locations where visitor amenities and facilities are available, including rest rooms, drinking fountains, advice, and information;

Commercial: buildings, structures, and other areas where goods are available for purchase;

Museum/interpretive: buildings, structures, and other areas where exhibits and interpretive materials are located;

Open space/undeveloped: large areas that are not currently evidencing specified land use activities or that do not contain substantial physical developments;

Utility: buildings, structures, and other locations where park services such as water, electricity, or propane gas are stored, purified, or distributed;

Service/support/storage: buildings, structures, or other locations where maintenance and security equipment and operations are housed, and Preserve storage occurs;

Mineral extraction: sites where surficial or below-ground resources, including stone, gravel, gas, oil, and others are extracted for use elsewhere or for sale.

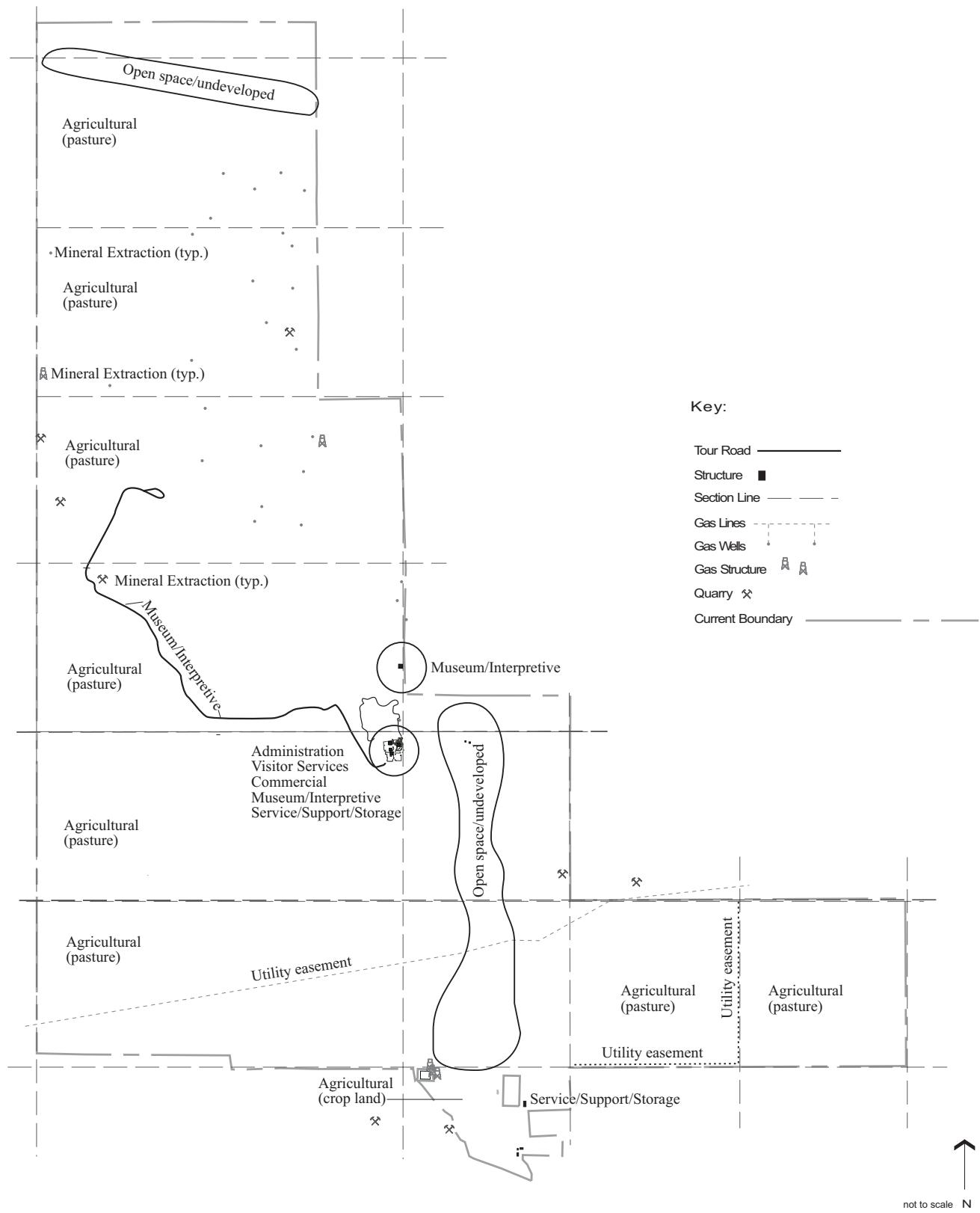
Museum/interpretive: Interpretive programs, including waysides and self-guided trails, currently exist within the Z Bar/Spring Hill Ranch headquarters, at the Lower Fox Creek School site, along a trail connecting the two areas, and through bus tours of the prairie that follow the Tour Road between the Z Bar/Spring Hill Ranch headquarters and an overlook located to its west within Gas House Pasture (*see photograph 14*).

Open space/undeveloped: While the majority of the Preserve continues to serve ranching and other agricultural uses, wooded portions of the Fox Creek and Palmer Creek stream corridors appear to be not currently utilized for any specific cultural purpose (*see photograph 15*).

Utility: Two easements exist within the Preserve for public utility lines. These include the Flint Hills Rural electrical lines that run north to south across the eastern portion of the Preserve, and a gas pipeline that traverses the southern portion of the Preserve from west to east. Utility land uses that relate internally to the ranch property include well houses in the Fox Creek bottomland; electrical service to these well houses; and a wellhead in the former corral area site, similarly electrified. Landscape features associated with utilities are addressed in more detail in a subsequent section of this chapter (*see photograph 16*).

Service/support/storage: Ranch operational and Preserve maintenance equipment is currently housed in the outbuildings associated with the Z Bar/Spring Hill Ranch headquarters; and in the barn located adjacent to the municipal waste ponds along the county road north of US Highway 50 (*see photograph 17*). Storage sites utilized historically include the trench silos within Red House Pasture south of the ranch headquarters and a nearby grain silo. Deer Park Place outbuildings also support small-scale storage uses.

Mineral extraction: Gas pipelines and collection structures crisscross portions of Gas House Pasture, as well as other areas of the Preserve. Some of the wells have been inactive since the late 1950s or early 1960s, although many were not plugged until the late 1980s. A few remain active, and some pipelines continue to carry small volumes of low-pressure natural gas; leases for use of the pipelines in some cases extend up to thirty-five years into the future. Other former land uses associated with mineral extraction that remain in evidence within the landscape include the numerous limestone quarries scattered throughout the Preserve (*see photograph 18*).



Map prepared by OCULUS, April 2001.
This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 79.
Land Use and Activity

Cultural Landscape Report

Land Uses and Activities

Source: John Milner Associates, Inc.



Photograph 11.

View of the expansive open pastures associated with the Preserve.

Source: John Milner Associates, Inc.



Photograph 12.

View of crop land near US Highway 50.

Source: John Milner Associates, Inc.



Photograph 13.

Visitor information signage at the Z Bar/Spring Hill Ranch headquarters. The historic privy is visible at right.

Land Uses and Activities

Source: John Milner Associates, Inc.



Photograph 14.
Self-guided Southwind Nature Trail
near the Z Bar/Spring Hill Ranch
headquarters.

Source: John Milner Associates, Inc.



Photograph 15.
Wooded portions of Fox Creek from
East Traps Pasture knoll.

Source: John Milner Associates, Inc.



Photograph 16.
Flint Hills Rural electrical lines in
Two Section Pasture.

Land Uses and Activities

Source: John Milner Associates, Inc.



Photograph 17.
Metal barn adjacent to the municipal
waste ponds.

Source: John Milner Associates, Inc.



Photograph 18.
Gas pipeline crossing a drainageway
near Highway 177.

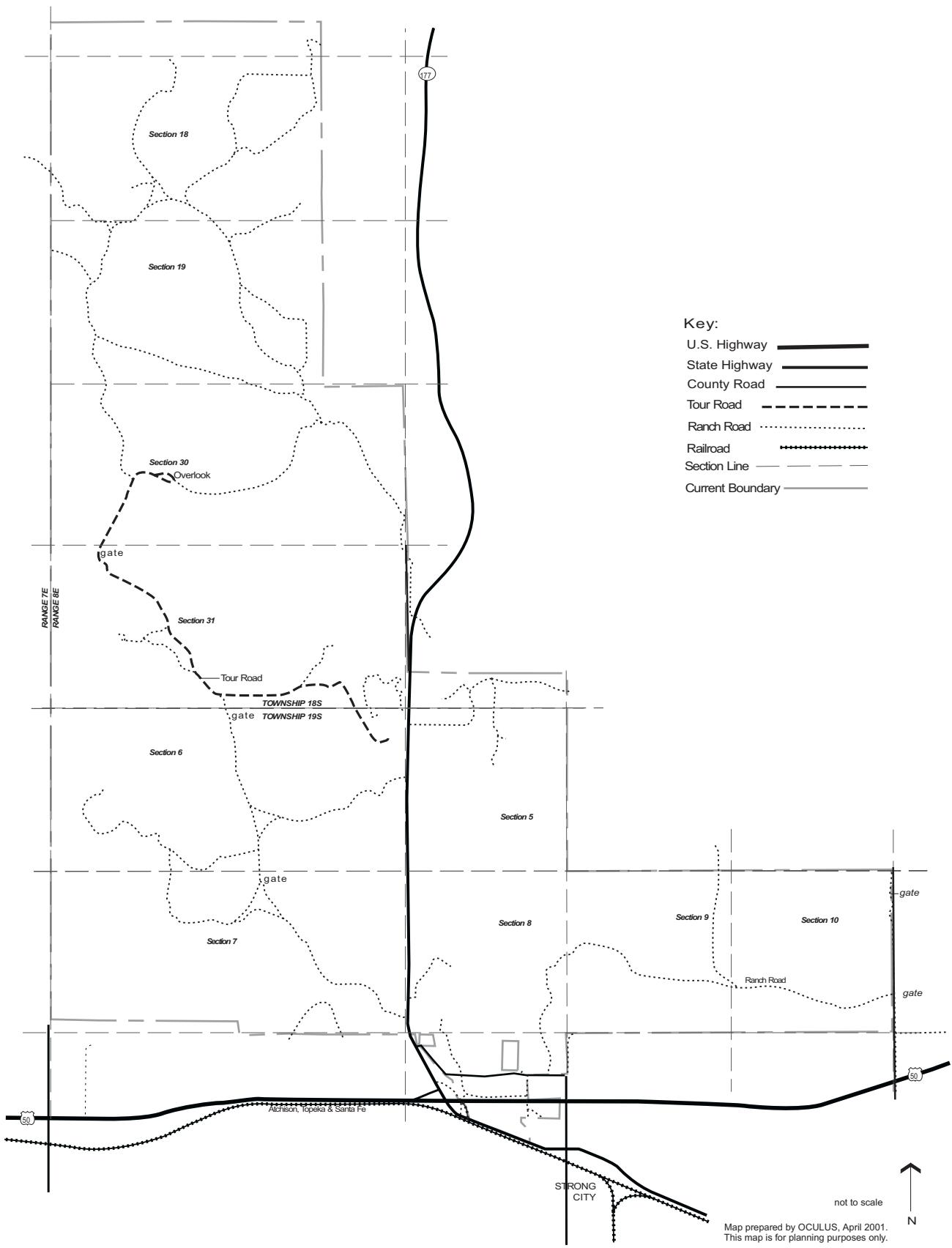
Circulation Patterns and Features

(See figure 80 and photographs 19 to 59)

Tallgrass Prairie National Preserve and its immediate environs contain a range of vehicular circulation systems, including a federal highway; a state highway; local and county roads associated with residential sections of Strong City; an extensive network of two-track roads providing access to the Preserve's pasture lands, gas wells, and other features; a complex system of internal circulation at the Z Bar/Spring Hill Ranch headquarters; and a Tour Road used to provide bus tours of a portion of the Preserve for visitors. Pedestrian circulation within the Preserve includes walks, steps, and paths associated with the Z Bar/Spring Hill Ranch headquarters, an interpretive trail within the complex, and a longer loop trail connecting the ranch headquarters with the Lower Fox Creek School. A rail line owned by the Atchison, Topeka & Santa Fe Railroad runs east/west to the south of the Preserve. The grade of a former spur rail line that led from the main rail line into the site is evident within the southern portion of the Preserve.

The most prevalent circulation features within the Preserve are roads. A hierarchy of road types exists, evident through surfacing and prism width. More permanent paving materials are used to surface roads that carry high volumes of traffic. Public highways are two to four lanes in width, paved with asphalt, and include widened shoulders. County roads are typically two lanes wide and surfaced with gravel. The internal network of two-track ranch and pasture access roads are single-lane routes composed of wheel ruts of hard-packed earth. The Preserve's system of two-tracks includes two categories: primary two-track roads that extend between frequently visited sites and typically follow the ridgelines; and secondary, spur and loop two-track roads that provide access to less visited areas. The ranch roads traverse pastures and lead to stock ponds, creeks, springs, high points, gas well and meter sites, and ranch operations sites. Where ranch roads pass through gates in pasture fencing systems, the openings are often flanked by two tall gateposts with a wire strung across the top between them. These posts increase the stability of the adjacent fence sections, and also help to make the locations of the gates more visible. Cattle guards are also integrated at some gates. The Tour Road, a former two-track, has been surfaced with crushed limestone.

Bridges and low-water crossings associated with circulation systems are described in more detail later in this chapter as structures. Individual circulation features associated with Preserve are described in more detail below.



Tallgrass Prairie National Preserve

Figure 80.
Circulation

Cultural Landscape Report
October 2004

Strong City Area

US Highway 50 cuts through the southern tip of the Preserve where it abuts Strong City. This primarily two-lane federal highway is paved with asphalt, and includes widened shoulders, bridges, guardrails, culverts, ditches, and sign systems within its right-of-way. At its intersection with Highway 177, US Highway 50 runs under a large concrete bridge. Ramps connect US Highway 50 with Highway 177. US Highway 50 is elevated atop an earthen berm that protects the roadway from flooding within the Fox Creek floodplain.

A short segment of **ranch road** runs north from US Highway 50 to the gravel county road connecting Highway 177 with Strong City. The ranch road also runs south and beneath US Highway 50 via a large concrete culvert (*see photograph 19*), providing access to Deer Park Place and residential areas of Strong City.

The **county road** noted above runs west from Strong City's northern edge. It crosses Fox Creek via a single arch bridge faced with cut and fitted coursed limestone before turning northwest and connecting with Highway 177 near St. Anthony Cemetery. This two-lane county road is paved with crushed stone (*see photograph 20*). It generally follows the alignment of a road that appears on late-19th-century maps. A trace of the road is all that survives to the west of Highway 177.

On the west side of Fox Creek, a **two-track ranch spur road** runs north along the bottomland between Fox Creek and St. Anthony Cemetery. The spur road terminates just north of the cemetery. A short **unimproved road** leads west from the two-track and provides access to St. Anthony Cemetery.

The **Atchison, Topeka, & Santa Fe Railroad** runs along the bottom of the Preserve at the eastern edge of Strong City. This standard-gauge single-rail line runs northwest to southeast and generally parallels US Highway 50 to its north, with a bridge crossing of Fox Creek. The grade of the former rail spur that led to a corral area site within the Preserve is still evident near the intersection of US Highway 50 and Highway 177.

Pastures

The Preserve's Two Section Pasture is accessed from the east by a **crushed-stone county road** running north from US Highway 50 (*see photograph 21*). Approximately 1,000 feet north of the Preserve's southeast corner, a gate marks the entrance onto a **two-track ranch road** that runs west into the Preserve (*see photograph 22*). This two-track generally follows the alignment of a trail that appears on late-19th-century mapping.

At about the midpoint of the Two Section Pasture, a **two-track spur road** splits off from the primary two-track. It then runs north along a prominent ridge to the Preserve's northern boundary (*see photograph 23*). This road provides access to the Flint Hills Rural overhead electrical transmission line that crosses the Preserve in this vicinity. The primary ranch two-track continues west along the ridge before descending into a small valley and, later, the Fox Creek bottomlands. At the bottom of the small valley, the ranch road turns south into the East Traps Pasture and connects to the **county road** described above.

Two roads lead into the Preserve's eastern side from Highway 177. About 1,500 feet north of St. Anthony Cemetery, a **two-track spur road**, originating from Highway 177, leads northeast into the Preserve. This two-track ends within Brome Pasture on the west side of Fox Creek. A **second two-track** leads into the Preserve's eastern side from Highway 177 opposite the Z Bar/Spring Hill Ranch headquarters (*see photograph 24*). This ranch road runs toward Fox Creek through Brome

Pasture. It turns north before crossing the stream and leads into East Traps Pasture on a concrete-surfaced low-water bridge (*see photograph 5*). After crossing Fox Creek, the two-track continues north. Another short two-track **spur road** originates from the main two-track spur road, runs west toward a dump site and terminates west of Fox Creek. The main two-track road continues north, turns east, and parallels the Preserve's northern boundary. This road ends at the Preserve's northeastern corner. A second **spur road** runs south from the main road just east of the Fox Creek crossing, ending at a major drainage that empties into Fox Creek.

Roads enter the Preserve's western section from Highway 177 at four points: Crusher Hill Pasture, the Z Bar/Spring Hill Ranch headquarters, north of the Lower Fox Creek School at Gas House Pasture, and near the northeastern corner of the Preserve. Approximately 1,000 feet north of St. Anthony Cemetery, the most southern of these entrances, a **primary two-track ranch road**, provides access to the eastern edge of the **Crusher Hill Pasture**. From the eastern portion of this road, the former alignment of a county road or highway is visible running west and southwest toward the Preserve boundary (*see photograph 25*). This **trace road** is edged in part by a remnant stone fence (*see photograph 26*).

The primary ranch road that arises at the southeastern corner of Crusher Hill Pasture generally follows hilltops and ridges, and runs through **Crusher Hill, Red House, Windmill, Gas House, and West Branch Pastures**. At each juncture between pastures, the two-track crosses through fences of stone or post and barbed wire. Gates and cattle guards limit the free movement of cattle at these points. Within the **Windmill and Gas House Pastures**, this primary ranch road also serves as the route of the visitor **Tour Road** discussed later in this section.

Also within Crusher Hill Pasture is a complex network of **two-track spur roads** leading to western portions of the pasture, and to Red Hill Pasture. Approximately 3,000 feet from the Highway 177 entry point of the main ranch two-track road, a **short spur road** runs southwest towards the southern Preserve boundary and a dump site. A second **spur road** arises just south of the Red House Pasture from a "Y" connection to the primary ranch road. It leads west to a strong ridgeline along the western Preserve boundary. The third **spur road** leads north from this point to the Red House site (*see photograph 27*). Within the Red House Pasture, **two spur roads** run from the main two-track ranch road to the Red House ruins site. Another **spur road** continues northwest from the Red House ruins site, terminating along the ridge at the western Preserve boundary.

The major ranch road continues into the Windmill Pasture from Red House Pasture where it forms the Preserve **Tour Road**. The two-track has been graveled as it leads northwest from the **Z Bar/Spring Hill Ranch headquarters** and the West Traps Pasture (*see photograph 28*). The Tour Road is accessed by small tour buses, and affords visitors spectacular views of the prairie in all directions from an overlook within Gas House Pasture. The Tour Road forms a loop near the overlook; vehicles return to the Z Bar/Spring Hill Ranch headquarters along the same route.

There are **three short two-track spur roads** within the Windmill Pasture. The eastern **spur road** leads northeast from the Tour Road into the West Traps Pasture approximately 3,000 feet northwest of the Z Bar/Spring Hill Ranch headquarters. The other **two spur roads** head west, ascending two small hilltops before joining again.

Within **Gas House Pasture**, the **major ranch road** continues north along the ridge and hill system running along the western boundary of the Preserve. Within this pasture, the road traverses some of the highest elevations of the Preserve, averaging between 1,400 and 1,500 feet above MSL. **Two spur roads** run east from the major ranch road in the western portion of this pasture and connect back to the major ranch road as it turns south from the West Branch Pasture. One of these leads to Highway 177. These two-track spurs descend east-west ridges and terminate at the western edge of the Fox Creek drainage.

The **primary ranch road** enters **West Branch Pasture** at its southwest corner and curves to the east and then south. The major ranch road then descends a north-south ridge into a drainage. Four spur roads extend from the primary ranch road as it curves within West Branch Pasture. The westernmost **spur road** runs northwest from the major ranch road toward the western boundary of the Preserve. Two **spur roads** lead from the central portion of the major ranch road. One heads north to Palmer Creek and a stock pond, while the other heads northeast, then splits into two roads, which rejoin after crossing Palmer Creek near its confluence with Fox Creek. A fourth **spur road** runs northeast to access the gas wells in the eastern part of West Branch Pasture.

After curving through West Branch Pasture, the **major ranch road** heads southeast towards the eastern boundary of the Preserve within **Gas House** and **West Traps Pastures**. The ranch road exits the Preserve about 4,000 feet north of the Lower Fox Creek School House and connects with Highway 177.

The Lower Fox Creek School site is accessed via an **old section of Highway 177** that parallels present Highway 177. The old road runs south past the school for about 500 feet, and north for about 2,000 feet, to an intersection with a crushed-stone surfaced county road. A narrow crushed-stone surfaced **access drive** leads north from the old road to the school site. The access drive passes in front of the school and loops around the building. The Southwind Nature Trail begins near the base of the access drive.

There is an older **road trace** located in East Traps Pasture.

Circulation

Source: John Milner Associates, Inc.



Photograph 19.
Concrete culvert running under US Highway 50 providing access to Deer Park Place and the northern edge of Strong City.

Source: John Milner Associates, Inc.



Photograph 20.
Two-lane county road between Strong City's northern edge and Highway 177.

Source: John Milner Associates, Inc.



Photograph 21.
County road running north from Highway 50 east of Strong City and accessing Two Section Pasture.

Circulation

Source: John Milner Associates, Inc.



Photograph 22.
Gate marking entrance to a two-track
ranch road near the Preserve's south-
eastern corner.

Source: John Milner Associates, Inc.



Photograph 23.
Two-track ranch spur road splitting
off from a primary two-track in Two
Section Pasture.

Source: John Milner Associates, Inc.



Photograph 24.
Two-track leading into the Preserve's
eastern side and Brome Pasture oppo-
site the Z Bar/Spring Hill Ranch
headquarters. The Fox Creek bottom-
lands as seen here have been used to
cultivate brome grass.

Circulation

Source: John Milner Associates, Inc.



Photograph 25.
Road trace of former highway visible
in Crusher Hill Pasture.

Source: John Milner Associates, Inc.



Photograph 26.
View of highway trace along the
Preserve's southern boundary.

Source: John Milner Associates, Inc.



Photograph 27.
Two-track spur road leading to Red
House ruin, Crusher Hill Pasture.

Circulation

Source: John Milner Associates, Inc.



Photograph 28.
Tour Road leading northwest from
the Z Bar/Spring Hill Ranch head-
quarters.

Z Bar/Spring Hill Ranch Headquarters

Site circulation at the Z Bar/Spring Hill Ranch headquarters includes three major systems: a network of crushed-stone surfaced roads, parking, and drives shared by staff and maintenance vehicles and open to the vehicles of visitors with accessibility needs; a system of walks and paths associated with the main house and outbuildings; and a circuit of interpretive trails.

Vehicular site circulation is of variable width, with no curbs or gutters, surfaced largely with crushed stone, and edged by grass lawn, buildings, fencing, or walls. Vehicles enter the Z Bar/Spring Hill Ranch headquarters from **Highway 177** (*see photograph 29*) which fronts the headquarters to the east, via a short **main entrance drive** (*see photograph 30*). Currently, there is great concern regarding the sight distance afforded by the ranch headquarters entrance. Cars waiting to turn into the complex from the north are visible for a sufficient distance for cars traveling southbound, but cars turning north out of the complex or into the complex from the south can not see far enough in the northerly direction for safe turns. The NPS and NPT, in conjunction with KDOT, are considering alternatives for alleviating the sight-distance problem.

The ranch headquarters entrance drive is surfaced with crushed stone. Visitors are directed to a large **parking lot** located immediately to the left (*see photograph 31*). The parking area, too, is surfaced with crushed stone. The parking lot is enclosed by perimeter fencing and gates that are closed to limit access when the ranch headquarters area is not open to visitors. The lot is roughly rectangular in shape and approximately 200 feet by 100 feet in size.

Visitors in buses and RVs are directed to a 75-by-150-foot oval-shaped **bus and RV parking area** just west of, and uphill from, the main visitor parking lot (*see photograph 32*). This bus and RV parking area is comprised of a single-lane drive that allows larger vehicles to parallel park along the drive edge.

Accessible parking is located further up the hill via the main entrance drive. Metal pipe fencing and gates control access to the upper portion of the drive. In general, the road surface of the drive is rutted and uneven, with ill-defined margins.

North of the barn, the **access drive** turns northeast and connects with the rear of the main house (*see photographs 33 and 34*). The width of the drive is variable, with some edges extending to the face of buildings and others to grass lawn. A crushed-stone service drive of variable width leads north from the main house and edges the agricultural outbuildings—the barn, scratch house, and poultry house (*see photographs 34 through 37*). Two **short paths** (*see photograph 38*) extend from the service drive to the poultry house, and two timber and stone **ramps** lead to the upper level of the barn across the way. A crushed-stone surfaced **lower service drive** leads south from the service drive, past the lower corrals associated with the barn. It provides access to the primary two-track road leading west from the complex that is currently used as the **Tour Road** (*see photograph 39*).

To the northeast of the barn-corral system, a system of **upper service drives** leads north toward the Ranch Hand House and the knoll above the main house (*see photographs 40 and 41*). This crushed-stone system of access drives is used primarily by park staff. It leads to an area formerly used for staff parking located on the south side of the knoll above the main house.

Two **paths** lead down the eastern end of the knoll above the main house (*see photographs 42 and 43*). One leads south toward the service drive. The path is very narrow, with a soil and crushed stone surface, and includes at its southern end a short set of limestone block steps, covered in small gravel, with a metal handrail. This path was repaired in September 2001. The second path leads

towards the main house, and includes a set of steps constructed of timber risers with crushed stone treads, and a metal pipe handrail. The steps are part of the interpretive trail and connect the main house with the upper level parking area. This system is currently in poor condition, and unsafe. Crushed stone has eroded into piles on the stair treads. The handrail appears not to be to code.

Circulation to the west, or rear, of the house originally provided service access, but it now accommodates primary Preserve visitor access. In the rear of the house, the first floor opens onto an enclosed porch. Concrete steps lead to a stone-patterned **concrete block terrace** with a joint pattern that simulates flagstones (*see photograph 50*). The blocks are similar to those utilized to build the silo. These blocks were apparently salvaged from the demolition of a second silo that once stood near the barn. The concrete shows signs of cracking, spalling, and vegetation is growing up between the blocks, which are set unevenly. The terrace abuts the concrete roof of a root cellar. A system of **perimeter stone walks and steps** surrounds the base of the main house on its north and south sides, connecting to both the front porch and the terrace at the first floor level, as well as the curing room/springhouse at the lower level (*see photographs 51 and 52*). The concrete steps located to the north of the house are cracking and chipping, primarily on the risers. The lowest step of the flight leading up near the root cellar has separated from the rest.

Other circulation in this area includes an earthen surfaced portion of the **interpretive trail** system (*see photograph 53*); a short, crushed stone path accessing the outhouse (*see photograph 54*); and **connecting walks** to the curing room/springhouse and main house perimeter walk (*see photograph 53*). Concrete and limestone steps lead down beside the barn from the service drive. The limestone section is in poor condition. The steps have experienced spalling, cracking, and settling.

Site circulation to the east, or front, of the main house was originally developed to provide formal access from the main road to the entrance into the house. The main house is sited halfway up the east-facing slope of a low hill (*see photograph 44*). Access to the front entrance of the main house is via a **main entrance walk** (*see photograph 45*) through the terraced gardens. This walk, some of which is obscured by silt that has collected due to poor drainage, is located on axis from the highway to the front door of the main house, passing through pairs of stone pylons that flank the walk as it ascends each of the four terrace levels, edged by stone retaining walls. At the lowest terrace level, the walk surface is a mix of lawn and bare soil. A set of stone steps (*see photograph 46*) with stone cheek walls is located at the first and lowest terrace wall. The stone cheek walls extend west toward the house and transition from cheek walls into edging, flush with the terrace's grass surface. A set of half-circular stone steps atop a set of stone steps with cheek walls are located at the next terrace retaining wall (*see photograph 47*). The circular steps, located in association with decorative iron fencing and gates, delineate the edge of the immediate environs of the main house from the larger lawn areas surrounding it. The stone associated with these steps is spalling and chipping, and the base is loose. Sets of steps are located at each of the subsequent terrace retaining walls (*see photograph 48*). Each of these sets of steps is similar to those described earlier. They include stone risers and cheek walls, with stone edging extending away from the steps flush with the grass on either side. The upper set of steps is integrated with the building's front porch (*see photograph 49*). Until they were repaired in September 2001, there were various condition issues associated with this system: the steps were spalling; the capstone associated with the cheekwall on the left was turned on its side, and the right pillar was missing. The front door on the lower level of the house is accessed from this front porch, which extends along the length of the façade.

A self-guided interpretive loop trail has been established within the ranch headquarters precinct by the NPS and NPT, described in a pamphlet as the "Prairie and the People Walking Tour." The **Prairie and the People Walking Tour trail** begins with Wayside 1—Z Bar/Spring Hill Ranch—at the intersection of the main entrance drive and the lower service drive. Visitors following the trail use the existing crushed stone service drives until leaving the main house after Wayside 4. Wayside 2—The Barn; Wayside 3—Carriage House and Poultry House; and Wayside 4—The

Limestone Mansion, are all accessed via the initial service drive. After leaving the main house, the visitor arrives at Wayside 5—Smoke House, Spring House, and Cellar—via an earthen and crushed-stone surfaced path. Wayside 6—Cistern and Icehouse; and Wayside 7—Discover the Prairie (*see photograph 55*) are accessed via the steps leading from the main house to the top of the knoll near the cistern and icehouse. The earthen and crushed-stone surfaced trail continues through the groves and plantings of cedars (*see photograph 56*). After Wayside 8, an information sign displays trail options to visitors (*see photograph 57*). One trail extends beyond the ranch headquarters precinct to connect with the Southwind Nature Trail. This trail leads up to a gate at the outer perimeter stone fence (*see photograph 58*). A separate bypass trail runs outside the perimeter stone fence to allow access when the main house and the Prairie and the People Walking Tour trail are closed. This bypass trail also intersects with the return segment of the Southwind Trail.

The **Southwind Nature Trail** (*see photograph 59*) continues west from the Ranch headquarters, beyond the outer perimeter stone fence, and through an expanse of open prairie. This trail is 1.75 miles in length and provides access to the Lower Fox Creek School House; a separate return trail loops back to the primary visitor parking lot, passing between the main house and Highway 177.

Circulation

Source: John Milner Associates, Inc.



Photograph 29.
View of Highway 177 from
Southwind Nature Trail.

Source: John Milner Associates, Inc.



Photograph 30.
Main entrance drive fronting the Z
Bar/Spring Hill Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 31.
Visitor parking lot at Z Bar/Spring
Hill Ranch headquarters located
alongside Highway 177.

Circulation

Source: John Milner Associates, Inc.



Photograph 32.
Bus and RV parking area just west of
and uphill from the visitor parking
lot. The bank barn is visible on the
right, the silo in the center of the
photograph.

Source: John Milner Associates, Inc.



Photograph 33.
Main house access drive and associ-
ated service drive at Z Bar/Spring
Hill Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 34.
Access drive running alongside the
bank barn.

Circulation

Source: John Milner Associates, Inc.



Photograph 35.

Service drive near agricultural out-buildings. Also note wayside exhibit.

Source: John Milner Associates, Inc.



Photograph 36.

Crushed-stone service drive and row of outbuildings, including from left to right: the shed, scratch house, poultry house, and carriage house.

Source: John Milner Associates, Inc.



Photograph 37.

Crushed-stone service drive behind the main house.

Circulation

Source: John Milner Associates, Inc.



Photograph 38.
Short paths extending from the service drive to the poultry house.

Source: John Milner Associates, Inc.



Photograph 39.
Tour Road leading west from the complex and past the lower corrals associated with the barn.

Source: John Milner Associates, Inc.



Photograph 40.
Upper service drive leading north toward the Ranch Hand House.

Circulation

Source: John Milner Associates, Inc.



Photograph 41.

Upper service drive leading to the former Quonset site. (The building has been removed since this photograph was taken.)

Source: John Milner Associates, Inc.



Photograph 42.

Path between the former Quonset and the upper parking area, and the lower service drive.

Source: John Milner Associates, Inc.



Photograph 43.

Path leading between the cistern and the main house.

Circulation



Source: John Milner Associates, Inc.

Photograph 44.
Main house, Z Bar/Spring Hill Ranch
headquarters.



Source: John Milner Associates, Inc.

Photograph 45.
Front entrance walk.



Source: John Milner Associates, Inc.

Photograph 46.
Stone steps and cheek walls located
at the first and lowest terrace wall.

Circulation

Source: John Milner Associates, Inc.



Photograph 47.

Stone steps with cheek wall and decorative iron fence and gate system; third terrace.

Source: John Milner Associates, Inc.



Photograph 48.

Detail of steps and cheek wall associated with terraces in front of Z Bar/Spring Hill Ranch headquarters main house.

Source: John Milner Associates, Inc.



Photograph 49.

Front door of the main house, edged by a front porch that extends along the entire façade.

Circulation

Source: John Milner Associates, Inc.



Photograph 50.

Rear view, main house. The first floor opens onto an enclosed porch, and a concrete terrace edges the rear of the house.

Source: John Milner Associates, Inc.



Photograph 51.

Stone steps lead between the front and rear façades of the main house along its eastern side.

Source: John Milner Associates, Inc.



Photograph 52.

Stone walls connect the main house to the nearby curing room/spring-house.

Circulation

Source: John Milner Associates, Inc.



Photograph 53.

A portion of the interpretive trail system passes the curing room/spring house.

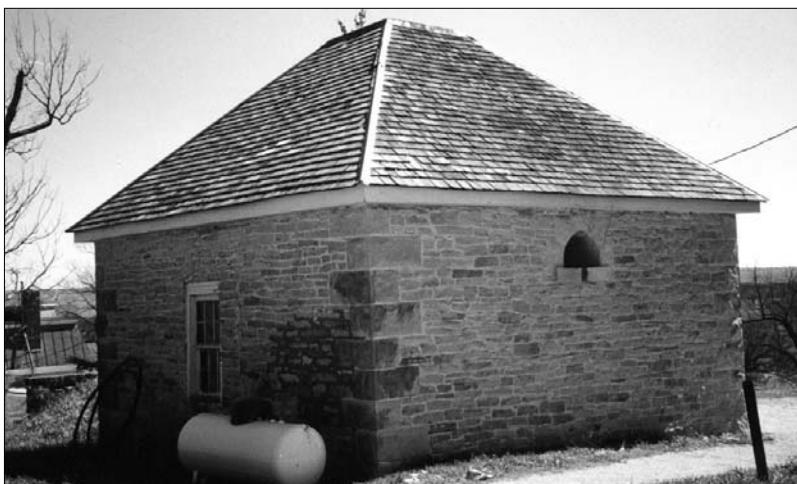
Source: John Milner Associates, Inc.



Photograph 54.

A short, crushed-stone path provides access to the outhouse.

Source: John Milner Associates, Inc.



Photograph 55.

View of the crushed-stone path leading past the icehouse.

Circulation

Source: John Milner Associates, Inc.

Source: John Milner Associates, Inc.



Photograph 56.

A soil and crushed-stone surfaced trail leads through the Eastern red-cedar windbreak planting northwest of the main house.



Photograph 57.

An information sign along the trail behind the house.

Source: John Milner Associates, Inc.



Photograph 58.

A trail leads to this gate in the stone fence on the outer perimeter of the Z Bar/Spring Hill Ranch headquarters precinct.

Circulation

Source: John Milner Associates, Inc.



Photograph 59.

The Southwind Nature Trail continues west beyond the outer stone fence and leads to the Lower Fox Creek School House, visible in the distance.

*Inventory of Circulation Features***Section 10, Township 19S**

- Primary ranch road (east of Highway 177) from County road on east boundary to Section 9

Section 9, Township 19S

- Primary ranch road (east of Highway 177) from Section 10 to Section 8
- Two-track ranch spur road north into Section 4

Section 8, Township 19S

- Primary ranch road (east of Highway 177) from Section 9 to Strong City limits
- Two-track ranch spur road running from Highway 177 to Lower Fox Creek
- Short section of two-track ranch road from Section 17

Section 17, Township 19S

- Primary ranch road (east of Highway 177) running from County road at Strong City limits to Section 8
- County road running from Highway 177 to Strong City
- Two-track ranch road running from County road into Section 8
- Two-track ranch road running from County road under US Highway 50 and into Deer Park Place
- Railroad spur along site's southern boundary (connecting cattle yard with AT&SF RR)
- Internal access roads serving farm/ranch buildings at Deer Park Place

Section 7, Township 19S

- Primary ranch road (west of Highway 177) running into Section 6
- Two-track ranch spur road heading to dump
- Two-track ranch spur roads running to western boundary and into Section 6
- Trace road

Section 6, Township 19S

- Primary ranch road (west of Highway 177) running into Section 31, Township 18S
- Two-track ranch spur roads running to western boundary and Red House ruin site and springhouse
- Tour Road leading into Section 31, Township 18S

Z Bar/Spring Hill Ranch headquarters

- Main entrance drive
- Parking lot
- Bus and RV parking area
- Access drive to lower service drive

- Lower service drive
- Short paths connecting lower service drive to poultry house
- Steps leading down beside barn
- Access drive connecting lower service drive to upper service drive system
- Upper service drive system
- Hillside path connecting lower service drive to upper service drive system
- Hillside steps connecting main house to upper service drive
- Main entrance walk leading to front of main house
- Concrete terrace at rear of main house
- Main house perimeter stone walks and steps
- Prairie and the People Walking Tour trail
- Southwind Trail

Section 5, Township 19S

- Two-track ranch road running to Lower Fox Creek and into Section 32, Township 18S
- Two-track spur road running south from Section 32, Township 18S

Section 32, Township 18S

- Two-track ranch road running to Section 5, Township 19S to barn/dump site and west into Section 33, Township 18S
- Two-track ranch spur road running south into Section 5, Township 19S

Section 31, Township 18S

- Tour Road running from Section 6, Township 19S into Section 30
- Southwind Nature Trail
- Two-track ranch spur road running west from Tour Road to two high points
- Two-track ranch spur road running north from Tour Road to un-named tributary of Lower Fox Creek
- Old road bed of Highway 177
- Access drive to and around school

Section 30, Township 18S

- Tour Road running from Section 31 to overlook
- Primary ranch road running from Tour Road north into Section 19
- Primary ranch road running from Section 19, through the eastern edge of Section 30 and into Section 31
- Two-track ranch spur roads connecting the Tour Road overlook with the primary ranch road

Section 19, Township 18S

- Primary ranch road running from the western end of Section 30 to the western end of Section 18
- Primary ranch road running from the eastern end of Section 18 to the eastern end of Section 30
- Two-track ranch spur road connecting the western and eastern segments of the primary ranch road
- Two-track ranch spur roads running from the eastern segment of the primary ranch road

Section 18, Township 18S

- Primary ranch road arc at the southern edge of Section 18
- Two-track spur road running from the primary ranch running west and crossing the Preserve boundary
- Two-track spur road running north to Palmer Creek and into Section 7
- Two-track spur road running northeast, split and rejoining, and running into Section 7
- Two-track spur road running from Section 19 and into Section 18

Section 7, Township 18S

- Two-track spur roads running from Section 18

Other, General

- Cattle paths

Vegetation

(see photographs 60 through 65)

The dominant vegetative community characterizing the Preserve is the tallgrass prairie ecosystem that has been managed for some 120 years as pasture for cattle (*see photograph 60*). Work recently conducted to inventory and classify Preserve vegetation by Chris Lauver suggests that there are eight plant community types found within the site. These include:

- Flint Hills Tallgrass Prairie, the most prevalent plant community on site
- Ash Elm Hackberry Floodplain Forest;
- Limestone Outcrops;
- Mixed Oak Ravine Woodland;
- Low Prairie;
- Bulrush Cattail Marsh;
- Bulrush Spikerush Marsh; and
- Eastern Cattail Marsh.

The study identifies the primary species comprising each of these communities. The tallgrass prairie community is described as characterized primarily by big bluestem, Indian grass, switchgrass, little bluestem, sideoats grama, leadplant, buffalograss, western ragweed, wild alfalfa, and hairy grama. Numerous other forbs and grasses, as well as shrubs such as smooth sumac, have also been identified within the tallgrass prairie at the Preserve.

Annual spring burning practices have clearly affected the composition of the prairie community: woody shrubs that would be introduced into the prairie through wind and animal-borne seed are killed off by fire. The standard prairie management practice within the region consists of annual burning of the prairie between March 20th and early April; early intensive stocking of livestock, averaging two acres per 550-pound steer, between April 15th and July 31st; removal of the cattle at the end of July; and regrowth of the vegetation through the fall and winter.

Small numbers of trees are present within the Preserve. Over upland areas, trees are found primarily along fencelines, and in association with available water such as springs, seeps, ponds, and drainageways (*see photographs 61 and 62*). The tree species typically found along these waterways include cottonwood, elm, redbud, and walnut. Otherwise, the majority of the tree cover found within the Preserve is concentrated along perennially-flowing stream corridors, particularly Fox and Palmer Creeks. The riparian community associated with the margins of Fox and Palmer Creeks is referred to as an ash-elm-hackberry-bur oak-black walnut floodplain forest community. Riparian woodlands edge both of these stream corridors in belts of varying widths (*see photograph 63*). The dominant species found along these waterways include oaks, elms, walnuts, sycamores, and cottonwoods. Where the tree cover is less dense, a ground cover of grasses is sometimes present. The most highly developed woodland observed during field investigations was along Palmer Creek. It is only here that leaf litter of any volume was observed. Livestock clearly access the stream corridors, which has resulted in compaction, erosion, and the loss of herbaceous ground cover vegetation. These areas appear to burn infrequently. Woodland may once have extended over the fertile bottomlands as open timber with prairie grasses beneath. Since the 19th century, stream corridor bottomlands have traditionally been cultivated, and tree cover is not currently present within upper floodplains and bottomlands, but primarily found along stream margins.

The Brome Pasture along Highway 177 south of the Z Bar/Spring Hill Ranch headquarters is currently cultivated with brome grass, which is grazed or cut for hay (*see photograph 24*).

Vegetation associated with former dwelling sites includes a dense hedge of Osage orange in the western portion of Two Section Pasture, redbud trees near the foundation of the Red House, and ornamental shrub, perennial, and shade tree plantings at Deer Park Place and the Z Bar/Spring Hill Ranch (*see photographs 44, 64, and 65*).

In the vicinity of the Z Bar/Spring Hill Ranch headquarters, there are many trees and shrubs that have been planted as ornamentals to complement the dwelling precinct. The most striking of these plantings are the sweeping arcs of Eastern redcedar trees that edge the building complex to the north and northwest. Planted as a windbreak by the end of the 19th century, the cedars have matured into a dense plantation of curving rows of trees, with space to walk between them (*see photograph 14*). Other species, including redbuds, walnuts, and elms, occupy gaps in the cedars. It is not clear whether they were planted or are volunteers, although some of the walnuts appear to be as old as the oldest cedars. Some of the deciduous trees are experiencing dieback.

Deciduous shade trees and cedars also complement the garden terraces east and south of the main house (*see photograph 45*). Most of the deciduous shade trees have a very open habit, due to the removal of the lower branches. Species associated with these plantings include elms, walnuts, cottonwoods, and a few cedars. Some of the trees conflict with circulation systems. Walnut fruits are a trip hazard for pedestrians. Shrubs, such as junipers, yucca, roses, and lilacs, and perennials such as daylilies and irises, frame the front porch, and edge the paths to the side of the house and

the service drive. Planting beds for perennial or annual ornamental plants are also found near the main house in front of the root cellar entrance and the springhouse. Although many of the trees appear to be in fair to good condition, some of the mature trees show evidence of old damage to trunks, dieback, and loss of branches, particularly a large tree above the house and a walnut near the barn.

There are no known federally listed endangered or threatened plant species within Preserve boundaries. More than thirty plants that are not considered indigenous to the region have been identified within the Preserve. Most are not currently considered a threat to native populations. These species, including henbit, Kentucky bluegrass, common chickweed, and sweet clover, should be monitored to ensure that their populations do not increase in size. Others, however, are considered invasive alien plants that may present a threat to the tallgrass prairie ecosystem. These include musk thistle, bindweed, and Caucasian bluestem. Caucasian bluestem was observed during recent field investigations conducted to prepare this CLR. Woody species that are non-indigenous with the potential to displace native populations and disrupt local ecology include Osage orange and Eastern redcedar trees. Both of these are present within the Preserve.

Inventory of Vegetation

- Tallgrass prairie
- Riparian vegetation along stream corridors
- Cultivated brome grass pastures
- Trees along fencelines
- Scattered trees at water sources
- Osage orange hedge, Section 9, Township 19S
- Cedar plantation, Z Bar/Spring Hill Ranch headquarters
- Shade trees around house and outbuildings, Z Bar/Spring Hill Ranch headquarters (cottonwood, walnut, elm)
- Ornamental shrubs, perennials, and bulbs at Z Bar/Spring Hill Ranch headquarters
- Ornamental plantings at Deer Park Place

Vegetation

Source: John Milner Associates, Inc.



Photograph 60.

View of the expansive nature of tall-grass prairie within the Preserve.

Source: John Milner Associates, Inc.



Photograph 61.

Trees appear infrequently within the Preserve. Most are found in association with water resources or along fencelines as seen here.

Source: John Milner Associates, Inc.



Photograph 62.

Trees found growing along water resources are often cottonwoods.

Vegetation

Source: John Milner Associates, Inc.



Photograph 63.
Bands of riparian woodlands edge
Fox Creek, as shown here.

Source: John Milner Associates, Inc.



Photograph 64.
This Osage orange hedgerow, visible
on the right, is a remnant of a former
homestead located in Two Section
Pasture.

Source: John Milner Associates, Inc.



Photograph 65.
Trees have colonized the Red House
ruins, as seen here.

Buildings and Structures and Structural Clusters

(see photographs 66 through 81)

The Preserve contains three clusters of buildings and structures that relate to different ownership histories. The Z Bar/Spring Hill Ranch headquarters is the largest, followed by Deer Park Place and the Lower Fox Creek School House. Both the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School site are open to visitors.

The Z Bar/Spring Hill Ranch headquarters is situated parallel to Highway 177 and encompasses some 29 acres. The complex is located on a gentle knoll; many of its buildings are set into the side of the hill. Most of the buildings were constructed of local, hewn limestone during the last quarter of the 19th century under the ownership of Stephen F. Jones. The main house and curing room/springhouse are oriented east to west while the outhouse, icehouse, cistern, Ranch Hand House, row of connected outbuildings, and stone barn are oriented north-south. The carriage house, located slightly off the grid, is oriented southeast-northwest. A broad sweep of evergreen trees wrap the complex to the north, forming a windbreak against the prevailing winter winds. Two additional buildings which were part of this complex were removed in May 2001: a post-World War II Quonset, and a pole barn. The foundation of the Quonset remains *in situ*.

Deer Park Place is nestled between US Highway 50 and the county road that crosses Fox Creek. The buildings that comprise the farmstead cluster are oriented east to west. Access roads link the outbuildings, which are currently owned by the NPT. A separate entrance drive, lined with shrubs and shade trees, leads to the main house, which is privately owned. Large berms, built within the Fox Creek floodplain, edge the farmstead to the north and west to protect the buildings from flooding.

The Lower Fox Creek School House is located one-half mile north of the Z Bar/Spring Hill Ranch headquarters and encompasses 2.35 acres atop small knoll. The school house and associated privy are oriented east-west. The access road and a sloping hillside define the eastern boundary, while gently sloping prairie forms the west, north, and south edges. The cluster has expansive views of neighboring ranches and the Preserve.

Z Bar/Spring Hill Ranch Headquarters

Constructed circa 1881 by Stephen F. Jones, the **main house** at the Z Bar/Spring Hill Ranch is a three-story, rough-hewn native limestone block dwelling situated on a bluff overlooking the Fox Creek valley (*see photograph 45*). Built in the Second Empire style, the standing-seam Mansard roof contains gabled dormer windows; two interior brick chimneys stand near the north and south ends of the house. A crenellated cornice distinguishes the roofline from the stone wall of the façade, and stone quoins demarcate building corners; a rusticated keystone delineates the center of each arched stone lintel. Bays include double-hung floor to ceiling windows on the first floor and double-hung sash windows on the second. A carved door on the east façade is the principal entrance into the house.

A large frame and stone porch with classic columns carrying a dentilated entablature extends along the first floor on the east façade. Centered above this porch, and the principal entrance to the house, is a carved Jones family crest and the construction date. Located on the west façade is a 20th-century frame addition, and there is a below-ground hewn limestone **root cellar** to the west of the house. Accessible through the basement of the main house, the root cellar was a storage area for food items and occasionally served as a shelter during storms. Capped with a thick layer of

Portland cement, the root cellar is illuminated by a cast iron slab inset with amethyst glass.¹⁴ The main house is listed individually on the National Register of Historic Places.

The main house, which is in fair condition, has been assessed in great detail within the draft *Historic Structure Report* (HSR) and will not be duplicated here. However, structural issues that affect or are affected by the landscape exist. For instance, surface water runoff and subterranean groundwater in the area of the house flows down from the hill towards the east, and lacking sufficient drainage, causes wet conditions against the west side of the house, root cellar, tunnel, and curing room/springhouse. This condition has, according to the HSR, resulted in some structural damage over the years. Additionally, the main house's roof and guttering system were observed by the CLR team to be leaking, which is affecting the stability of the porch and causing poor drainage around the house foundation. Cement grouting and caulking, which appear historically inappropriate, have been used for repairs in some exterior locations.

A **terraced garden** is situated in front of the principal façade of the main house between the house and Highway 177 (*see photograph 46*). Three tiers are supported by mostly dry-laid, occasionally mortared or chinked, limestone retaining walls; a fourth retaining wall supports the top level at the main house. Overall, the terraces are in fair condition, although the drainage of the terraces is ill-defined and appears to be poor. The walls are described as follows, in order from the lowest level up to the house level.

The first level, along Highway 177, is showing some slippage near the sign by the road. Large chips are missing from the base of the wall piers. The second level displays drainage problems, with clogged and/or covered weep holes, causing water to puddle on the terrace behind the wall and seep down through it. There is some slippage, and a segment of this wall just beyond the western post is failing. The third-level wall shows some signs of movement and spalling at its base. Some capstones on the northern portion of this wall are slipping, and some sections of the wall are failing. The top terrace wall appears to have been reconstructed more recently, as it lacks a patina of moss. The dry-laid portions of this wall may be affected by climbing vegetation; the mortared section was repointed at some time, but displays poor workmanship. The base of the wall shows signs of movement and spalling.

Large hewn limestone steps delineate the main east-west axis through the garden leading towards the house. Gates, planting beds, upright limestone posts that were once likely used as hitching posts, a fountain basin, and wrought iron grillwork complement the stone retaining walls. These features and their conditions are described in detail in the Small-scale Features and Circulation sections of this chapter.

A vaulted limestone **tunnel** connects the main house to the two-story hewn limestone **curing room/springhouse** to the north (*see photograph 52*). Both the tunnel and the curing room/springhouse date to 1882. A small door leading directly to the terraced garden to the east perforates the tunnel, allowing access to the exterior yard. Located on the first floor, the springhouse was used to keep food cool and to provide water to the main house. Generally, springhouses covered springs, allowing chilled water to flow through the building. In the case of the Z Bar/Spring Hill Ranch headquarters, spring water is piped into the outbuilding from its source to the west.

The curing room, located on the second floor, was a place where meat was cured by concentrated exposure to enveloping smoke. According to the HSR, it may also have been used as a “summer kitchen” at one time. The curing room/springhouse is lit by a number of oculus openings on the first and second floors. A door is located on the west façade of the second floor, allowing visitor access to the smokehouse. Oculi are demarcated by limestone quoins while a stone lintel spans the

¹⁴ The patent dates for this inset are November 12, 1845, and March 27, 1855.

door opening. A pyramidal, wood-shingled roof covers the curing room/springhouse and a louvered cupola decorates the roof (*see photograph 53*). The curing room/springhouse exterior is in good condition, although evidence of moisture was noted on the bottom of the north façade. A retaining wall connecting the main house to the curing room/springhouse is described in the Small-scale Features section of this chapter.

To the north of the curing room/springhouse stands a three-seat hewn limestone **outhouse** (*see photograph 54*). Built in 1882 to house a latrine for the main house nearby, the outhouse contains two arched, double-hung sash windows on the east and west elevations. A door, located on the south elevation, provides visitor access to the outhouse. Rusticated keystones distinguish the three openings. Like the curing room/springhouse, a pyramidal, wood-shingled roof topped by a decorative louvered cupola covers the outhouse. The eaves appear weak in some areas and erosion is evident around the drip line on the ground.

A hewn limestone **cistern**, and adjacent **icehouse**, built circa 1882, stand to the east of the main house (*see photograph 66*). Built partially into the side of the hill, and covered by a limestone-vaulted arch, the cistern stored water for consumption or other uses. Above ground architectural elements associated with the cistern include a dark limestone parapet and a sod-covered vaulted arch. An elliptical opening, demarcated by a rough-hewn keystone, is found in the parapet. The adjoining icehouse, 5 feet tall and with a footprint measuring 16 feet, 10 inches by 13 feet, 4 inches, was used to keep ice, collected during the winter, frozen throughout the year. Elliptical openings in the east and west elevations, a double-hung window in the north elevation (in the location of the original door), and a double door in the south façade (added later) illuminate and provide access to the icehouse. Dark limestone quoins distinguish the corners of the building and, like the curing room/springhouse, it is covered by a pyramidal, wood-shingled roof. The sod cover of the cistern needs to be managed, and some adjacent features appear to have been partially buried by earth, but the cistern and icehouse are overall in good condition. The icehouse is not open to visitors and is currently used as an NPS maintenance shop. A second, underground, cistern was recently excavated by NPS archeologists along the terrace to the northeast of the main house. This site is described in more detail in the archeological resources section below.

Along the western edge of the Z Bar/Spring Hill Ranch headquarters is a circa 1950s **Ranch Hand House** measuring 28 by 29 feet (*see photograph 40*). This one-and-a-half-story board-and-batten wood and gypsum dwelling sits on a concrete and hewn limestone foundation. Three double-hung sash windows and a door are found on the principal façade. Additional bays, windows, and a door are positioned on other façades. A board-and-batten ell addition stands on the north end of the house. An asphalt-shingle gable roof covers the Ranch Hand House. The structure is utilized by the NPT as office space. It is in good condition, but may need repainting.

To the north of the main barn is a series of farm outbuildings constructed during the 19th and 20th centuries (*see photograph 36*). This row of buildings, mostly supporting specialized uses such as sheltering poultry, stretches east to west along a service road that terminates at the end of the barn corrals. All exterior, north-facing walls along this row were built into a gently sloping hill, further insulating the buildings. Common or shared limestone walls suggest that much of this row was built circa 1882 during a single building campaign. Opposite these buildings is the large main barn and attached corral area. These farm-related outbuildings will be described from west to east, beginning with the support buildings and ending with the barn and corral area. The corral itself will be described as a structure.

A two-bay pole-in-ground **shed (#2)** covered with metal sheathing stands at the west end of the row. Covered by a flat, corrugated metal roof, the shed currently houses two portable toilets available to visitors. The shed has an earthen floor and shares a common wall of mortared, hewn limestone with adjacent shed #1. Shed #2 is in fair condition, exhibiting sagging joists and some evidence of water damage.

Shed #1, a three-bay building, exemplifies how Jones-period buildings were adapted for reuse as ranching changed in the Flint Hills. Surrounded by three hewn stone walls supporting vertical timber siding, timber poles, and a low-pitched gable roof covered with corrugated metal, this building now houses tractors and other farm vehicles. Limestone quoins are visible behind 20th-century vertical siding on one end wall. This ornamental detail indicates that, when built, the limestone end wall was meant to be seen from the service road or barn and not hidden behind siding. Architectural evidence suggests that the building has been altered to accommodate new uses. The shed has an earthen floor. Overall, it is in fair condition, with evidence of structural cracks, and some areas repointed with cement.

Shed #2 shares a common wall with the adjacent **scratch house**. A two-bay, 16-by-39-foot building surrounded by three hewn limestone walls supporting horizontal timber siding and a gently-sloped shed roof, this building, like shed #1, displays indications of reuse. Originally a covered enclosure where fowls roamed on an earthen floor, the scratch house now shelters farm equipment and shares a common wall and door with the adjacent poultry house. The scratch house is in fair to poor condition, with seepage in the northeastern corner, no drainage, and water pooling both inside on the floor and outside along the foundation. Roof leaks and structural cracks further exacerbate this problem.

Built completely of hewn limestone, the earthen-floored **poultry house** is one of the more finished, and presumably more expensive, buildings along this row (*see photograph 38*). Its vaulted ceiling, also of limestone, supports a sod roof. One of two surviving 19th-century sod-covered roofs at the Z Bar/Spring Hill Ranch headquarters, the poultry house was meant to be a well-insulated outbuilding. Doors access the road on the east and the scratch house on the west side. Four bays, including two double-hung windows and two doors, reveal the poultry house interior. Four narrow air holes perforate the walls between these bays. Rough-hewn limestone quoins distinguish corners and exterior bays while slightly protruding limestone blocks, laid across the top of the four walls, suggest a cornice. Architectural evidence indicates that the poultry house once had skylights that are now boarded up. A concrete floor has replaced the original floor, which was likely earthen. Overall, the poultry house is in good to fair condition. The vaulted ceiling appears to be in good condition, although there is some evidence of water seepage around the foundation. Some of the stones have been repointed, displaying poor workmanship and inappropriate materials.

A short, hewn-limestone retaining wall connects the poultry house to the **carriage house**. Facing southeast, about 45 degrees off the alignment of the row of outbuildings, is the one-and-a-half story carriage house (*see photograph 67*). Hewn limestone walls enclose the first floor while the gable ends of this circa-1882 building are clad with horizontal wood sheathing. Covered by a wood-shingled gable roof, the carriage house has two large doors on the first floor and a small window in the half story just under the gable. In this area, surface runoff is draining across the front edge of the building and collecting along the foundation. Repointing of the stones was carried out at some time with inappropriate material. Overall, the carriage house is in fair to good condition.

Opposite the line of outbuildings is the limestone rubble **bank barn** (*see photograph 34*). Three stories tall and tripartite in plan, the barn measures 110 feet by 60 feet. When constructed circa 1882 under the ownership of Stephen F. Jones, this barn was recognized as the second largest in the state of Kansas.¹⁵ A vast, quarter-hipped gambrel roof is supported by a post-and-beam system on all floors. Originally sheathed by metal, the roof is now covered by wood and asphalt shingles. Functional windowed cupolas top the roof. Rough-hewn limestone quoins and cut lintels and sills accentuate corners and bays throughout the barn. Meticulous detailing of lintels and sills demonstrates the talent of local stoneworkers, as well as the importance of this building to its

¹⁵ NPS guides at the Preserve indicate that the barn was the second largest in the state when built. The Kansas State Historic Preservation Officer notes that the Cooper Barn in Thomas County is slightly larger (114' x 66') than the Spring Hill barn, but that it is a wood frame structure rather than stone.

owners. Outside, along the side of the barn are steps, some of concrete and some of limestone. The limestone steps are in poor condition, exhibiting spalling, cracking, and settling.

Various pens, stalls, stanchions, and a tack room are found on the first floor. The second floor originally stored hay and grain moved by wagons via the two large doors on either end of the north façade. This room is now used seasonally as a visitor interpretive area between May and October. From the same façade, two 52-foot-long ramps extend from the third floor dormer doors to the service road. The ramps exhibit some deteriorating mortar. Concrete work and repointing are needed. The third floor contains the granary, threshing floor, and hay storage area. A grain bin, a support base for the cross-drive shaft, and a grain drop still exist on the third floor. Windows and wide doors, emphasized by arched, rough-hewn lintels, penetrate the east, west, and south façades. The south façade, also containing a dormer window, faces the adjoining corral area. The dormers on the barn are in need of paint, and roof shingles are missing in some places. The barn structure generally appears to be in good condition.

Constructed circa 1882, the **corral** structure encloses the barnyard to the west and south (*see photograph 68*). Mortared limestone masonry walls enclose the corrals west of the barn. The walls are of variable dimensions, but are on average 5 feet tall and 2 feet thick. Stone corrals south of the barn are similar to those described to the west of the barn. Segments of the stone corral walls are in poor condition, with leaning, loose or falling stones, and vertical cracking. Here, and throughout the area around the barn, drainage is poor, and some repairs have been made using inappropriate materials.

Adjacent to the southern stone corral is a series of metal gates and fencing containing a frame and metal loading chute built on a poured concrete foundation. These will be described in more detail in the Small-scale Features section of this chapter.

Three corrugated metal structures supported by timber poles, one larger and one smaller shed and a chute shed, are found in the corral area. In the western corner of the complex, built against the stone wall of the corral, is **shed #3**, a small structure with a gently sloping roof. According to the HSR, the stone walls of this shed are in good condition, but the corral wall as a whole is not. The north wall leans to the south, and the west wall leans substantially to the east. What mortar exists is in need of repointing. Overall, the wood is in fair condition; the supporting columns and ceiling joists are weathered and decaying at the bottom. The corrugated metal gable is beginning to buckle at the center and north end of the east side; the roof, also of corrugated metal, is in good condition. There is some evidence of tearing, and the ridge cap is beginning to pull up in places.

A larger gable-roofed shelter surrounded by metal fencing—the **chute shed**—sits in the center of the southern portion of the corral. The HSR notes that the corrugated metal siding is in good condition, although there are a few minor tears in the lower portions, and some denting. Some unprotected wood members are very weathered. Some of the metal members, including hardware and nails, are rusted. Another very small gabled shed, the **scale house**, is surrounded by metal fencing in the southern section of the corral complex. This shed houses a scale.

The **concrete stave silo**, built circa 1940, is located just south of the barn in the stone corral complex. The silo is 58 feet in circumference and has several openings on its north side. The concrete stave silo appears to be in overall good condition. The foundation of a second silo that has been demolished is located nearby.

A **grain silo** is located approximately one-half mile southwest of the corral complex in the Red House pasture (*see photograph 69*). Elevated above the ground on vertical posts, this metal structure faces Highway 177. West of the grain silo is a series of excavated earthen **trench silos** (*see photograph 70*).

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 66.

An icehouse and cistern are located east of the main house at the Z Bar/Spring Hill Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 67.

The carriage house at the Z Bar/Spring Hill Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 68.

Corrales, a concrete-stave silo, and the bank barn at the Z Bar/Spring Hill Ranch headquarters.

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 69.
Grain silo, Red House Pasture.

Source: John Milner Associates, Inc.



Photograph 70.
Trench silos near the grain silo, Red House Pasture.

Deer Park Place

Located approximately 1.5 miles south of the Z Bar/Spring Hill Ranch headquarters along US Highway 50 is Deer Park Place (*see photograph 71*). The cluster includes a number of buildings and structures that are under the purview of the NPT/NPS, although the main house at Deer Park Place remains in private ownership. At this time, Deer Park Place is not open to visitors. Only ranch buildings and structures owned and managed by the NPT/NPS are described in this section.

Constructed in 1887, the largest of the buildings included within the Preserve's portion of the precinct is the two-and-a-half-story rectangular **barn** with board-and-batten siding. The barn has a limestone rubble foundation (*see photograph 72*) and corrugated metal gable roof; three louvered cupolas are located along its ridgeline. Large sliding doors are found on the east and west façades; the west door opens into the adjoining corral. The first and second floors feature various sized windows on the north and south façades; the east and west façades on the third floor feature large hay doors. A series of holes above the hay door on the west façade accommodates nesting birds such as pigeons and doves.

Adjoining the barn is a **corral area** enclosed by horizontal plank and barbed wire fences. A round water bin is located inside the corral, and a horizontal plank loading chute for cattle is found on the southwest edge of the corral system.

Northeast of the corral is the **hollow-tile barn** (*see photograph 73*). Constructed during the first half of the 20th century, the one-story hollow-tile barn is covered by a standing-seam metal roof. A decorative, pressed-metal cupola displaying the word "Milcor" tops the roof. The north façade has three windows, two with double-hung sashes, while the east façade and the principal—south-facing—façade each contain a single sliding door. The west facing façade possesses two large sliding doors with three-pane fanlights over each.

West of the hollow-tile **barn** is the **poultry house** (*see photograph 74*). Constructed in the 1940s from limestone rubble, the one-and-a-half story poultry house is protected by a gable roof of corrugated metal. Horizontal timber sheathing covers the gable ends with the exception of the small louvered opening on each gable end. Four double-hung sash windows perforate the east and west façades and four bays. One door and three screened windows form the principal façade to the south. Bay openings suggest that this building was originally intended to serve another function but was subsequently adapted as a poultry house.¹⁶ A small, wire-fenced pen extends the length of the principal façade.

Located northwest of Deer Park Place is a cut limestone **bridge** (*see photograph 75*). This arched bridge spans Fox Creek from east to west, as part of a county road that once served as an important east/west route before US Highway 50. The arch and associated walls are mortared and well pointed.

¹⁶ The draft National Register nomination for the Z Bar/Spring Hill Ranch Historic District suggests that the poultry house may have been built as a bunk house.

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 71.
Deer Park Place headquarters as seen from Highway 177.

Source: John Milner Associates, Inc.



Photograph 72.
Board-and-batten barn, Deer Park Place.

Source: John Milner Associates, Inc.



Photograph 73.
Hollow-tile barn, Deer Park Place.

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 74.
Limestone chicken house adjacent to
hollow-tile barn, Deer Park Place.

Source: John Milner Associates, Inc.



Photograph 75.
Arched stone bridge near Deer Park
Place.

Lower Fox Creek School

Located approximately one-half mile north of the Z Bar/Spring Hill Ranch headquarters is the one-and-a-half-story **Lower Fox Creek School House** (*see photograph 76*). Built circa 1882, this 24-by-30-foot hewn limestone building is a typical school house of the period. A belfry sits on the ridgeline of the wood-shingled gable roof towards the east, principal, façade. Three double-hung sash windows distinguish the north and south façades. Quoins accent the corners and bays. Two inverted cross-and-bible doors with elliptical, glazed transoms provide access to the building on the principal façade. An elliptical, double-hung sash window sits between the two doors and a stone oculus is situated above the window. Stone lintels and sills decorate all the window bays, while keystones mark the bays on the principal façade. Three hewn limestone steps lead to both entrance doors (*see photograph 77*). After the school closed in 1930, it fell into disrepair; a limited restoration was conducted in 1968. The Lower Fox Creek School House has been listed individually on the National Register of Historic Places since 1974.

A few feet northwest of the school house is a **privy** (*see photograph 78*). Constructed on a poured concrete floor, possibly indicating a 20th-century date of construction, this single-story, board-and-batten privy is covered by a tar paper and wood-shingle gable roof. Extant tar paper sheets and shingles are secured with wire nails. A poured concrete toilet with a wooden seat remains inside the privy. Both the Lower Fox Creek School House and the privy are open to visitors with permission from NPS or NPT. A concrete foundation nearby may correspond to another, missing privy.

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 76.
Lower Fox Creek School House and
site.

Source: John Milner Associates, Inc.



Photograph 77.
Lower Fox Creek School House,
front façade.

Source: John Milner Associates, Inc.



Photograph 78.
Privy, Lower Fox Creek School.

Red House Ruins Site

Located approximately two miles southwest of the Z Bar/Spring Hill Ranch headquarters, the Red House site contains one standing structure, a 1952 **springhouse** (*see photograph 79*), and the ruins of a dwelling house. The three-sided springhouse is built of limestone rubble and heavily-aggregated concrete. Concrete and rubble retaining walls channel and contain the spring water.

Southwest of the Z Bar/Spring Hill Ranch headquarters and in the Red House Pasture is the **Red House ruin** (*see photograph 65*). Purportedly the remains of a 19th-century homestead, the ruin consists of rectangular limestone blocks mortared with concrete aggregate. Timber members are visible that support the existing remnant limestone walls; thick window glass shards are visible around the foundation. Barbed wire corrals with unmilled posts and a horizontal plank gate stand near the Red House site. Recent damage by cattle is visible on the site.

Other Clusters and Individual Buildings and Sites

Located approximately one mile south of the Z Bar/Spring Hill Ranch headquarters and along the east side of Highway 177 adjacent to Brome Pasture is a small **substation** (*see photograph 80*) associated with gas lines; this structure is not included within the Preserve. Enclosed by a chain-link fence, the substation consists of two metal buildings, oriented east-west, on a large poured-concrete base. There is a single door on the principal or west façade.

Located three miles southeast of the Z Bar/Spring Hill Ranch headquarters adjacent to the municipal waste ponds is a gabled **metal barn**. The barn contains wide, sliding doors on the north and south façades. It is currently used to store heavy farm equipment. The barn is included within the Preserve, and an agricultural lessee is authorized to use it.

Two concrete-block **well houses** are located east of the Z Bar/Spring Hill Ranch headquarters along Fox Creek (*see photograph 81*). These single-cell buildings sit on poured concrete foundations and are accessed by small frame doors. One of the houses is still in use. A metal **gas house** is located along the eastern fenceline of Section 30.

Twenty-six breached and intact earthen berm **dams**, forming ponds to water livestock, are scattered throughout the Preserve. *Figure 24* (in Chapter Two) indicates the general decade of construction for each of the ponds. As noted in a 1998 dam study for the Preserve:

The majority of the impoundments are used as stock ponds for cattle... with the exception of the Peyton Creek Detention Dam 104 (NPT Dam No. 1). [This dam] contains native grasses...to provide adequate vegetative cover against surface erosion...The majority of the impoundments at TAPR are earthen dams constructed from the 1930s to the 1980s, based on information obtained from NPT and NPS personnel. While no information is available as to the construction of the dams, the construction of the Peyton Creek Watershed Detention Dam 104, located on the east side of the TAPR, provides some typical information as it was constructed in the 1990s...Bedrock at Detention Dam 104 consists of calcareous shale with limestone layers occurring throughout. Soil materials used to construct the dam include lean alluvial clays with medium to high plasticity and clayey gravels. These soil materials appeared to be representative of those found for the other impoundments of the TAPR. No information was obtained regarding construction techniques (i.e. lift

thickness, compaction, and moisture conditioning), but this impoundment, as well as the others, appear to have withstood years of weathering and age.¹⁷

¹⁷ Paul C. Rizzo Associates, Inc., “Report: Dam Inventory Tallgrass Prairie National Preserve” (Lincoln, NE: NPS, November 20, 1998), 3.

Buildings, Structures, and Clusters

Source: John Milner Associates, Inc.



Photograph 79.
The springhouse at the Red House
ruin.

Source: John Milner Associates, Inc.



Photograph 80.
Substation along the eastern edge of
Highway 177.

Source: John Milner Associates, Inc.



Photograph 81.
Well house near Fox Creek, East
Traps Pasture.

*Inventory of Buildings and Structures***Z Bar/Spring Hill Ranch Headquarters, buildings**

- Main House
- Curing room/springhouse
- Outhouse
- Icehouse
- Cistern
- Ranch hand house
- Shed #1
- Shed #2
- Scratch house
- Poultry house
- Carriage house
- Barn
- Shed #3
- Chute shed

Z Bar/Spring Hill Ranch Headquarters, structures

- Tunnel (connecting main house to curing room/springhouse)
- Silo
- Corral
- Retaining walls forming garden terracing

Deer Park Place, buildings

- Board-and-batten barn
- Poultry house
- Hollow-tile barn

Deer Park Place, structures

- Bridge

Lower Fox Creek School, buildings

- School House
- Privy

Red House Site, structures

- Springhouse
- Dwelling ruins

Other buildings

- Substation
- Metal barn
- Well houses
- Gas house

Other structures

- Dams
- Grain silo
- Trench silos

Small-scale Features and Objects

(see photographs 82 through 99)

Within Tallgrass Prairie National Preserve there are a number of small-scale features and objects associated with various periods of ranch history. The most predominant type of small-scale feature is the fencing that encloses the Preserve, defines its various pastures, and encircles the Z Bar/Spring Hill, Deer Park Place, and Lower Fox Creek School precincts. Fencing is made of a variety of materials including barbed wire, metal, wood plank, unmilled Osage orange posts, and limestone, discussed in more detail below; gates and cattle guards limit access where fences cross roads and paths.

Other types of small-scale features observed within the Preserve include livestock-related objects, such as snubbing posts, salt licks, and boxcars for storing livestock feed. Old bison wallows are also found scattered over much of the western portion of the Preserve. Additional small-scale features remaining from former ranch uses include quarry sites, road and rail line traces, water pumps, spring boxes, low water crossings, rock cairns, and small building ruins. Utility systems running through the Preserve are visible in above ground small-scale features such as gas flowlines, gas collection structures, and electrical poles.

Numerous features at the Z Bar/Spring Hill Ranch headquarters relate to former family uses: a swing set, fishpond, a fountain basin, planting beds and garden borders, and steps. In addition, small-scale features relate to more recent visitor and staff use: these include signs, benches, trash receptacles, overhead lighting, a gas pump, a weather station, propane tanks, electrical and telephone lines, and flagpoles.

Fencing

Fencing types and materials, as mentioned above, vary greatly over the extent of the Preserve. Originally, five-foot-high rock fences were established to enclose pastures, corrals, and other types of cattle holding areas after the demise of the free range system during the last quarter of the 19th century (see photograph 82). Unmortared limestone fencing survives in various locations:

- along the southern boundary of the Two Section Pasture;
- near stock pond #4;

- between Sections 8 and 9;
- along the northern Preserve boundary;
- along the western boundary into Township 19S, Section 6;
- south from the northern Preserve boundary through the western end of Section 18, the central portion of Section 18, and the eastern end of Sections 18 and 19;
- into Section 30 along the eastern Preserve boundary;
- south of the section line of Section 18;
- along the section line between Sections 19 and 30, Township 18S;
- along the eastern edge of Sections 30 and 31;
- south of the section line between Sections 30 and 31;
- south from the fence along the Section 30/31 line;
- around Lower Fox Creek School property;
- south of the Lower Fox Creek School property;
- south of the trench silos;
- along the section line between Sections 6 and 7, Township 19S;
- running north from the section line between Sections 6 and 7, Township 19S;
- and in an L-shaped configuration running north from the fence along the Section 30/31 line (*see photographs 83 and 84*).

The introduction of barbed wire at the end of the 19th century reduced the need for the construction of labor-intensive stone fences. Over time, existing stone walls were augmented with post and wire fences (*see photograph 85*), which accounted for more than half the fencing on the Preserve by the 1910s. The earliest fence posts were constructed of unmilled Osage orange logs strung with four or five strands of barbed wire with the top wire at least four feet above the ground; as metal posts became available, they were utilized to replace damaged or failing wood posts (*see photograph 86*). Posts are generally set eight feet on center; legally they must not be set more than twelve feet apart. Currently, there is a mixture of both types of posts utilized throughout the Preserve. Since repair of stone fences was no longer necessary, these were allowed to deteriorate over time, and stone was often taken from the fences for other uses. Today, limestone fencing exists in various states of disrepair, ranging from standing stacked stone walls three feet in height to limestone rubble lying on the ground.

Within corral areas, where cattle are expected to exert more concentrated pressure, the distance between posts is smaller than in typical pasture fencing. Fence corners are reinforced by special bracing features, composed of metal pipes strung diagonally on metal wire between the two final posts in each line. The two final posts are sometimes constructed of metal pipe, and are better founded to ensure their stability (*see photographs 87 and 88*). Metal horseshoes strung on the wire are used to tighten it when necessary. Many of the gates in the western portion of the Preserve also feature metal **cattle guards** (*see photograph 89*). These were installed during the 1990s by a

ranchland lessee. The posts supporting the gates are also more sturdy and/or better founded than standard fenceposts. These tall posts have a tension wire strung between them, which helps to keep the adjacent fencelines taut.

A **corral and feedlot** is located in Section 9 of Two Section Pasture, just north of the Osage orange hedge (*see photograph 90*). The corral consists of four-strand barbed wire fence strung between unmilled Osage orange posts and staves. Metal pipes occasionally brace this fence. Horizontal board gates with braced horizontal arches above mark corral access points. A timber loading chute is part of this corral which, in turn, is part of a larger, circa 1950s, feedlot/corral area enclosed by a bull or box-wire fence.

Other types of fencing identified within the Preserve include: metal pipe fencing enclosing the visitor parking area at the Z Bar/Spring Hill Ranch headquarters (*see photograph 91*); box- or pig-wire fencing at a former dwelling compound in Two Section Pasture (*see photograph 92*); wood stave corral fencing at the former corral area; and plank board fencing within Brome Pasture across from the Z Bar/Spring Hill Ranch headquarters. Ornamental iron fencing associated with the garden terraces at the main house is described in detail later in this section. At Deer Park Place is a small pen, delineated by metal post and wire fencing, for domestic animals like goats. The pen includes small, gabled animal shelters. A fence of barbed wire encloses an area behind the Hired Hand House at the Z Bar/Spring Hill Ranch headquarters. The posts are rusting and the wire is becoming uncoupled in places. A stone bollard and metal cable fence edges the county road at the stone bridge over Fox Creek.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 82.
Stone fencing in East Traps Pasture.

Source: John Milner Associates, Inc.



Photograph 83.
Detail of stone fencing, Two Section Pasture.

Source: John Milner Associates, Inc.



Photograph 84.
Detail of stone fencing, Z Bar/Spring Hill Ranch headquarters.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 85.
Stone fencing augmented with barbed
wire.

Source: John Milner Associates, Inc.



Photograph 86.
Unmilled Osage orange posts strung
with barbed wire and braced by metal
pipes.

Source: John Milner Associates, Inc.



Photograph 87.
Braced gate, East Traps Pasture.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 89.
Gate and cattle guard installed during
Ed Bass lease.

Source: John Milner Associates, Inc.



Photograph 88.
Barbed wire fencing with metal pipe
bracing, Two Section Pasture.

Source: John Milner Associates, Inc.



Photograph 90.
Wood-stave corral fencing, Two
Section Pasture.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 91.
Metal pipe fencing at the visitor
parking area, Z Bar/Spring Hill
Ranch headquarters.

Source: John Milner Associates, Inc.



Photograph 92.
Box- or pig-wire fencing, Two
Section Pasture.

Features from former ranchland and livestock uses

A series of **limestone cairns** are found in the East Traps Pasture and on a hill affording expansive views of the Preserve and Z Bar/Spring Hill Ranch headquarters (*see photograph 93*). Composed of dry-laid limestone rubble, these cairns may have been used as part of former sheep herding operations.

Concrete troughs, constructed circa 1950s by Fred Howard, are found in a number of locations within the Preserve at the Z Bar/Spring Hill Ranch headquarters (*see photograph 94*). Most notable are those found in Two Section Pasture near an unused railroad grade and in the former corral area. Composed of poured concrete with plank and metal pipe siding, this long and narrow trough runs alongside a poured concrete pad used for farm trucks and tractors.

A **railroad grade** cuts through the lower part of the Preserve to the north of US Highway 50 and to the east of Highway 177. Although the tracks have been removed, railroad ties from the spur can be seen under the old highway.

There are several movable, or unfounded small-scale features located within the Preserve. These include **plastic bins**, containing water supplemented with vitamins and minerals, that are set out for cattle; round **metal watering bins/catchment basins** also set out for cattle; and former **salt licks**, comprised of broad flat rocks where salt used to be placed for cattle, and now distinguished by bare earth denuded of vegetation by the salt (*see photograph 95*).

Boxcars, used to store grain and other fodder for livestock are found in two locations: east of the Z Bar/Spring Hill Ranch headquarters; and within the former corral area (*see photograph 96*).

A single “**snubbing post**,” an upright limestone post found on a hill in Windmill Pasture, was once used to restrain sick or injured cattle while they were being treated.

Finally, numerous **bison wallows**, bald areas of compacted earth, are scattered throughout the western side of the Preserve (*see photograph 97*).

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 93.
Limestone cairns, East Traps Pasture.

Source: John Milner Associates, Inc.



Photograph 94.
Troughs and truck road bed at the stockyard feedlot north of the county road.

Source: John Milner Associates, Inc.



Photograph 95.
Limestone salt lick, East Traps
Pasture.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 96.
Boxcar for storage of fodder east of
the Z Bar/Spring Hill Ranch head-
quarters.

Source: John Milner Associates, Inc.



Photograph 97.
Bison wallows, Crusher Hill Pasture.

Features related to utilities and stormwater/drainage

A low **soil berm** marks the alignment of a buried gas line running through the Preserve. **Osage orange posts** identify its location. The gas pipeline itself is discussed in the Utilities section later in this chapter.

Metal pipes conducting natural gas are evident within many of the western Preserve pastures. Active **gas wells** are located in the eastern half of West Branch Pasture and the northeastern corner of Gas House Pasture; there is one additional well in Red House Pasture. Numerous capped gas well sites are located across the western pastures of the Preserve. **Gas collection structures**, including above ground flowlines at the well sites, a broader network of field gathering lines, and pumps and metering stations associated with the lines, are located in sections 19, 30, and along much of the western Preserve boundary (*see photograph 98*).

Two gasoline pumps are located within the Preserve. One is located adjacent to the poultry house at the Z Bar/Spring Hill Ranch headquarters. The other occurs near the hollow-tile barn at Deer Park Place. **Telephone** and **electrical lines**, strung on wooden utility poles, are found in various locations within the Preserve.

Standing metal **water pumps**, most of which are inactive, are found at the Lower Fox Creek School, adjacent to the corral and barn at the Z Bar/Spring Hill Ranch, and in the Two Section Pasture near the feed/corral area and troughs.

Small-scale features associated with the control and collection of water include: various metal pipe and poured concrete **culverts** found throughout the Preserve and in the Z Bar/Spring Hill Ranch and Deer Park Place headquarters; a poured concrete **low water crossing** across Fox Creek between Brome and East Traps Pastures; a **concrete underpass** that provides access to Deer Park Place beneath US Highway 50; and another that carries stream flow beneath and Highway 177 near the Z Bar/Spring Hill Ranch headquarters. Round, **concrete pads** (possibly covering water catchment areas) are found in Red House pasture near the Z Bar/Spring Hill Ranch headquarters, and **spring boxes** are found throughout the Preserve, notably in Crusher Hill and Red House Pastures.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



*Photograph 98.
Gas line, Two Section Pasture.*

Ranch Headquarters Features

Small-scale features associated with the Z Bar/Spring Hill Ranch headquarters include several features related to the garden terraces. Hewn limestone **blocks**, some of which may have been established as hitching posts, border the axis of the terraced garden to the east of the main house. Blocks form square and rounded **steps** leading through the terraces and to the house, and between the house and the curing room/springhouse. These steps show some evidence of spalling, as well as movement due to vine growth. Vertical hewn limestone blocks securing metal gates delineate the main garden axis. Ornamental iron fencing lines the sides of the walkway; on the north side, the fencing is loose and leaning, and in fair to poor condition. On the south side it is in good condition, although vegetation, including vines of Virginia creeper, has crept over the fence in places. Additionally, there is a **fountain basin** and a small **fishpond** lined with hewn limestone located on the topmost terrace. The fountain is mortared and has been filled with earth; the concrete is spalling and migrating in some areas. A spigot is visible on top of the basin.

Two **planting beds** edged with poured concrete are located adjacent to the main house; a third bed near the steps to the icehouse/cistern is edged by limestone rubble. The slope beside the hewn limestone steps leading from the main house to the icehouse/cistern is exhibiting severe erosion; other steps lead from the west side of the barn to the service road. More hewn limestone steps are found along the Southwind Nature Trail. A box-wire fence and gate are located at the end of the stairs adjacent to the barn. In addition, there are two **loading docks** composed of railroad tie retaining walls near the visitor parking area and adjacent to the staff parking area below the top of the knoll above the main house. These are currently rotting and the metal posts supporting them are rusted and failing. As a result, the feature is in fair to poor condition. Concrete structures associated with leach fields, described in the Utilities section of this chapter, are located near the Ranch Hand House and below the main house.

Features related to Visitor and Park Operations Uses

Small-scale features associated with 20th-century development of the Preserve as a site open to the public are found within the Z Bar/Spring Hill Ranch headquarters and at the Lower Fox Creek School. At the Z Bar/Spring Hill Ranch, there are directional, regulatory, wayfinding, informational, and interpretive **signs** located throughout the complex and along the Southwind Nature Trail (*see photograph 57*). For the most part, signage is of painted wood or metal. A bronze commemorative plaque, set in concrete is located adjacent to the school. Erected in 1972, the plaque honors Mr. and Mrs. Robert M.E. Peterson, who helped restore the building.

Visitor amenities such as wooden benches, brown metal trash receptacles, and overhead lighting are found at Z Bar/Spring Hill Ranch. Metal **swing sets** and **flagpoles** are situated adjacent to both the Lower Fox Creek School and the main house at the Z Bar/Spring Hill Ranch headquarters.

Propane tanks are located at both the Z Bar/Spring Hill and Deer Park Place complexes. There is a **gas pump** located in front of the poultry house. A **weather station** is found at the Z Bar/Spring Hill Ranch headquarters on the open hillside behind the house. There is a **bronze plaque** identifying the Spring Hill Ranch as a National Historic Landmark along the service drive behind the house.

Stone and Concrete Rubble and Foundations

Large blocks of concrete and limestone rubble are found just southwest of the Z Bar/Spring Hill Ranch corral adjacent to the Tour Road. This rubble may be evidence of an earlier pond that no longer exists, or from stone walls removed from the corral area (*see photograph 99*).

Limestone rubble has been used to edge portions of the Tour Road within the Windmill and Gas House Pastures. Remnants of limestone steps exist between the current access road leading to the Lower Fox Creek School House and its eastern, principal, façade.

Three foundations are apparent at the Z Bar/Spring Hill Ranch headquarters. These include the foundation of a second silo near the existing silo; the footings of a pole barn that was demolished in 2001 near the row of outbuildings, and the foundation of a Quonset located on the knoll behind the main house, demolished at the same time.

A **foundation** of mortared hewn limestone, standing approximately one foot above the ground, can be seen on the east side of the entrance road to the Deer Park Place. Neither available documentary evidence nor architectural evidence suggests a date of origin or use for this feature. There is also a concrete **foundation** at the Lower Fox Creek School site that may correspond to the former boys' privy.

Small-scale Features and Objects

Source: John Milner Associates, Inc.



Photograph 99.

Remnants of 19th-century pond near Z Bar/Spring Hill Ranch headquarters.

Inventory of Small-scale Features and Objects

- Fences
- Corral area fencing, loading chute
- Cattle guards
- Water bins/catchment
- Troughs
- Pen
- Plastic bins
- Salt licks
- Snubbing post
- Low water crossing
- Concrete pads
- Spring boxes
- Standing water pumps
- Cairns
- Foundation, Deer Park Place
- Foundation, Lower Fox Creek School
- Foundation, Quonset
- Quarry sites
- Gas flowlines
- Gas collection structures
- Railroad grade
- Road traces
- Signs
- Benches
- Trash receptacles
- Overhead lighting
- Weather station
- Propane tanks
- Gas pump
- NHL plaque
- Swing sets
- Flagpoles
- Garden borders
- Planting beds

- Steps
- Fountain basin
- Fishpond
- Rubble edging, including pond ruin
- Railroad-tie loading docks
- Bison wallows
- Boxcars

Utilities

The utility-related features and systems located within the Preserve are associated with both localized needs and uses, as well as with uses that extend beyond Preserve boundaries. The lines that cross the Preserve include a buried high pressure **gas pipeline** and adjacent **telecommunications line** (fiber-optic cable) running generally east/west across Crusher Hill, Brome, East Traps, and a small portion of Two Section Pastures, and **overhead electrical transmission lines** that run north/south through Two Section Pasture and along its southern boundary. The right-of-way for the gas pipeline is 66 feet wide; its alignment is clearly visible due to the mound of earth associated with the line for much of its length. The electrical lines are maintained by Flint Hills Rural. In addition to these systems, there is an **electrical substation** located along the eastern edge of the Highway 177 right-of-way, to the south of the Z Bar/Spring Hill Ranch headquarters.

The GMP indicates that there are also sanitary sewer lines located within the Preserve, but these have not yet been located by the CLR team. Strong City maintains a sewage lagoon on a parcel that abuts Preserve land. The three pond areas associated with the sewage treatment facility are located along the old highway near the stone bridge. The effluent from the lagoon system is discharged into Fox Creek.

Utilities located within the Preserve associated with ranch operations include electrical lines servicing the Z Bar/Spring Hill Ranch headquarters, Deer Park Place, and three well pumps; various wells and cisterns; and **septic leach fields** installed in 2001 below the Ranch Hand House and the main house at the Z Bar/Spring Hill Ranch headquarters. The **two wells** that service the Z Bar/Spring Hill Ranch headquarters are located to the east along the Fox Creek bottomlands. These are operated by pumps powered by individual **electrical lines** running from the ranch headquarters area. They currently “function only as cisterns...the water in the system is batch chlorinated at the ranch headquarters **cistern** but the water is still not considered safe for consumption. Potable water must be brought in for both public and staff consumption. In addition to its quality, the water system is inadequate for fire protection purposes. There are no hydrants, reservoirs, or detection and suppression systems in the major buildings.”¹⁸

A **third well**, located in the former corral area, also includes a pump powered by electricity. It is assumed that this well was used to water livestock corralled in this area. It is not known whether this well continues to be utilized, or remains operational. Finally, there is a **cistern** located at the Lower Fox Creek School. There is a water pump located at the northeastern corner of the building that draws water from the cistern.

¹⁸ NPS, *General Management Plan*, 90.

Inventory of Utilities

- Cistern at Lower Fox Creek School
- Wells (two), along Fox Creek bottomlands east of Z Bar/Spring Hill Ranch headquarters
- Cistern at the Z Bar/Spring Hill Ranch headquarters
- Well, former corral area
- Septic leach fields (two), servicing ranch hand house, main house
- Overhead electrical transmission lines (N/S and E/W), Two Section Pasture
- Buried high pressure gas pipeline, E/W across southern half of Preserve
- Adjacent telecommunications line
- Electrical lines providing service to Z Bar/Spring Hill Ranch headquarters, three wells, Deer Park Place

Archeological Resources

According to the recently-prepared *Archeological Overview and Assessment* for Tallgrass Prairie National Preserve, “there were no formally recorded archeological sites in the preserve at the time that it was established and little systematic archeological research has yet taken place there. Details of the history and prehistory of Tallgrass Prairie are thus only beginning to emerge.”¹⁹ However, the report notes, “There is abundant archeological evidence from adjacent areas of the Flint Hills that this region has supported rich natural resources for thousands of years, and that it has drawn human populations throughout their occupation of North America. The details of these successful prehistoric and historic human adaptations are an important component in the paleo-environmental history of the Flint Hills, and the prehistory of the surrounding area is a critical point of reference for documentation of the past biodiversity of the preserve lands themselves.”²⁰

Based upon limited field investigations and review of archival research materials, several archeological sites have been recorded to date within the Preserve. These include prehistoric and historic sites and features, ranging from lithic scatters to domestic homesteads.

The identified prehistoric sites include:

- **lithic scatter**—a 25-acre prehistoric site within the southern portion of the Preserve, likely a temporary campsite or series of repeated short-term occupation sites (period of origin unknown);
- **lithic scatter**—a low-density concentration of prehistoric lithics within Preserve’s eastern area (period of origin unknown);
- **quarry and workshop**—a 50 to 60 acre prehistoric stone workshop and quarry site atop a prominent high point within the Preserve’s western side, artifacts including waste flakes or debitage, irregularly shaped chert cores, teted nodules, and chert biface blanks or preforms (period of origin and use unknown);

¹⁹ Jones, *Archeological Overview*, 1.

²⁰ Ibid.

- **quarry and workshop**—a 25-acre prehistoric stone workshop and quarry site, located in the northwestern portion of the Preserve, includes artifacts ranging from flakes, chipped stone artifacts, broken cores, rough bifacial implements, primary reduction debris, finished chipped-stone tools. Site also likely includes associated habitation features such as hearths, trash middens, and structures, possibly Early Ceramic Period, ca. 1-950 AD; and
- **quarry and workshop**—a 4-acre prehistoric quarry and workshop site on a prominent knoll within the western portion of the Preserve, artifacts include primary chert flaking debris (period of origin and use unknown).

The recorded historic sites include:

- **rock cairns**—concentration of more than 100 dry-laid limestone cobble cairns atop a prominent high point within the Preserve's eastern side (purpose and period of origin unknown, likely historic);
- **Z Bar/Spring Hill Ranch headquarters**—existing dwelling and farm complex established circa 1881 by Stephen Jones;
- **Lower Fox Creek School**—existing site established in 1882 near the Z Bar/Spring Hill Ranch headquarters;
- **Former corral area and railroad spur line**—the bed of a former railroad spur line, concrete foundations and mounds representing former structures, and various features relating to use of the area as a feedlot. This site likely dates from between the Stephen Jones era and the mid-20th century;
- **Homestead site**—limestone footings and depressions and artifact scatters associated with a former house and outbuilding complex in the western portion of the Preserve. Glass collected from the site may date to 1870–80. Construction materials post-dating 1900 have also been observed in association with the site. The homestead, composed of a collection of five to eight structures, appears on a 1938 aerial of the Preserve;
- **Homestead site**—Remnant rock walls and a small depression mark the probable site of a former homestead in the northwestern portion of the Preserve. The site does not appear on a 1938 aerial photograph of the Preserve;
- **Red House homestead ruin site**—remnants of a dwelling complex sited around a strongly flowing spring are evident within the western portion of the Preserve. The features observed to date include a concrete and limestone masonry spring box, inscribed with a date of 1952, limestone foundations that may be from a barn, limestone corral wall remnants, a partially collapsed, dry-laid limestone structure, and another wall remnant. Artifacts collected include glass that may date from 1870–80. A structure in the region appears on the 1938 aerial photograph of the Preserve;

A cistern was recently excavated by NPS archeologists to the northeast of the main house at Spring Hill Ranch. This subterranean feature is stone-lined, with an arched roof structure. It abuts one of the stone retaining walls associated with the terraces east of the main house. Artifacts found in the cistern appear to date to 1891; the cistern itself likely dates to within five years of the construction of the main house.

It is expected that future archeological investigations will yield additional information about former cultural occupation and use of the landscape included within Tallgrass Prairie National Preserve. Based upon the *Archeological Overview and Assessment*, prehistoric features that might be

expected to occur within the Preserve include: additional quarries and workshops, other task-specific sites such as game kill sites, additional habitations/campsites, tipi rings, rock alignments relating to game drive systems and/or religious expression, cairns, and burial mounds.

Historic sites that might exist within the Preserve include additional farmsteads/homesteads and seemingly isolated farm- or ranch-related features that may be composed of habitation structures, outbuildings such as barns, corn cribs, root cellars, privies, corrals, water wells, cisterns, drains, water supply lines, spring boxes, fence lines, roads, and quarries.

Preliminary Inventory of Known and Potential Historic Archeological Resources

- 185 dry-laid limestone cobble cairns east of Z Bar/Spring Hill Ranch headquarters
- Potential prehistoric camp site, Early and Middle Ceramic Period
- Z Bar/Spring Hill Ranch headquarters
- Homestead/farmstead site north of Lower Fox Creek School, circa late 19th through mid-20th century occupation
- Prehistoric quarry and workshop site west bank of Fox Creek
- Potential prehistoric occupation sites, west of Fox Creek and east of Z Bar/Spring Hill Ranch headquarters
- Homestead/homestead site above confluence of Palmer Creek and an un-named tributary, date of occupation undetermined
- Red House homestead near southwestern corner of Preserve
- Lower Fox Creek School site
- Multiple component historic site west of Fox Creek near southern edge of Preserve (rail spur topographic modifications, foundation, feed trough, box cars) at former corral area site
- Prehistoric quarry/workshop and habitation site, northwestern corner of Preserve
- Prehistoric quarry/workshop below the Preserve's high point
- Cistern, Spring Hill Ranch precinct

Condition Assessment of Landscape Features

The Z Bar/Spring Hill Ranch headquarters is in overall fair condition, with major problems related to drainage and replacement of historic materials. The conditions of individual inventoried features within the Z Bar/Spring Hill Ranch headquarters are assessed in this section. Each feature is given a condition rating based on the definitions provided in the Cultural Landscapes Inventory program. The condition of each feature is further discussed, including field observations by the CLR team, in the previous, narrative portion of this chapter. Condition-related photographs follow the end of this section.

Z Bar/Spring Hill Ranch Headquarters Feature Condition Assessment

(see photos 100 through 115)

Landscape Feature/Condition-related Issues	Condition Rating
Main house	Fair
Terraced garden	Fair/Poor
Curing room/springhouse	Good
Outhouse	Good
Icehouse	Good
Cistern	Good
Ranch hand house	Good
Shed #1	Fair
Shed #2	Fair
Scratch house	Fair/Poor
Poultry house	Good/Fair
Carriage house	Good/Fair
Barn	Good/Fair
Corral	Poor
Shed #3	Fair
Chute shed	Good
Tunnel	Good/Fair
Concrete stave silo	Good
Retaining walls forming garden terraces	Fair
Main entrance drive	Fair
Parking lot	Fair
Bus and RV parking area	Fair
Access drive to main house/lower service drive	Fair
Short paths to poultry house	Fair
Lower service drive	Fair
Access drive connecting lower service drive to upper service drives	Fair
Upper service drives	Fair
Hillside paths connecting lower service drive to upper service drives	Poor
Hillside steps connecting main house to upper service drive	Poor
Main entrance walk leading to front of main house	Fair/Poor
Concrete terrace at rear of main house	Fair/Poor
Building perimeter stone walks and steps	Fair/Poor

<u>Landscape Feature/Condition-related Issues</u>	<u>Condition Rating</u>
Prairie and the People Walking Tour trail	Fair
Eastern redcedar windbreak plantation	Fair
Shade trees around house and outbuildings (cottonwood, walnut, elm)	Fair/Poor
Ornamental shrubs, perennials, and bulbs	Fair
Signs	Good
Information kiosk	Good
Benches	Good
Trash receptacles	Good
Overhead lighting	Good
Weather station	Good
Propane tank	Good
Gas pump	Fair
NHL plaque	Good
Swingsets	Good/Fair
Flagpoles	Good
Blocks forming edging and steps in garden	Fair
Ornamental iron fencing, north of walkway	Fair/Poor
Ornamental iron fencing, south of walkway	Good
Planting beds	Fair
Steps	Fair/Poor
Fountain basin	Fair/Poor
Fishpond	Fair/Poor
Rubble edging including pond ruin	Poor
Loading docks (railroad tie retaining walls)	Poor
Foundation, Quonset	Fair
Views from Z Bar/Spring Hill Ranch headquarters to Fox Creek, Flint Hills, and Lower Fox Creek School House	Good

Condition Issues, Z Bar/Spring Hill Ranch

Source: John Milner Associates, Inc.



Photograph 100.

These stairs leading to the lower level of the barn from the service drive are spalling, and cracking, and some of the steps have separated from one another.

Source: John Milner Associates, Inc.



Photograph 101.

Some fence sections, like this four-board wood fence associated with the corral, have deteriorated and need replacing.

Source: John Milner Associates, Inc.



Photograph 102.

The corral area at the bank barn has numerous small-scale features that require repair or replacement.

Condition Issues, Z Bar/Spring Hill Ranch



Source: John Milner Associates, Inc.

Photograph 103.

Drainage systems, such as this down-spout, throughout the precinct require updating to improve erosion, ponding, and structural deterioration problems.



Source: John Milner Associates, Inc.

Photograph 104.

The metal reinforcing components of some pasture fences are rusted and in need of repair or replacement.

Condition Issues, Z Bar/Spring Hill Ranch

Source: John Milner Associates, Inc.



Photograph 105.

This wall, located beyond the barn's upper level, is failing horizontally in some places as shown here.

Source: John Milner Associates, Inc.



Photograph 106.

This wall is failing along vertical seams.

Source: John Milner Associates, Inc.



Photograph 107.

Some of the masonry walls associated with the barn and other outbuildings require stabilization, support, and repair, as shown here.

Condition Issues, Z Bar/Spring Hill Ranch

Source: John Milner Associates, Inc.



Photograph 108.
Some Preserve gates are leaning and require repair.

Source: John Milner Associates, Inc.



Photograph 109.
This path leading toward the agricultural outbuildings from the icehouse is eroded, gullied, and hazardous. There is no handrail.

Condition Issues, Z Bar/Spring Hill Ranch

Source: John Milner Associates, Inc.



Photograph 110.

This path between the icehouse and the main house is eroded and uneven. The surface is not stable enough. The handrail, while in good condition, appears not to be to code.

Source: John Milner Associates, Inc.



Photograph 111.

These steps associated with the terraces in front of the main house require repair or replacement. The stone is chipped and broken. The treads are not shedding water properly, and are unevenly set. They require handrails. Vegetation growing on the iron fencing should be removed. Some sections of the fencing are loose and deteriorated and may need replacement.

Source: John Milner Associates, Inc.



Photograph 112.

The posts along this stair system are badly chipped. The stair treads are not shedding water properly, are unevenly set and unstable, and need cleaning. These stairs should have a handrail system. Ferrous metal pins should be replaced with stainless steel.

Condition Issues, Z Bar/Spring Hill Ranch

Source: John Milner Associates, Inc.



Photograph 113.

Sections of the stacked stone wall near the main house have fallen down and require re-stacking.

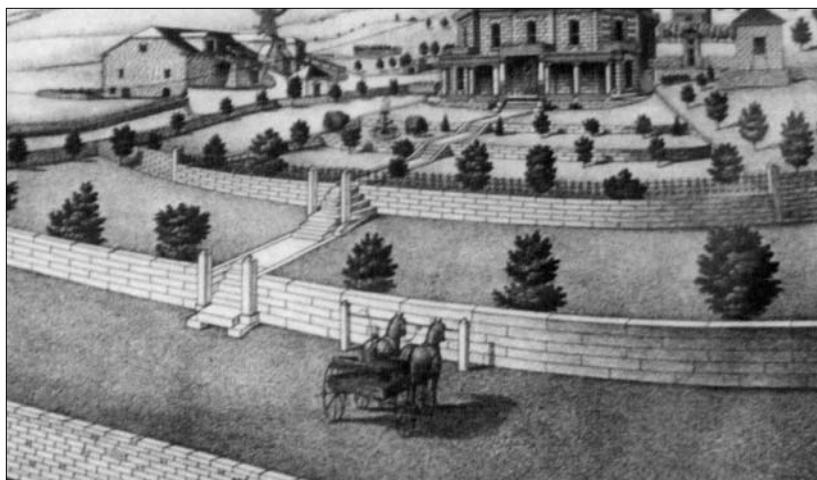
Source: John Milner Associates, Inc.



Photograph 114.

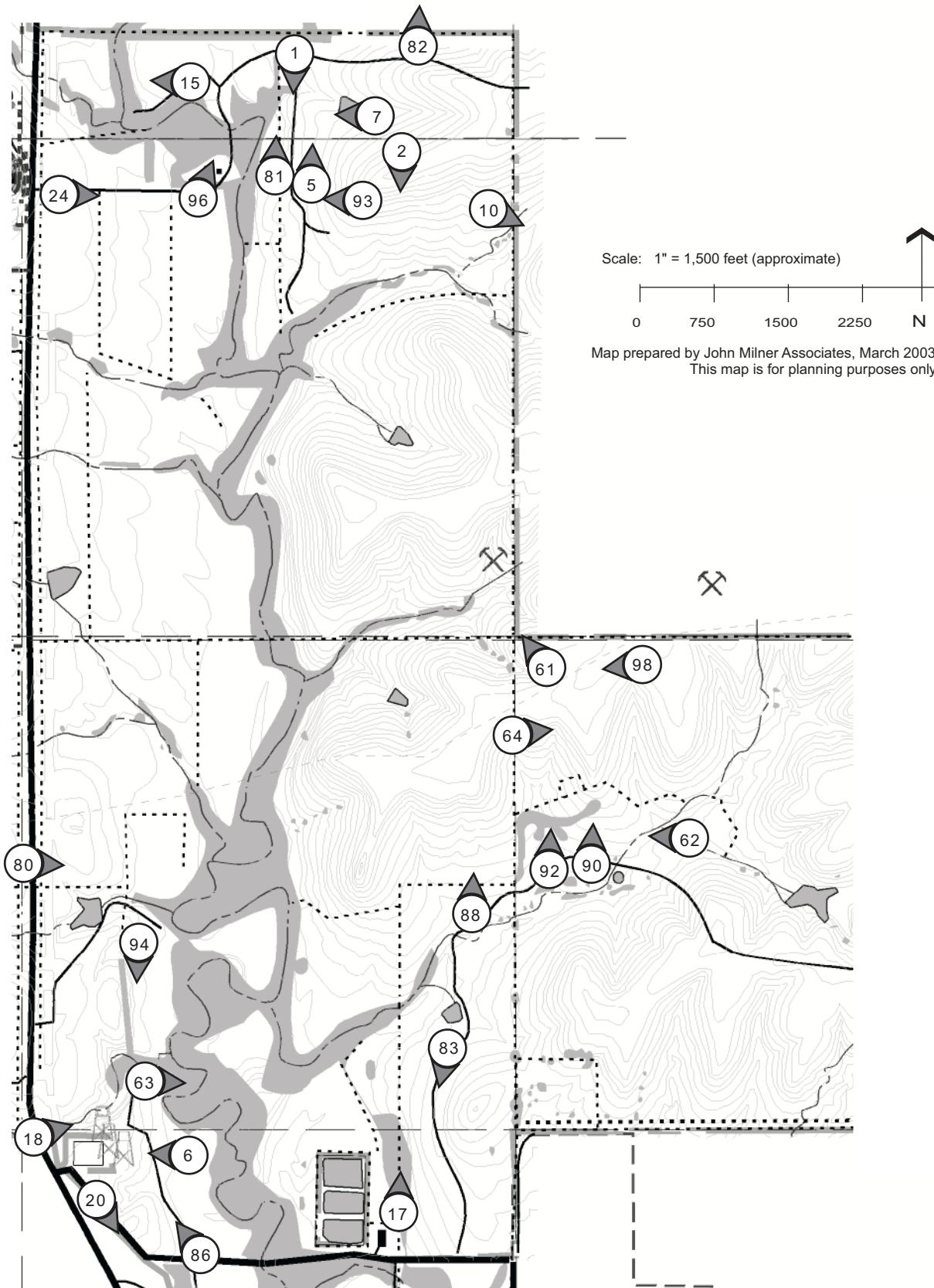
The mortared stone retaining walls associated with the main house terraces are currently exhibiting drainage problems. Weepholes observed in association with some of the walls appear to be filled with soil or debris. Some sections are leaning from hydrostatic pressure. Some have experienced improper repair using ill-matched mortar. The stone needs cleaning.

Source: John Milner Associates, Inc.



Photograph 115.

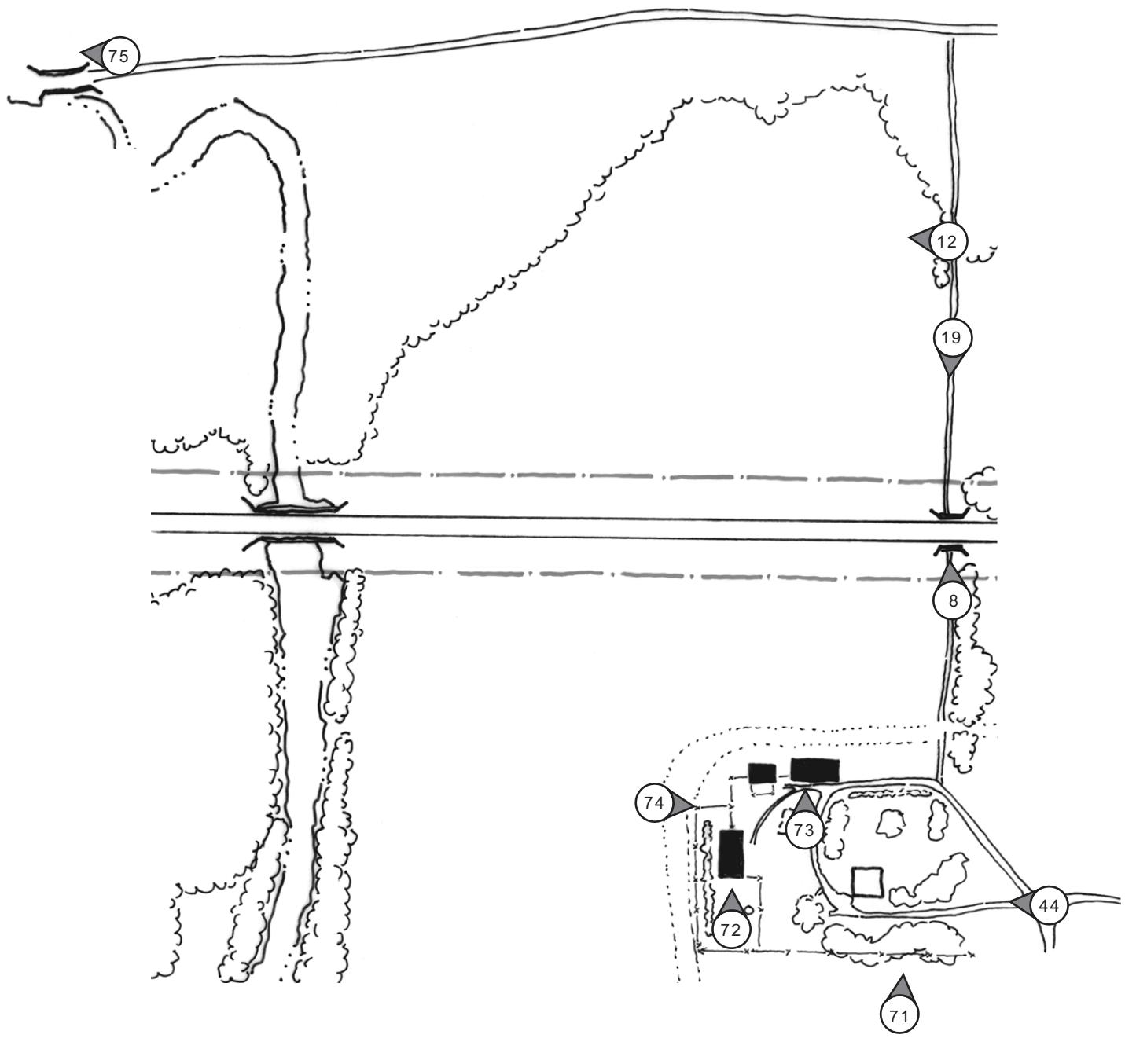
This historic illustration may be useful in rehabilitating the terraces, which may require rebuilding and the installation of a dry-well drainage system.



Tallgrass Prairie National Preserve

Figure 82. Detail
Photo Station Points 2001

Cultural Landscape Report
October 2004



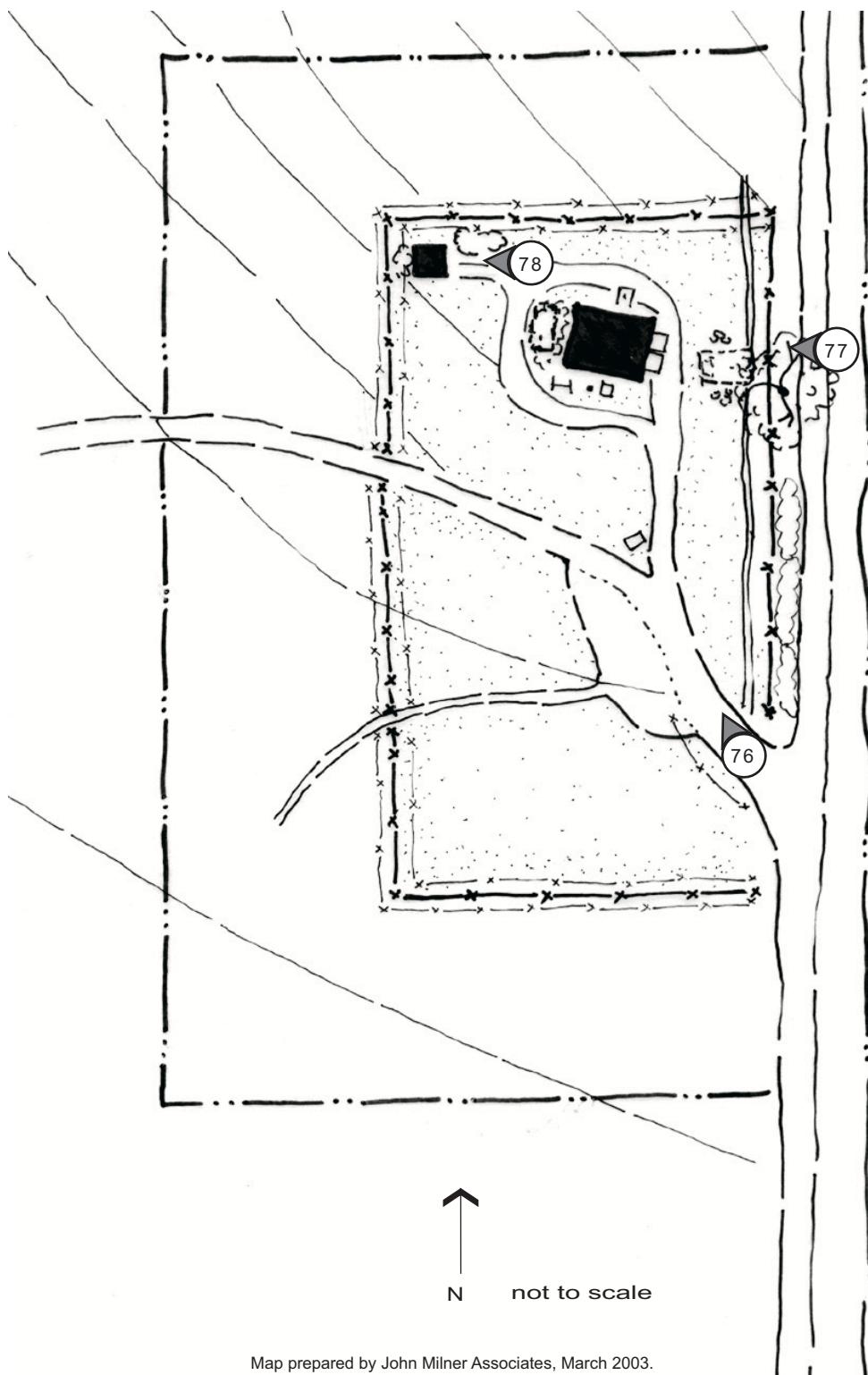
Map prepared by John Milner Associates, March 2003.
This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 84.
Photo Station Points 2001: Deer Park Place

Cultural Landscape Report

October 2004



Map prepared by John Milner Associates, March 2003.
This map is for planning purposes only.

Tallgrass Prairie National Preserve

Figure 85.
Photo Station Points 2001: Lower Fox Cr. School Cultural Landscape Report
October 2004

Chapter 4 / Analysis



4. ANALYSIS

Introduction

This chapter includes a National Register-level significance evaluation, comparative analysis of historic and existing conditions, and an integrity assessment. Together, these identify how much the Preserve landscape resembles conditions present during important periods in its history.¹ The significance evaluation included below is based upon existing National Register and Historic Resource Study documentation of the Preserve. Although exploration of new contexts and significance issues is beyond the scope of this project, the significance evaluation summarizes previously documented contexts and explores other potential and likely aspects of the Preserve's significance in support of appropriate treatment.

The comparative analysis that follows relies on historical data, NPS mapping, CLI/CLR fieldwork, historic photographs, and aerial photography to determine the integrity of cultural landscape resources for the identified period of significance. These resources are identified as character defining, while resources that post-date the period of significance are identified as non-character defining.

Using the significance evaluation and lists of identified contributing and non-contributing resources, the CLR assesses landscape integrity in accordance with National Register criteria. Zones of integrity are mapped to illustrate the assessment (*see figure 89*).

Current National Register Status of the Preserve

Properties listed on the National Register 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 on 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;
- B. be associated with the lives of persons significant in our past;

¹ The analysis of integrity and significance was prepared by LCA during Phase 1 of the CLR. The assessment information contained therein was edited, revised, and augmented during Phase 2 based on additional information secured and developed by JMA.

- C. embody the distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction;
- D. have yielded or may be likely to yield information important in prehistory or history.

In addition to meeting these criteria, a property designated as a National Historic Landmark (NHL) must be nationally significant and also represent one or more of the themes that are considered significant within the continuum of American history by the NHL program.

In 1997, the Z Bar/Spring Hill Ranch was recognized as a NHL for its representation of the transition from open rangeland to the enclosed holdings of large cattle companies during the 1880s. The NHL nomination notes that the Z Bar/Spring Hill Ranch possesses significance in the areas of architecture and agriculture during the period 1878–1904, which encompasses the years when Stephen Jones and Barney Lantry were adjacent property owners, or in residence on their Chase County lands. The ranch possesses significance for its association with Jones and Lantry, both of whom moved to the vicinity in the 1870s and became closely involved with the business, railroad, and financial interests of the region. These prominent citizens played major roles in the region's transition from a diversified subsistence farming economy to large-scale cattle ranching. The site's significance is based to a large degree on the importance of enclosed cattle ranching in the Flint Hills. Also significant is the architecture of the Z Bar/Spring Hill Ranch headquarters buildings and the Lower Fox Creek School House.

In addition, the property was found to represent the following NHL themes:

- Westward expansion
- Peopling places
- Developing the American economy, and
- Transforming the environment.

A more recent draft National Register Nomination suggests that Tallgrass Prairie National Preserve also represents a historic district with local-level significance for its extended history of agriculture and ranching between 1878 and 1993. The draft nomination suggests that the Preserve has the ability to represent the evolution of cattle ranching in the Flint Hills region over a 110-year period, and that its extant resources embody the changes that have occurred over this period. Preserve features are especially well suited to convey the close association between the existing built environment and the region's natural resources.

CLR Evaluation of Significance

CLR evaluation of the Preserve in accordance with the listing requirements of the National Register of Historic Places, and based on the draft National Register nomination and CLR research and analysis, suggests that the Tallgrass Prairie National Preserve landscape is

nationally significant under Criterion A for its relationship to the “broad patterns” of history, in the area of Agriculture.

The Preserve also appears to be locally significant under Criterion B for its association with Stephen Jones and Barney Lantry, both regionally important businessmen who helped transform Chase County’s economy.

The architecture of the Z Bar/Spring Hill Ranch headquarters is nationally significant under Criterion C. Other cultural concentrations located within the Preserve contain examples of distinctive architectural characteristics and landscape features which may be locally significant under Criterion C.

It is also likely that the Preserve possesses significance under Criterion D for the ability of its archeological resources to yield important information for the NHL period of significance and other historic periods prior to and following the NHL period, as well as prehistory.

As discussed earlier, the Z Bar/Spring Hill Ranch headquarters is a NHL with a period of national significance that extends from 1878 to 1904. Taking into consideration local significance as well, this CLR recommends extending the period of significance for the Preserve from ca. 1856 to 1970. This extended period reflects the understanding that the Preserve’s cultural landscape is a result of a long continuum of cultural use and adaptation to the natural environment. The 1856 beginning date coincides with early Euro-American frontier settlement in the region, and the first recorded examples of cultural adaptations to existing natural conditions; this date, however, could be extended to earlier documented prehistoric human uses with sufficient contextual study. The local period of significance extends thusly after 1856 to 1878, spans the NHL period of significance (1878–1904), and extends forward from 1904–1970. This 20th-century period encompasses Benninghoven ownership; fragmentation of the ranch; the Dustbowl and Great Depression-era reconsolidation as a cattle ranch; and mid-20th-century corporate ranching. The end date of the recommended period of significance—1970—coincides with the decline of the importance of railroad transportation to cattle ranching in Kansas, significant changes in the regional agricultural economy, and the death of Fred Howard, Sr., who had managed the property since 1935. The destruction of the corral area and removal of the railroad spur line shortly thereafter severed a century-old relationship between cattle ranching and the Atchison, Topeka & Santa Fe (AT&SF) rail line out of Strong City.²

Extension of the period of significance to 1970 on a local level supports the NPS mission of “preserving and interpreting...the heritage associated with the ranch property...”³ Specifically, the resources associated with the extended period of significance help support the “Interpretation and Education” theme identified for the Preserve which conveys how “the cultural resources and features of the site illustrate the continuum of human experience in the Flint Hills region of Kansas from the first inhabitants through today’s residents.”⁴

² The corral area and railroad spur are still discernible in 1971 aerial photographs.

³ National Park Service, “Tallgrass Prairie National Preserve General Management Plan and Environmental Impact Statement,” (Chase County: Tallgrass Prairie National Preserve, 2000), 11.

⁴ National Park Service, “Tallgrass Prairie National Preserve General Management Plan,” 13.

The Preserve lands appear to possess local significance in agriculture, specifically ranching. In general, efforts to farm Preserve lands have not been as successful as cattle ranching, with other agricultural uses tending to be subordinate to, and supporting of cattle operations. Several 19th-century small-scale farmers and homesteaders in the pre-railroad era apparently failed in their efforts to establish successful farms and lasted for less than a decade. In the 20th century, the Benninghoven family, operating a smaller and more diversified farming and ranching operation without another non-ranch source of income and investment capital, was also eventually unsuccessful. The stories of the Preserve's former owners not only have considerable sentimental appeal and human interest; they are also associated with significant trends and events in the cyclical agricultural history of Chase County. The willingness or desperate financial need of the early 19th-century settlers and the Depression-era Benninghovens to sell to affluent buyers provides the socio-economic context in each instance for intensive ranch development.

Catastrophic natural events—the drought of 1860, the grasshopper invasion of 1874, and the dustbowl of the 1930s—in combination with regional and national economic conditions, had devastating effects for the owners of the land. Such events often necessitated or preceded transfer of the land or portions of it to new owners. As a result, the most enduring cultural features have been those associated with cattle ranching and not with diversified agriculture.

Just as the Preserve is significant for its role as a 19th-century ranch, it may possess significance in the 20th century during the years it operated as the Davis/Z Bar Ranch. As a 20th-century ranch context is developed, the site may be reevaluated for state or national significance. Additionally, the potential state and national significance of the Preserve is associated with other contexts such as the railroads, corral area, and early settlement, identified herein as likely of local significance, may be re-evaluated in the future, as more information about them, and their contexts, are developed.

It has been difficult to further qualify significance from one period of local history over another, or to credit one individual, family, manager, or corporate entity over another when evaluating the Preserve as a whole. Some periods of history are better represented due to the survival of documentation or physical resources.⁵ Many of the Preserve's most enduring and significant cultural features and characteristics are those associated with the large-scale ranching periods of Jones and Lantry and with the Davis/Z Bar Ranch, perhaps in part because those periods represent ranch prosperity and consolidation. Overall, the existing landscape continues to represent the NHL period of significance, which is also the Preserve's most intense period of human occupation. Many surviving character-defining features were established during this period, and retain a substantial degree of integrity, as is illustrated over the pages that follow.

The Preserve's cultural resources relate to the history of American westward expansion, cattle ranching, and transportation in the Flint Hills. They include, for example, the Z Bar/Spring Hill and Deer Park Place ranches, the Lower Fox Creek School, the Red House site, and the settlement site in Two Section Pasture. They also include Palmer Creek, Fox Creek, numerous

⁵ The Benninghoven family, although in residence for an extended period of time, made few alterations that have survived and that continue to physically represent their residency. Although the stories of both the early pioneers and the Benninghovens are compelling human stories, their occupation and uses appear to have had only a few enduring above ground cultural resources associated with them that remain on the Preserve landscape today.

pastures and the stone fence systems that enclose them, the corral and railroad spur area, tallgrass prairie, cultivated bottomlands, riparian woodlands along stream corridors, the Eastern redcedar windbreak and shade trees at Spring Hill, and an Osage orange hedgerow in Two Section Pasture. Additional cultural landscape features that survive from the period of significance include springs and seeps, stone outcrops and quarry sites, internal circulation at the Z Bar/Spring Hill Ranch headquarters, some pasture two-track routes, the county road and stone bridge, and bison wallows and paths worn by cattle. Cultural resources known or believed to survive from the period of significance have the potential to increase our understanding of the development and use of the Flint Hills landscape and the occupations associated with it. Although land use changes have certainly occurred, there remain many extant resources that retain a substantial degree of integrity and the ability to convey their connection to significant events and associations. Generally, the later 20th-century resources associated with the extended period of significance are fairly easy to differentiate from the resources associated with the NHL period of significance.

Comparative Analysis

A primary objective of this CLR is to evaluate the ability of the existing landscape to represent the NHL period of significance as well as other identified periods of significance. In order to better understand the relationship between the contemporary Preserve landscape as documented in Chapter Three, and the landscape that existed during the NHL and local periods of significance, this CLR includes a comparative analysis of historic and existing conditions. The analysis focuses primarily on extant features, their period of origin, associations, and modifications over time. Overall, the analysis resulted in the generation of four lists, including features that:

- survive from, and are character-defining for, the NHL period of significance;
- survive from, and are character-defining for, the local period of significance;
- are missing from the one of the periods of significance; and
- are non-character defining/or as yet undetermined.

Lists of features support the comparative analysis of each landscape characteristic investigated within the chapter, including:

- patterns of spatial organization and views,
- responses to natural features and systems,
- land uses and activities,
- circulation patterns and features,
- vegetation,

- buildings, structures, and structural clusters,
- small-scale features and objects, and
- utilities.

The three primary goals for developing this information are to:

- understand which features contribute to each period of significance;
- serve as the basis for an integrity evaluation; and
- provide insight into the similarities and differences between historic and existing conditions that will contribute to the development of a well-grounded treatment plan for the cultural landscape.

Character-Defining Features

(figures 86 through 88)

Research for this CLR has identified a number of character-defining features associated with the Preserve for both the NHL and extended local periods of significance. Evaluation of the Preserve's cultural landscape must be based on the understanding that its natural characteristics—geology, soils, hydrology, and native vegetation—underlie the continuum of its visual character and cultural development. For instance, quarried limestone outcrops are a representative example of natural resources with cultural value. An understanding of the cultural value of these natural characteristics is critical to an understanding of the Preserve. Some natural characteristics and features with cultural value have endured with little change for centuries; others have disappeared or failed due to changing economic cycles, climatic conditions, and agricultural uses.

The existing landscape is a byproduct of more than a century of human management. In particular, grazing, enclosure, burning of the grasses, quarrying, cultivation, damming, and transportation have contributed a cultural layer to the Flint Hills landscape. The visual qualities of the Preserve today reflect human management that has not completely dismantled the reading of the underlying prairie in the way cultivation has wrought change to soils, plant communities, and patterns of spatial organization elsewhere in the Midwest. It is likely that the character of the prairie pastures visible today is very similar to that of the late 19th and early 20th centuries.

The Preserve landscape represents tallgrass prairie land use and land management from prehistoric times through the end of the 20th century, including the NHL period. It reveals the significant story of the interaction of people with their environment and with the forces of nature, and their ability to exploit natural resources throughout history. For example, farm ponds developed over several decades of the 20th century embody distinctive characteristics that evolved in response to changing needs and technologies. The landscape represents a continuous dominant land use of agriculture, namely grazed pasture, on a distinguishable ranch unit that

evolved from a bison-grazed prairie to a corporate 20th-century ranch. The layered landscape represents aspects of both 19th-century and early 20th-century ownership and management.

Many of the vernacular characteristics of the landscape reflect changes in technology and the evolution of cattle ranch management. Yet, they too are important and contribute to the character of the Preserve. Each successive use has contributed something to the Preserve's cultural landscape. The Preserve that exists today reflects these collective efforts.

Patterns of Spatial Organization and Views

The site organization visible today at the Preserve represents the continuum of human habitation and the sweeping changes in land use that typified the expansion of the American West. During the mid- to late 19th century, portions of the landscape developed from an expansive, unbounded grassland known by American Indians, into relatively small farms where new settlers began to develop the first of the stone fences that still compartmentalize the landscape today. Soon, small fields were converted into large, orthogonal, fenced parcels overlaying and enclosing the rolling rangeland. The region's spatial organization developed primarily in response to topography and vegetation, geology and soils, and hydrology. The resulting pasture and settlement patterns, evidenced primarily through fencing, are one of the most significant cultural landscape characteristics of the site, having shaped the ongoing division and organization of the Preserve lands over the last 130 years. The broad patterns of fenced enclosure, ownership, and road networks in evidence today arose during the NHL period of significance.

While some of the pasture names and boundaries have changed since 1904, as per oral history accounts, many of the pastures have remained roughly the same since at least 1895 and possibly earlier. For instance, the relatively small enclosure just west of Two Section Pasture, which still retains its fencing and access road, was referred to as "Meadow" on the 1895 map, and described as a milk cow meadow during the 20th century by Fred Howard, Jr. Today, the name has been lost, but the meadow itself retains its form.

In addition to the pasture delineation established in support of ranching operations, other major elements associated with Preserve patterns of spatial organization are its views and vistas. The important views and vistas of the Preserve appear to have changed little since the 19th century, and retain much of the character that they possessed during the NHL period. Landform, big blue sky, creeks and springs, and grasses—green, brown, or gold—punctuated by limestone outcrops provide the basis for visual understanding; so do fences, stock ponds, and road and rail traces. The broad and sweeping views of the area have been little impacted on either Preserve lands or adjacent sites by incompatible development or change. While difficult to quantify, it is likely that the expansive prairie views differ from their prehistoric appearance due to the regular burning practices implemented over the past 130 years, and the double-stocking cattle grazing practices that have likely resulted in a more uniform appearance of vegetation today than might have existed during the early settlement period.

The corridors of waterways, including Fox and Palmer Creeks, remain similar to those present prior to Euro-American settlement, although the extent of riparian tree cover has likely changed over time, first as the burning practices of the American Indian peoples were discontinued, and

then as early settlers cut over the woodlands for fuel and construction materials. The extent of woodland along stream corridors likely diminished during early settlement. Later, ranching and cultivation of crops within the bottomlands perpetuated the removal of riparian woodland cover. Today, with very little crop farming going on, the margins of the stream corridors are far more heavily wooded than ever before in the area's documented history. The bands of woodland are thicker, and the composition of the woods is also likely thicker and shrubbier.

On a site-specific level within the Preserve, patterns of spatial organization associated with the Lower Fox Creek School, Deer Park Place, the Red House site, and Z Bar/Spring Hill Ranch headquarters have also retained much of their character from the NHL and local periods of significance. Although little is known about the appearance of the Lower Fox Creek School site during the NHL period, the school house and the stone wall were established by 1882, providing the overall structure of the site's organization. However, many of the small-scale features, such as the privies, other possible outbuildings, and circulation patterns have been altered or are missing. The school house also retains the sweeping views of the prairie that are integral to its feeling as a rural prairie school; sited atop a knoll, the school house has long been a prominent visual feature along the road between Council Grove and Strong City.

The existing spatial organization of the Z Bar/Spring Hill Ranch headquarters area appears to have been predominantly established by the end of the NHL period. Lithographs from 1883 and 1887, and a ca. 1908 postcard illustrate the prominent siting of the main house on a knoll overlooking a series of walled earthen terraces, and a tight cluster of surrounding outbuildings. The cedar windbreak appears highly developed by the time the ca. 1908 photograph was taken, and many of the shade and evergreen trees around the house, and emphasizing the spatial patterns of the terraces also appear relatively mature. Stone walls edge the major north-south road corridor to the east of the main house, as well as the barn precinct. The majority of these features survive today. The area around the barn appears to have been heavily modified just after the end date of the NHL period of significance, with changes to walls and circulation indicated in the ca. 1908 postcard. As noted below within the buildings and structures section, the most important changes to patterns of spatial organization have occurred since the NHL period through the addition and removal of buildings, and additions to circulation systems.

Deer Park Place also appears to have retained its overall patterns of spatial organization established during the NHL period of significance, although some critical changes have occurred since that have altered these patterns. For example, buildings have been removed or replaced, circulation has been altered, and the landform was changed in the mid-20th century with the addition of a flood control berm.

The Red House site retains features and spatial organization from the early settlement period. It is still possible to understand the choice of its siting within a protected enclave, near a free flowing spring. Likewise, a former occupation site in Two Section Pasture visibly reflects the features of an early homestead, including stone-walled enclosures and an Osage orange hedgerow.

The former corral area along the railroad line retains the spatial organization of the later years of the local period of significance, although the wooden corrals, chutes, scale house, and other features that characterized the site through the 1950s do not survive. Until recently, the

alignment of the railroad spur and the boxcars provided important connections to this significant aspect of the ranch's history.

Character-Defining Patterns of Spatial Organization and Views Associated with the NHL Period of Significance

- Palmer Creek and Fox Creek corridors
- Fenced boundaries/pastures
- Lower Fox Creek School precinct
- Z Bar/Spring Hill Ranch headquarters
- Deer Park Place Ranch
- Red House site
- Former settlement site, Two Section Pasture
- Railroad spur
- Views of Spring Hill Ranch headquarters, Lower Fox Creek School House
- Views from Spring Hill Ranch headquarters, Lower Fox Creek School House
- Expansive views from high points

Character-Defining Patterns of Spatial Organization and Views Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Pastures:
 - West Branch Pasture
 - Gas House Pasture
 - Windmill Pasture
 - Red House Pasture
 - Crusher Hill Pasture
 - West Traps Pasture
 - Brome Pasture
 - East Traps Pasture
 - Two Section Pasture
 - Cow meadow
- Former corral area
- All scenic views (see Chapter Three for complete listing)

Responses to Natural Features and Systems

Humans have played and continue to play an integral role in the Preserve's ecosystem. Human interaction with the environment has had a powerful and indelible impact; observable cultural influences have become intertwined with the natural environment to create a place where the natural and cultural environments have become one. It would be difficult—if not impossible—to identify any natural feature within the Preserve without cultural value.

Site spatial organization, as discussed above, developed primarily in response to natural resources. Successive owners chose building sites that were near springs and other water sources, and afforded expansive prairie views; many such sites have remained relatively unchanged since they were established.

Beginning with examples of cultural evidence surviving from the early settlement period, the Red House site and the dwelling site in Two Section Pasture are both located in somewhat sheltered areas close to strongly flowing springs. The earliest owners in the region purchased parcels associated with stream corridor bottomlands; the ability to cultivate crops was their most important consideration. Thus, the most sought after land abutted water courses, and the less desirable land was located on the uplands. It was not until the arrival of the railroad that this pattern reversed; the railroad allowed for the growth of the cattle ranching industry within the grassy uplands of the Flint Hills, which were far better adapted to this use than to crop cultivation. By the fourth quarter of the 19th century, a significant shift in ownership patterns had begun, and the emphasis of local land owners and uses shifted from subsistence agriculture, focusing on cropping within the bottomlands, to ranching over large expanses of upland land, with minor cultivation occurring to produce primarily cattle feed.

The ranching legacy is still apparent today and is inextricably linked with the native tallgrass prairie landscape, which first challenged and later sustained its human occupants.

Limestone outcrops have been another key character-defining feature of the Flint Hills throughout the local and NHL periods of significance. Prehistoric quarrying uses developed in response to the presence of these outcrops and the opportunities they afforded for hunting the game attracted to the abundant native grasses. The outcroppings were also the source of materials for the stone walls that marked ownership and formed enclosed pastures from the early settlement period through the end of the 19th century. During the NHL period, Barney Lantry's commercial quarrying of lands on and near the Preserve was likely the catalyst for the introduction of two rail line spurs, one leading to the former corral area, the other to a quarry site below Crusher Hill. These spurs were originally used for loading and transporting Lantry's quarried stone, which was used in rail line development elsewhere around the country. During the 20th century, the spur was utilized for shipping livestock to market, a practice that sustained the area's involvement in the American cattle industry.

Roads in the area appear to have typically and consistently traversed uplands and avoided water crossings as much as possible. The stone bridge crossing of Fox Creek is an unusual feature within the Preserve landscape. Elsewhere, two-track ranch roads cross creeks and streams

without the benefit of bridges, culverts, or other structures. A low water crossing, consisting of a concrete slab across Fox Creek east of Spring Hill, is the lone exception. Recent primary roadway development along Highway 177 integrates culverts into its design to carry stream and stormwater flow. Within the Preserve, however, there is limited evidence as to how circulation crossings were historically handled, if at all.

Other important Preserve features associated with cultural responses to natural features are the numerous stock ponds that currently dot the landscape. These were established primarily during the second quarter of the 20th century to water livestock pastured throughout the Preserve. The construction of ponds accelerated after mechanized earth-moving equipment became available. These are not character-defining for the NHL period of significance, but do contribute to the later local period of significance.

Character-Defining Natural Resources and Responses to Natural Features and Systems Associated with the NHL Period of Significance

- Tallgrass prairie ecosystem
- Cultivated bottomlands
- Stone outcrops and quarry sites (see Chapter 3 for complete listing)
- Palmer Creek, Fox Creek, Stout Creek, west branch of Stout Creek, un-named tributaries
- Springs and seeps

Character-Defining Natural Resources and Responses to Natural Features and Systems Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- County road bridge
- Stock ponds

Features Missing from Periods of Significance

- None identified

Non-Character-Defining/Not-Yet-Determined Features

- Flood control structure
- Municipal sewage treatment ponds in south-central portion of site
- Dump northeast of Z Bar/Spring Hill Ranch headquarters
- Dump along southern site boundary

Land Uses and Activities

Since early Euro-American settlement, the Preserve landscape has primarily been used for agriculture. Limited residential uses have also occurred. Mineral extraction, in the form of stone quarrying and the collection of natural gas, have also been associated with the Preserve during

both the NHL and local periods of significance, although natural gas extraction does not date to the NHL period. Today, these traditional uses continue, yet have been augmented with administrative, museum/interpretive, visitor service, and commercial uses associated with NPS and NPT administration of the site.

Of all the cultural activities and uses associated with the site, agricultural practices have had the most visible impact. The Preserve landscape has been animated with cattle from the time of the earliest Euro-American settlement. This agricultural use is closely associated with the historical significance of the ranch and its extant cultural resources. Grazed uplands and pastures dotted with cattle, cultivated fields of corn and grains, and burned-over fields with early spring shoots of green emerging are scenes associated with the Preserve. Management practices oriented primarily to livestock operations have resulted in a visible decline in cultivated fields on Preserve land over more than a century.

Another change from traditional land use is the current management practice of double-stocking cattle over a shorter period of time. Some local residents have expressed concerns about the effects of this grazing management practice, since they believe that double-stocking from April to July has changed the visual appearance of the Preserve. They believe that the grasses have since become noticeably sparser in upland areas. Agricultural land uses, including grazing livestock, have had a significant visual impact on the Preserve's hydrologic and vegetative systems over time. Stocking rates and grazing locations contribute to erosion, particularly at mineral/salt feeders and watering places, including both natural riparian areas and developed watering sites.

Character-Defining Land Uses and Activities Associated with the NHL Period of Significance

- Agriculture (pasture)
- Agriculture (crop land)
- Mineral extraction (limestone quarries)
- Utility (springhouses, springboxes)

Character-Defining Land Uses and Activities Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Mineral extraction (natural gas collection)
- Utility (electrical lines, well houses)

Land Uses Missing from Periods of Significance

- Residential

Non-Character-Defining/Not-Yet-Determined Features

- Administration
- Visitor services
- Commercial

- Open space/undeveloped
- Service/support/storage

Circulation Patterns and Features

Although no roads or trails are known to remain from before the 1856 land survey, the general alignments of roads and paths on ridge tops is a circulation strategy that appears to survive from prehistoric periods. The 1856 General Land Office survey map indicates the presence of routes or trails leading northeast/southwest between Section 31, Township 18S, Range 8E and Section 18, Township 18S, Range 8E; and between the general vicinity of the Red House site in Township 19S, and a crossing of Fox Creek near the northern edge of Section 31, Township 18S, Range 8E. Little is known about the features that were accessed via these trails. It is possible that additional circulation, such as foot trails, wagon two-tracks, horse trails, and cow paths existed but were considered too ephemeral to be included on the survey maps.

By the end of the NHL period of significance, the precursor of Highway 177 had been established along a portion of the section line dividing, for example, Sections 5 and 6, Township 19S, Range 8E. The extant county road was a feature of the late 19th- and early 20th-century landscape; at that time it continued to the west of the precursor of Highway 177—the north/south road leading to Council Grove. This route extended south only as far as the current county road before State Highway 50 (which became known as US Highway 50 after 1960) was constructed to the south in the mid-20th century. The county road was the main route between the north/south road and Strong City. The current county road, which generally survives from the NHL period, was also realigned and improved in the 20th century, significantly altering its historic character. The western section appears to have been abandoned during the second quarter of the 20th century. In 1956, Highway 177 was re-routed further to the east; the alignment of a pre-1956 roadbed is still visible along the west side of the modern roadway, most notably in front of the Z Bar/Spring Hill Ranch headquarters main house and the Lower Fox Creek School House. The road corridor has also clearly been altered to accommodate changes in traffic, safety standards, and use.

Dates of origin are not known for most of the existing two-track ranch roads. In general, they appear to lack NHL period integrity, but likely arose during the 20th century and are associated with the extended local period of significance. One less improved route, with two branches, does appear on late-19th-/early-20th-century maps of the region within Two Section Pasture leading generally east to west. Little is known about this route or its character. While extant two-track roads may follow alignments established earlier, they likely took on their existing character after the introduction of motor vehicles in the 20th century. Some two-track ranch roads, including spur roads in Gas House Pasture, may have been developed in the mid-20th century to access gas well and meter sites.

Some internal circulation associated with the Z Bar/Spring Hill Ranch headquarters survives from the NHL period, including the paths, steps and terraces around the main house; the route up the hill to the ice house/cistern (steps were added later); and the general alignment of the lower service drive to the barn and outbuildings. During the 20th century, additions and improvements to the complex's internal circulation included the establishment of the upper service drive system

and the terrace at the rear of the residence. The ca. 1908 postcard of the headquarters indicates that modifications were apparently made to the wall and circulation system along the road frontage just after the end of the NHL period of significance, including possible grading operations to the east of the stone barn.

Since 1970, several features have been added, including interpretive trails, paths, and a visitor parking lot. Missing are hitching posts, and access to the front of the residence from the north/south road. Formalization of the Preserve Tour Road through the addition of crushed stone paving has occurred since NPT ownership in 1994.

Historic circulation patterns at Deer Park Place differ significantly from those in use during the NHL period of significance. According to 19th-century illustrations and maps, it appears that the original entrance into the property was similar to that at Spring Hill—a straight, axial route originating at the main road, with an area to hitch horses, and a direct walk through a manicured lawn/garden area to the east entrance of the house. These features do not survive; the only circulation feature at Deer Park Place that may remain from the NHL period is the roadway along the north edge of the yard precinct that provides access to the agricultural outbuildings. The current loop likely relates to the later local period of significance, however. The date of origin of the ranch road leading north to the county road from Deer Park Place is not currently known, although the concrete structure that leads beneath Highway 50 dates from the mid-20th century.

Historic circulation at the Lower Fox Creek School site appears to have included a set of steps leading from the former alignment of the north/south road to the front doors of the school house. If there was a formal path that led from the steps to the building, it has been lost. Other circulation systems have not been identified. Nothing is currently known about the date of origin of the existing circulation at the school.

Railroad

One of the features missing today that helped characterize the Preserve during the NHL and later local period of significance is the railroad spur. The east-west AT&SF line running to the south of the Preserve was an integral component of ranch development on Preserve lands, connecting local ranching interests with the markets and other related resources necessary to the survival of the ranching industry. The railroad was the economic and physical link that made the business interests of Jones, Lantry, and later, the Davis/Z Bar Ranch possible. During the NHL and the later local periods of significance, the sights, sounds, and smells associated with the railroad would have been part of life within the Preserve: the lowing of cattle, shrilling of railroad whistles, locomotives backing up the railroad spur, and men on horseback driving cattle to the edge of town.

The Preserve was associated with the late-19th-century development of cattle ranching in the Flint Hills when railroad transportation made large-scale ranching economically feasible and profitable. Its location near Strong City provided an important local economic interest in rail transportation. The Preserve's natural grasslands to the AT&SF line through Strong City, which was on the direct line from Southeastern Colorado to Kansas City, the stock regions of the southwest, and profitable eastern markets. The AT&SF line was of strategic importance in the

economic development of the Flint Hills. The success of the Preserve's historic agricultural economy was as dependent upon transportation as it had always been on the environment. Both the AT&SF and Missouri, Kansas & Texas Railroads played major roles in the subdivision and sale of many of the parcels of land that comprise the Preserve.

On a regional scale, the property illustrates the critical role of railroad transportation in making large scale ranching and other industries possible within the Flint Hills. The development of the small settlement of Cottonwood Falls into Chase County's major railroad depot of Strong City helps explain the timing of the major land investments of Stephen Jones and Barney Lantry in the late 1870s. The location boasted excellent connections with the west, where Lantry had construction contracts and Jones had significant cattle associations. The potential to transport limestone directly to construction sites and to develop railroad spurs near ranch land where cattle and supplies could be loaded and unloaded influenced local economic growth, and with it, land use and organization. Without the accessibility of the AT&SF Railroad, which made long-distance cattle transport possible, the Preserve may never have developed into an economically viable ranch. Neighboring ranchers and farmers drove cattle to the ranch's corral area to be loaded onto the cattle cars using its railroad spur connection with the AT&SF.

Just as rail transportation, ranching, and quarrying stone made Strong City prosperous, their declines were similarly linked. The extension of railroad transportation into the Flint Hills and "their eventual supplantation by trucks changed agricultural operations and determined the fates of towns dependent on the regional agricultural economy."⁶ The gradual, nationwide shift away from railroad transport was a trend that profoundly affected the character of the Preserve. Today, the tracks of the spur are gone, but some of the original patterns can still be read on the land.

Character-Defining Circulation Associated with the NHL Period of Significance

- Circulation at Z Bar/Spring Hill Ranch headquarters, including but not limited to main entrance walk, perimeter stone walks and steps, barn ramps
- County road
- Trace of county road west of the north/south road
- Trace of former alignment of the north/south road

Character-Defining Circulation Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Two-track ranch roads and spur roads
- Main ranch road
- Circulation at Z-Bar/Spring Hill Ranch headquarters (see Chapter 3 for detailed information): main entrance drive, access and service drives, paths

⁶ Thomas Isern, "Farmers, Ranchers, and Stockmen of the Flint Hills" *The Western Historical Quarterly* XVI (No. 3, July 1985): 264.

- Lower Fox Creek School access road, path to privy
- Highway 177 (current alignment dating to 1956) and adjacent historic alignment

Features Missing from Periods of Significance

- Railroad spur connecting the corral area to the AT&SF
- Historic circulation patterns at Deer Park Place
- Historic circulation patterns at Lower Fox Creek School site

Non-Character-Defining/Not-Yet-Determined Features

- US Highway 50
- Tour Road gravel surfacing
- Z-Bar/Spring Hill Ranch headquarters parking lot, bus and RV parking area, concrete block terrace, interpretive trails (“Prairie and the People” walking tour trail, Southwind Nature Trail), connecting walks
- Lower Fox Creek School site parking

Vegetation

As noted previously, the tallgrass prairie of the Flint Hills uplands and the wet prairie of the bottomlands are—and always have been—the primary landscape characteristic of the Preserve. Ongoing investigation into the existing vegetative composition of the prairie ecosystem, and development of a means for enhancing the biodiversity and health, will likely reveal much about how grazing and annual burning have modified this vegetation community over the past 130 years. The prairie continues to support a range of grasses and forbs that in turn support insect, reptile, mammal, and bird populations. Historic records clearly indicate that the bottomlands have been cultivated since early settlement, and particularly during the NHL period of significance. As early as 1886, these areas were used to grow corn and other crops, as well as “tame grasses.” Fruit orchards and a small vineyard were also apparently sited in the Fox Creek bottomlands during the NHL period of significance.

Few invasive exotic species have as yet encroached on Preserve prairie vegetation. Cultivation of brome on the Fox Creek bottomlands is being phased out and the NPS and NPT have already initiated efforts to eradicate brome and restore bottomland prairie.

In addition to its effect on upland prairie vegetation, grazing has also had an impact on the riparian communities associated with the stream and creek margins as first recorded by government land surveyors in 1856. Cattle have traditionally undergrazed woodlands, maintaining them relatively clear of understory and ground cover vegetation. In recent years, cattle have been increasingly removed from areas abutting stream corridors. With less cultivation of the bottomlands, little collection of wood for fuel and construction occurring, and less frequent grazing, the woodlands along the stream corridors are far denser and cover a broader area than they have during periods of recorded history. Today, gallery forest along Palmer Creek, where cattle rarely are present, appears to be in relatively good condition. The riparian woods

along Fox Creek appear to be suffering from various ills, however, including erosion due to flooding and cattle access to the creek, overshading, and the deleterious impact of invasive alien plant species such as brome grass encroaching from the adjacent fields.

Cultural vegetation, or that which can be attributed to planting, today includes the Osage orange hedgerow in Two Section Pasture, and various trees, shrubs, and ornamental flowering plants in the vicinity of the Z Bar/Spring Hill Ranch headquarters. The Osage orange hedgerow likely predates the NHL period of significance. It may have been planted as early as 1860—if so, it is one of the few plantings that survives from the locally significant early settlement period.

Ornamental and climate amelioration plantings at the Z Bar/Spring Hill Ranch headquarters appear to survive from both the NHL and local periods of significance. The cedar windbreak is clearly visible on a ca. 1908 postcard of the headquarters as a substantial planting. Trees that complement the form of the stone edged terraces in front of the main house also appear relatively mature by that date. Some have clearly been lost to age and disease, and many that survive are in poor condition. Many of the existing ornamental shrubs and bedding plants around the house appear to post-date the NHL period, but may be associated with the later local period of significance.

Character-Defining Vegetation Associated with the NHL Period of Significance

- Tallgrass prairie vegetation over the majority of the site
- Riparian vegetation along stream corridors
- Cedar plantation, Z Bar/Spring Hill Ranch headquarters
- Shade trees around house and outbuildings, Z Bar/Spring Hill Ranch headquarters (cottonwood, walnut, elm)
- Osage orange hedgerow in Two Section Pasture
- Cultivation within bottomlands

Character-Defining Vegetation Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Cultivated brome grass within bottomlands
- Trees along fencelines
- Scattered trees at water sources

Features Missing from Periods of Significance

- Riparian vegetation along stream corridors (diminished)
- Crop fields along Palmer Creek bottomland, Fox Creek bottomland
- Orchard, Fox Creek bottomland
- Vineyard, Fox Creek bottomland

Non-Character-Defining/Not-Yet-Determined Features

- Ornamental shrubs, perennials, and bulbs at Z Bar/Spring Hill Ranch headquarters

Buildings and Structures and Structural Clusters

The Z Bar/Spring Hill Ranch headquarters is an outstanding example of a Flint Hills cattle ranch residence. Construction of this hillside complex of buildings represents the investment of outside capital in the Flint Hills and the transition from modest homesteads and farmsteads on government or railroad grants to impressive ranch headquarters. The Z Bar/Spring Hill Ranch headquarters exhibits high artistic design values from the 19th century for both its architecture and its landscape. It is a carefully conceived and conscientiously executed landscape that incorporates both domestic and agricultural uses in an imposing ranch headquarters and commands a splendid view of the Fox Creek Valley and Flint Hills.

The main house at Spring Hill Ranch was constructed in 1881. The original house was a three-story ell-shaped building with an attached curing room or summer kitchen. The house was constructed from locally-quarried limestone—square-cut stones with rough-hewn faces—under the direction of David Rettiger, a Strong City contractor. It is similar in style to the Cottonwood Falls courthouse, designed by John G. Haskell of Lawrence, Kansas. The house is a dramatic and extravagant work of residential architecture for the region.

Apparently, but with little documentary evidence, the root cellar, tunnel to the springhouse, and north and south wings of the porch were added to the house a few years after its construction. During the early 20th century, a rear porch was added to the house, the tower roof at the tunnel was removed, and concrete replaced a sod roof above the root cellar and tunnel. The outdoor patio was built much later, likely during the 1980s (for additional information, see the Historic Structures Report).

Outbuildings associated with the main house were built soon after, including the outhouse, the cistern, and icehouse/springhouse, all circa 1882. The rubble limestone bank barn, a three-story structure with a tripartite plan, is likely the largest extant barn in the state today, and was the second largest when constructed. The north side of the roof of the barn at Spring Hill held a large double-header windmill during the NHL period of significance, which was removed in the 1880s due to the damage its vibration appeared to be causing to the barn. The windmill pumped water, moved grain, operated a hay chopper, rootcutter, oil cake crusher, cornsheller, and a pair of cornburns.⁷ The barn appears to have remained in continual use, at least for storage, after the NHL period of significance, with little exterior alteration, until acquisition of the property by the NPT. Most of the nearby agricultural outbuildings are also attributable to the NHL period of significance, and Stephen Jones' ownership of the ranch. These include the stone bank barn, poultry and scratch houses, and a carriage house, all potentially established circa 1882.

Two sheds that are included in a line of attached structures that includes the chicken and scratch houses may be later additions. This collection of buildings has been variously altered during the

⁷ Dennis Domer and Michael Swann, "Vernacular Architecture Forum: Making Urban and Rural Landscapes on the Prairie Plains" (Lawrence: Vernacular Architecture Forum, 1996), 100.

20th century. Later additions to the complex that are attributable to the extended local period of significance also include a pole barn and a Quonset, both of which were removed in 2001, a ranch hand house, a concrete stave silo, as well as several metal shed structures located within the bank barn corrals. The ranch hand house may have been moved to the site, or constructed on the site as early as the 1890s; however, it appears to have been remodeled in the 1950s, obscuring evidence of its earlier construction period. A second silo that once stood next to the existing silo in the barnyard was removed during the late 20th century.

Deer Park Place also includes agricultural outbuildings that were established during the NHL period, and others that post-date it. The existing board-and-batten barn was constructed in 1887. A lithograph from that year indicates the presence of the barn, a nearby dwelling, and three or four other buildings, including a water tower. The barn appears to be the only surviving outbuilding from the NHL period of significance. Later additions to the complex include a hollow-tile barn and a chicken house constructed from rubble in the 1940s that are character-defining for the extended local period. While its date of origin has not yet been identified, a stone bridge that crosses Fox Creek near Deer Park Place appears to be constructed of local limestone in a manner consistent with local late-19th- and early-20th-century features, and likely survives from the NHL period of significance.

The Lower Fox Creek School House, first referred to as Mount Pleasant School, was built circa 1882. Like the residence at Spring Hill, and the bank barn, the school house was constructed under the supervision of David Rettiger. It was typical of other stone school house buildings within the county, of which there were twelve. The school remained in use until the early 1930s. Sheep were kept in the schoolyard after the school was closed. The school district was disbanded in 1946–47, after which ownership of the building reverted to the Z Bar/Spring Hill Ranch. The building was subsequently utilized for storage, including hay, which, along with a lack of maintenance, led to its deterioration. The original roof was lost during a storm. The original outbuildings associated with the school house during the late 19th and early 20th century—two privies and a coal shed—all appear to have been lost between the 1930s and the 1960s.

In 1968, fourteen Garden Clubs of the Mid-East District of Kansas conducted a limited restoration of the school house. They cleared out stored material, including hay, repaired the windows, patched the roof, and painted the woodwork and interior, and protected the building from further decay.⁸ The Garden Club may have been responsible for moving the extant single privy onto the site although the origin of this feature is currently not known.

Structural ruins associated with a possible early settlement residential complex, referred to as the Red House, survive in the southwestern portion of the Preserve. It was most likely the homestead of John Griffis, who purchased land in the area during the 1870s and 1880s. Sited on the side of a hill, the complex appears to have included a residence and possibly a barn. Stone walls likely enclosed pastures and farmyards. A spring box was constructed over a nearby strong-flowing spring during the 20th century as a water source for livestock.

⁸ Hal K. Rothman and Daniel J. Holder, “Tallgrass Prairie National Preserve Historic Resource Study” (Omaha: National Park Service, 2000), 131–32.

The lone extant structures within the pastures are two trench silos surviving from a group of four or five that were constructed on the ranch during the 1940s. Trench silos were considered to be more efficient and less expensive than other types available at the time. They were used to store silage, grain, and mineral supplements for yearlings on the ranch. One trench silo, located southeast of the headquarters on a site now covered by the widened Highway 177, was described as the largest in the county.

Extant structures associated with the former corral area, including a feed trough, a well with electric pump system, remnant corral pens, and remnant rail line grades suggest the repeated former use of this area for a variety of ranching needs. First established as a rail line spur connecting to a quarry site established by Barney Lantry, the site was later expanded during the 20th century to serve as a shipping connection for cattle. The rail line spur was eventually extended across the county road to accommodate longer runs of rail cars. A system of wooden corrals was constructed in conjunction with the rail line spur that held and directed cattle being loaded on and off rail cars. The complex at one time included pens, gates, chutes, ramps, scales, a scale house, a box car, and watering troughs and tanks, none of which survive today. Over time, use of the rail line spur declined, and was replaced by trucking uses. For a short time, the corral area continued to hold cattle that were loaded onto trucks. The portion of the corral area located to the north of the county road was later converted to a feed lot; the extant feed trough and well survive from this use. The area was apparently also used as a winter feed lot for a short time during the 1920s. A stone corral, which is no longer extant, is said to have existed in the vicinity of the currently fenced pasture near the well during that time.

Dams and impoundments constitute the other primary structure type located on the Preserve. Stock ponds began to be established in the region during the 1930s when water was scarce. Springs and drainageways were impounded with dams to develop the ponds. The ponds and dams are generally character-defining for the local period of significance. Pond construction increased after motorized earth moving equipment became available. Stone from the boundary and pasture walls was reused to form spillways and line dam margins. It appears that all except Pond #1, the Peyton Creek Dam constructed in the 1990s, contribute to the local period of significance. A few of the ponds are currently dry due to breached dams.

Character-Defining Buildings and Structures Associated with the NHL Period of Significance

- Z Bar/Spring Hill Ranch headquarters buildings and structures including: main house (1881), barn (1882), tunnel (1882), curing room/springhouse (1882), outhouse (1882), icehouse (1882), cistern (1882), scratch house, poultry house, carriage house (1882), corral (ca. 1882), retaining walls forming garden terracing
- Deer Park Place buildings and structures including: board-and-batten barn (1887), stone bridge (date of origin unknown)
- Lower Fox Creek School House (ca. 1882)

Character-Defining Buildings and Structures Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Z Bar/Spring Hill Ranch headquarters buildings and structures including: ranch hand house (rehabilitated ca. 1950s), silo (ca. 1940)
- Deer Park Place buildings and structures including: poultry house (ca. 1940s), hollow-tile barn (ca 1900-1950)
- Red House site spring box (1952)
- Corral and feedlot
- Grain silo
- Trench silos
- Dams #2-20, 22-26

Features Missing from Periods of Significance

- Z Bar/Spring Hill Ranch headquarters buildings and structures including: second silo, pole barn, Quonset hut, outbuildings behind ranch hand house
- Red House dwelling (ruin)
- Dam #21 (breached)
- Trench silos
- Tractor-loader building
- Lower Fox Creek Schoolhouse privies, coal shed
- Deer Park Place outbuildings

Non-Character-Defining/Not-Yet-Determined Features

- Z Bar /Spring Hill Ranch headquarters buildings and structures including: Sheds 1, 2, and 3, scale house
- Lower Fox Creek School privy
- Substation
- Well houses
- Gas House
- Dam #1 (Peyton Creek Dam)

Small-scale Features and Objects

There are no known surviving small-scale features associated with the early settlement period. Little is known about small-scale features that might have existed prior to the 1870s, although it can be imagined that there may have been different types of fencing and gates, water collection features, bridging features or culverts, and features for hitching and tying horses and cattle, and

stones for mounting horses. Some features, such as the network of stone fences, appear to have first been established in the early settlement period, but were likely expanded and increased during the NHL period.

Small-scale features surviving from the NHL period include: the extant system of stone boundary and pasture fencing; the limestone terrace wall, step, fence, and garden features associated with the Spring Hill Ranch headquarters main house; and the rubble edging associated with the former pond site near the barn. Little is known about missing small-scale features that may have existed within the Preserve during the NHL period. It is possible that they included additional sections of fencing, gates, corral areas, bridging or culvert features, and again features for hitching and tying horses and cattle, and stones for mounting horses. Snubbing posts apparently were present in various pastures at one time; one survives, although its date of origin is not currently known. The bottomlands to the east of the Z Bar/Spring Hill Ranch headquarters main house appear to have included an orchard and/or vineyard enclosed within a stone wall. A stone wall apparently edged the county road at one time as well. Neither of these walls survives.

Small-scale features that were established within the site during the later local period of significance include a variety of fencing types and gates, the corral area near the AT&SF rail line spur, watering troughs constructed of concrete and metal watering bins, and catchment basins, salt lick stones, boxcars, water pumps, spring boxes, and a low water crossing.

There has been an evolution in the use of fencing materials in the Preserve, incorporating different technologies and styles of fencing. At various times, stone, wood, wire, steel, and aluminum have been used in a range of combinations. Characteristic small-scale ranching features such as wing fences and tall field gates are also important to the visual environment.

Cattle guards were added in the 1990s. It is not clear whether they replaced previous, now-missing cattle guard structures. A flagpole and swing set were added near the main house at Z Bar/Spring Hill Ranch headquarters during the late 20th century, although the date of origin of these features is not currently known. Similar features were added at the Lower Fox Creek School House, perhaps in conjunction with renovation of the building in 1968. Retaining walls constructed of railroad ties exist near the bank barn. The date of origin of these features is similarly not currently known.

Since acquisition of the property by the NPT and NPS, there have been a number of small-scale features added, particularly in association with the Z Bar/Spring Hill Ranch headquarters, to accommodate visitor access and interpretation. These features include an interpretive kiosk, identity, wayfinding, and interpretive signage, benches, trash receptacles, lighting. The NPS has established a weather station within the Z Bar/Spring Hill Ranch headquarters precinct as well.

Character-Defining Buildings and Structures Associated with the NHL Period of Significance

- Fencing including stone fences
- Z Bar/Spring Hill Ranch headquarters features including limestone blocks forming edging and steps in terraced garden, decorative iron fencing, fountain basin, fishpond
- Rubble edging, including former pond site (ca. 1870–1900)

Character-Defining Buildings and Structures Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Fencing including stone fences, post-and-wire fences; Osage orange fenceposts
- Characteristic small-scale ranching features including concrete troughs, metal watering bins/catchment basins, salt licks, snubbing post
- Low water crossings
- Spring boxes
- Foundations at Deer Park Place, Lower Fox Creek School sites
- Boxcars
- Bison wallows
- Extant spur segments from AT&SF Railroad to north of corral area site

Non-Character-Defining/Not-Yet-Determined Features

- Cattle guards
- NPS signs
- NPS benches, trash receptacles, and overhead lighting
- Features at Z Bar/Spring Hill Ranch headquarters and Lower Fox Creek School, including flagpoles, swing sets, propane tanks, rain gauge, planting beds, railroad-tie retaining walls
- Culverts
- Concrete underpass
- Concrete pads
- Plastic bins

Utilities

There are no known utility features remaining from the NHL period of significance. The primary features known to have been present at that time was a telegraph/telephone line that is shown in the 1887 lithograph of the ranch headquarters, and possibly heating systems in the main house that relied on natural gas. Strong City is known to have had telephone service by 1885. As noted in the Historic Structures Report for the Preserve, “It is assumed that the Ranch House was heated by natural gas, based on the fact that there was natural gas in this part of Kansas, no electricity until the 1930s, and no propane.”⁹ In addition, “an 1882 article mentions that ‘soft and spring’ water was supplied to all apartments.”¹⁰

⁹ Quinn Evans Architects, DRAFT “Historic Structure Report; Tallgrass Prairie National Preserve” (Ann Arbor: prepared for the National Park Service, April 2003), 99.

¹⁰ Ibid.

Utilities associated with the later, local period of significance included gas collection features—gas wells, flowlines, and collection structures—telephone and electrical poles and lines, water pumps, wells, and cisterns.

Later additions include propane tanks, and septic drain fields near the main house and ranch hand house at Z Bar/Spring Hill Ranch headquarters. Plans are currently being finalized for a new water system to accommodate fire protection and potable water needs. The plans include storage tank and pump facilities, new water lines, and fire and yard hydrants.

Character-Defining Buildings and Structures Associated with the NHL Period of Significance

- None identified

Character-Defining Buildings and Structures Associated with the Local Period of Significance (in addition to NHL features, which are also included within the local period)

- Gas wells, flowlines, and structures
- Telephone and electrical lines
- Water pumps
- Cisterns at Z Bar/Spring Hill Ranch headquarters, and Lower Fox Creek School
- Well, former corral area

Features Missing from Periods of Significance

- Other gas wells and structures (capped)
- Telegraph lines from late 19th century

Non-Character-Defining/Not-Yet-Determined Features

- Wells, two, along Fox Creek bottomlands east of Z Bar/Spring Hill Ranch headquarters
- Septic leach fields, two, servicing ranch hand house, main house
- Overhead electrical transmission lines (N/S and E/W), Two Section Pasture
- Buried high pressure gas pipeline, E/W across southern half of Preserve
- Adjacent telecommunications line
- Electrical lines providing service to Z Bar/Spring Hill Ranch headquarters, three wells, Deer Park Place
- Propane tanks
- New water lines, storage tank, pump, and fire suppression systems

Integrity Assessment

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

Assessment of integrity is based on evaluation of the existence and condition of physical features dating from a property's period of significance, taking into consideration the degree to which the individual qualities of integrity are present. The seven aspects of integrity included in the National Register criteria are location, design, setting, materials, workmanship, feeling, and association. As noted in Bulletin 15,

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.

Assessment of Preserve integrity in accordance with these seven aspects reveals that the property possesses considerable overall integrity for both the NHL period of significance and the extended local period of significance. The Preserve retains much of its historic integrity because of the survival of the expansive prairie landscape, and the evidence of site-specific cultural responses to the natural environment. The prairie's all-encompassing character dominates the site: the broad horizons, golden grasses, and rolling rangeland evoke the eras of early settlement and the ranches of Jones and Lantry as easily as they do earlier and more recent periods. The zones of relative integrity are illustrated at the end of this chapter on *figure 89*. As is noted, the Preserve generally possesses a good deal of integrity for both periods of significance. The area around Deer Park Place and the former corral area have undergone more substantive change than other areas of the Preserve, which has served to diminish their integrity to a degree.

The Preserve also continues to reflect many aspects of its agricultural history, particularly the character-defining layout and arrangement of buildings and structures, continuity of agricultural

land use, circulation networks, and field and boundary demarcations that give the Preserve its distinct identity.

Because the NHL period of significance is a discrete and relatively short period set within a longer and broader local period, areas of the Preserve that have integrity for the NHL period generally possess integrity for the local period as well. There are places where features from the longer period of significance intrude somewhat on the integrity of the NHL period or where alterations, removals, or demolitions that occurred during a later period have diminished NHL period integrity. However, where features from different eras co-exist, such as at the Z Bar/Spring Hill Ranch headquarters, they are frequently distinct as products of their own time. This distinction helps avoid creating false impressions. In addition, these features contribute to an understanding of the evolution and continuity of the site, are likely significant in their own right, and do not necessarily detract from site integrity.

Integrity Assessment by Aspect

The Preserve retains substantial integrity of **location** for both the NHL and extended local periods of significance based on its continuing function as a ranch in the same location established during the 19th century.

The Preserve retains substantial integrity of **design** for the NHL period of significance as well as for the 20th-century portion of the local period of significance. Design integrity is strongest within the Z Bar/Spring Hill Ranch headquarters for the NHL period; the original design intent of the 19th-century headquarters landscape is not only still apparent, but is enhanced by a large complement of features surviving from the Jones period. Other surviving 19th-century structures, such as the Lower Fox Creek School House and the stone bridge near Deer Park Place, also contribute to integrity of design. As important as these individual examples of architecture or engineering is the survival of the overall spatial organization established by Jones and Lantry as depicted in the 1895 map of Lantry's holdings. The layout of the consolidated ranch is still evident and has continued to influence land use and site arrangement into the 21st century.

Later alterations that diminish the integrity of NHL period design include the loss of small-scale features associated with the terraces around the main house, construction of Highway 177, retaining wall alterations, renovations to the barn, silo construction, changes to the Z Bar/Spring Hill Ranch headquarters entrance road and stone fences in the vicinity of Highway 177 ca. 1908, and alterations to the corral area where Barney Lantry established a stone quarry and associated railroad spur line. Alterations that diminish the local period of significance include the removal of the Quonset, pole barn, second silo, and the later additions to the corral area along the railroad spur line.

Modifications to the Preserve landscape that contribute to the local period of significance, but not the NHL period, include the addition of stock ponds and changes in fencing patterns and materials. Fencing, which probably originated with the earliest settlers, contributes to an understanding of the enclosure movement and the agricultural/ranching context and is an important designed feature of the landscape. The evolution of fencing from stacked stone to post and wire, and the presence of both, many times in consistent locations, illustrates an important design element for both periods of significance that was adapted to temporal conditions.

The Preserve also possesses integrity of **setting** for both the NHL and local periods of significance particularly due to the consistency of the open prairie within the Preserve and along its margins. There are few intrusions that currently despoil the Preserve's setting. The prairie landscape, which provides the physical setting and geographic context for the Preserve, has defined and been defined by both prehistoric changes and historic management practices. The timeless setting of the Flint Hills has endured through the Preserve's successive periods of cultural occupation; the limestone outcrops, varied topography, sweeping, panoramic views and vistas, waving grasses, and cottonwoods shading creeks and streams continue to contribute to the overall integrity of setting.

Integrity of **materials** for the NHL period is derived largely from the Preserve's surviving limestone buildings, structures, and fencelines, the indigenous vegetation on upland slopes and in creek bottoms, ornamental vegetation at dwelling locations, and from the natural features that survive including limestone outcrops, undulating landform, and water resources. The survival of deciduous and coniferous ornamental vegetation at the Z Bar/Spring Hill Ranch headquarters, the Osage orange hedgerow within Two-Section Pasture, and the riparian woodland along Fox and Palmer Creeks enhances integrity of materials for both periods. Changes in the use of materials occurred between the NHL and later local periods of significance, primarily the abandonment of the use of stone to construct pasture and other fences, the paving of major roads, such as the surrounding highways, with asphalt rather than stone or hard-packed earth, and the construction of new buildings from materials such as concrete and metal. Changes in material that post-date the local period of significance include the loss of the rail line spur near the corral area, the metal Quonset atop the knoll behind the Z Bar/Spring Hill Ranch headquarters, and one of the concrete silos near the barn. For the local period of significance that extends to early settlement, the fabric of the original settlers' dwellings has vanished, diminishing integrity for this portion of the period.

Integrity of **workmanship** is particularly linked with integrity of materials. The Preserve's character-defining stone buildings and structures, particularly the Z Bar/Spring Hill Ranch headquarters, Lower Fox Creek School House, Fox Creek stone bridge, and the Preserve's network of native limestone fences, support integrity of both material and workmanship. While these primary landscape features survive, most of the craftsmanship of small-scale features from the NHL period is no longer evident since few of these features survive, diminishing the integrity of workmanship over time. The loss of stone fencing at key locations detracts from integrity for both periods. Workmanship for the later local period of significance is of lesser quality, as evidenced in the rebuilt stone walls, buildings and structures, and metal fences from the mid-20th century. The later wire fences, utilitarian barns, and other features that post-date the NHL period of significance lack the attention to detail and craftsmanship evident in earlier construction.

The Preserve possesses integrity of **feeling** for both periods of significance due to the surviving open pastures that dominate the site, the survival of the Z Bar/Spring Hill Ranch headquarters, Lower Fox Creek School, and system of pasture organization. The Preserve's integrity of feeling is diminished to a degree by the loss of the corral area and rail spur; the daily agricultural activities centered in and around the barns at the Z Bar/Spring Hill Ranch headquarters and Deer Park Place; and the activity and animation that would have been associated with cattle drives and cattle transport including the sights, sounds, smells, and other qualities of ranch life. Continuing grazing uses through leasing helps to perpetuate the integrity of feeling within the Preserve.

The landscape of the Preserve possesses integrity of **association** for both the NHL and local periods of significance. The Preserve is closely associated with prominent 19th-century ranchers Stephen Jones and Barney Lantry and their establishment of large-scale ranching on Preserve lands. It is also associated with other Chase County residents from the NHL period due to the survival of the Lower Fox Creek School site and St. Anthony Cemetery, which were significant in community life. The Preserve also retains integrity of association with 19th-century Euro-American pioneers who settled within the Preserve due to the survival of dwelling sites such as Red House; the Depression-era diversified farming and ranching of the Benninghovens and the 20th-century Davis/Z Bar Ranch based upon the survival of later additions to the Z Bar/Spring Hill Ranch headquarters.

In addition to its agricultural resources, the Preserve also includes resources such as the Z Bar/Spring Hill Ranch headquarters and Lower Fox Creek School that are associated with domestic settlement and education in the Flint Hills. They provide glimpses into the cultural and social life of Flint Hills families in the late 19th and early 20th centuries. These combined natural, agricultural, domestic, and educational resources represent the full spectrum of associated human settlement within the region of the Preserve. They provide tangible associations for interpreting the evolution of the Flint Hills from prehistoric times through the late 20th century.

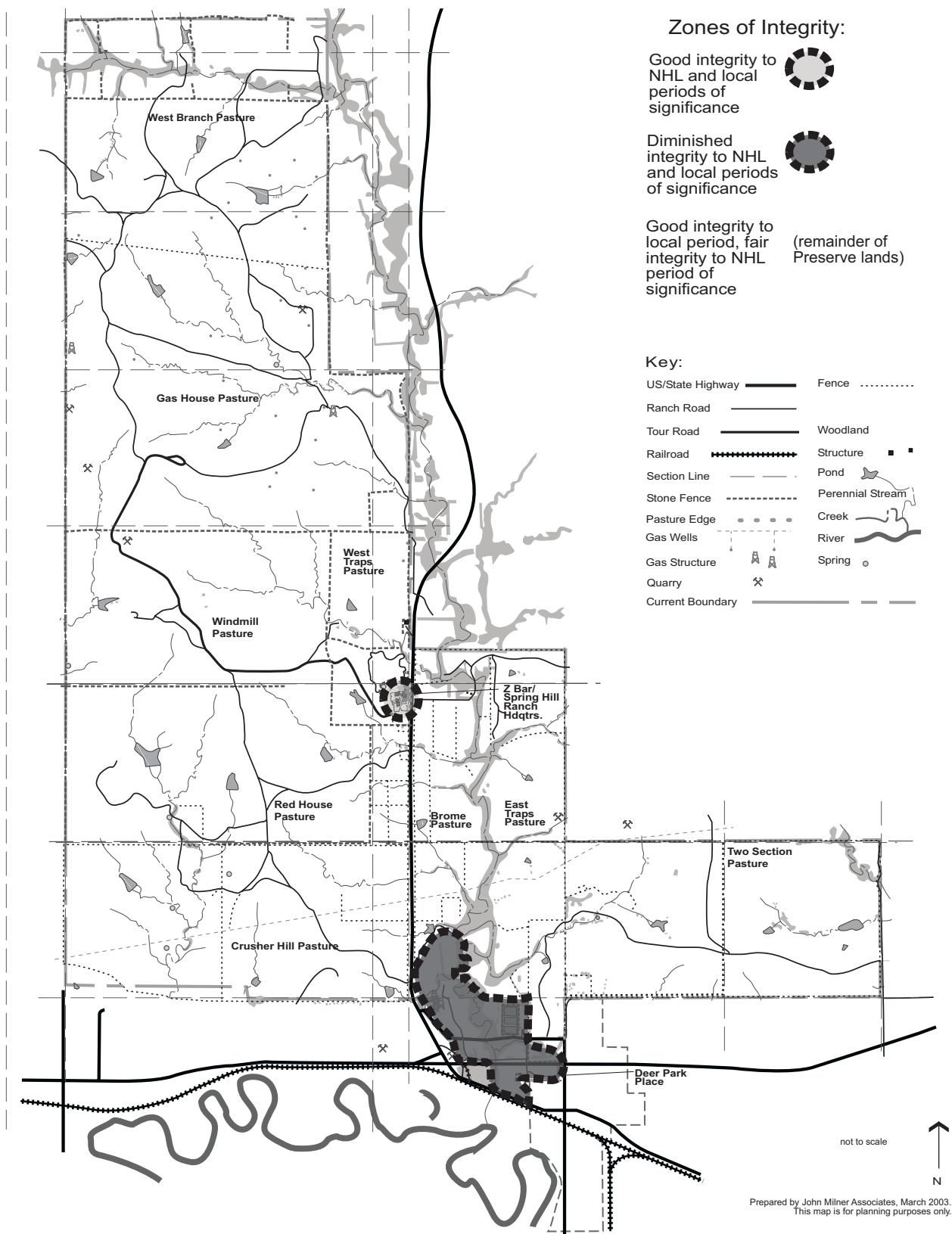
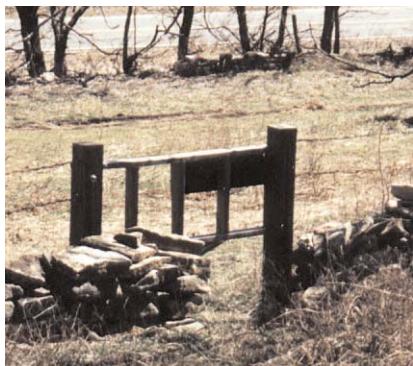


Figure 89.
Zones of Integrity

Cultural Landscape Report

October 2004

Chapter 5 / Summary of Management Issues



5. SUMMARY OF MANAGEMENT ISSUES

Introduction

This chapter provides a summary of the landscape resource management issues with relevance to the CLR that are currently of concern to the Preserve. The management issues documented in this chapter are based on discussions between Preserve Superintendent Steve Miller, former Site Manager John Donaldson, regional Historical Landscape Architect Sherda Williams, and John Milner Associates, Inc. (JMA) Cultural Landscape Report (CLR) project team members. Also included are observations made during field investigations, and review of existing Preserve planning documents. The issues relevant to the CLR have been taken into careful consideration during the development of the treatment plan conveyed in the next chapter. Other related issues which are better addressed through related studies are also identified below, but not explored in the treatment plan.

Over-arching Management Issues

In support of the development of this chapter, Superintendent Steve Miller identified three broad, over-arching issues affecting all aspects of Preserve management. These include:

- careful consideration of the special needs of this public/private partnership in which the National Park Service (NPS) will own only a small portion of the overall Preserve, but will be responsible for the management of that portion of the Preserve as well as the remainder of Preserve lands under the ownership of the National Park Trust (NPT);
- careful consideration of the rights and concerns of adjacent property owners as the management of the site evolves from a privately-managed cattle ranching operation to a historic site providing interpretive, educational, and recreational opportunities to the public; and
- recognition of the dual nature of the Preserve's mission—preserving and enhancing a nationally significant remnant of tallgrass prairie ecosystem and the processes that sustain it; and preserving and interpreting the cultural resources of the Preserve and the long-standing heritage associated with the ranch property through the present—while ensuring that new development will be minimal and designed to avoid intrusion into and degradation of important views and cultural landscapes.

Management Concerns by Topic

Prescribed Burning/Use of Fire to Manage Grasslands

- How will changes to land management relating to the enhancement of biodiversity affect the cultural landscape?

- If a mosaic approach to burning and grazing is adopted, what effect will this have on the character of the site, its cultural landscape values and integrity, and the viewsheds of primary visitor use areas?
- If burn areas are designed to conform to natural features and not existing pastures in the future, how will this affect the integrity of the cultural landscape?
- What criteria should be considered when developing vegetation management plans?
- How should areas of cultural concentrations, such as the Z Bar/Spring Hill Ranch headquarters, and Lower Fox Creek School site, be treated to protect against unwanted burning?
- Based on knowledge of historic conditions, what guidelines should be considered when addressing fire management around these areas?
- What are the areas of cultural sensitivity to be protected when developing fire, vegetation, bottomlands, visitor use, and other resource management plans for the Preserve?

Visitor Safety

- Which cultural features of the landscape—for example boxcars, grain silos, well sites, spring boxes, occupation site ruins—that might pose a threat to visitor safety, contribute to the ranching legacy of the site?
- How can the threats to visitor safety be mitigated?

Visitor Use / Preserve Program

- Which cultural landscape features contribute to the understanding of the site's ranching legacy?
- What relative levels of integrity do these features retain?
- Which features are particularly sensitive to change and require special protection against new visitor uses?
- Which cultural landscape features that contribute to the site's ranching legacy and have a high degree of integrity present a low potential for degradation when subjected to visitor uses?
- Which features, systems, or components of the landscape might accommodate recreational uses?
- Where should visitor uses and interpretive activities be concentrated?
- Are there any areas that should not be open to the public due to safety and resource protection considerations?

- Should horseback riding be permitted?
- If so, would new trails need to be built?
- How can the potential impacts on natural and cultural resources be mitigated?
- What do we know about the field between the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School House?
- What was the landscape used for historically?
- What cultural landscape features exist there? Should the Southwind Trail remain? Should the grassland be grazed, burned? This area is currently being used as a demonstration area, with fire being used as a tool of vegetation management without grazing. Is this the most appropriate location for this demonstration?
- Over which portions of the Preserve is it most important to retain the existing grassland character? What are the alternative methods for retaining this character? Do they include mowing?
- How should croplands be established and/or maintained to interpret this component of the site's ranching legacy and other settlement patterns?
- If a new visitor contact facility is developed, what design guidelines for building massing, materials, siting, lighting, etc. would fit with an understanding of the cultural landscape based on the CLR? If so, where?
- How will the Preserve address the need for local/regional recreational use? Which portions of the Preserve are best suited to recreational uses? Which types of recreational uses are appropriate for the Preserve, given the management goals outlined in the General Management Plan (GMP)?
- What would be the potential impact of overnight camping on natural and cultural resources?
- Should missing or deteriorated features be reconstructed or rehabilitated?

Z Bar/Spring Hill Ranch Headquarters/Lower Fox Creek School House/Deer Park Place Areas

- How will restroom facilities be made available to the public within visitor use areas?
- What should replace the current portable toilets at the headquarters area?
- How should current drainage problems around the main house be addressed?
- If failure occurs within the garden terrace retaining walls, how should the failure be mitigated?

- Should parking continue to be available near the Z Bar/Spring Hill Ranch headquarters? If so, how much and where? If a visitor contact facility is developed, should primary visitor parking occur only at the facility, with public transportation provided to visitor use areas?
- Where should parking be established at the Lower Fox Creek School site? Will the building be open to the public?
- A Historic Structures Report is being prepared for the Z Bar/Spring Hill Ranch headquarters main house. Water damage has already occurred to the limestone due to seepage. Identify issues?
- How can water be carried away from the house without negatively affecting historic landscape features such as the garden terraces?

Circulation

- Which roads contribute to the ranching legacy of the Preserve? Which roads should be retained across the Preserve based on their historic value and current usefulness? Will any new trails or roads be needed? Will two-track roads be sufficient for maintenance in areas not open to the public? How should roads be improved or surfaced in areas open to the public?
- Should roads that are no longer necessary for Preserve operations be converted into pedestrian trails?
- How should the interpreted buildings and structures at the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School site be made ADA accessible? What surface materials should be used on pedestrian trails, including accessible trails?
- If the Kansas Department of Transportation cedes a portion of the Highway 177 easement to the Preserve, should the original road grade be used for a new internal circulation route?

Small-scale Features

- Which historic fencelines contribute to the ranching history of the site? Where should fencing be retained and maintained?

Archeological Resources

- Areas currently undergoing erosion associated with known archeological resources need to be stabilized to prevent further losses. Identify issues.
- Archeological sites need to be protected from visitors, potential looters, and from land management practices such as bison and cattle grazing and prescribed burning. Identify issues.

Water Resources

- Which stock ponds survive from historic periods? Which ponds contribute to the history of cattle ranching on the site? How should features, which contribute to the site's ranching history be protected, or potential threats or impacts from new uses be mitigated?
- Where were stream crossings historically located?
- Which spring boxes and springhouses contribute to the site's ranching history? How should potential threats or impacts from new uses be mitigated?

Bottomlands

- What is the best method for providing access to bottomland resources (i.e. boardwalk type trail)?
- Should the farm pond established for flood control in the Fox Creek bottomland near the former stockyard site be retained?

Bison

- When a new joint cattle/bison handling facility is developed, what guidelines should be applied to its siting, design, and materials?

Land Use Rights

- What should happen to current mineral rights leases? Should they be purchased? Should gas pipelines be removed?
- Should current grazing leases be bought out? If so, when?
- Can the overhead electrical lines ever be relocated underground?

Adjacent Lands

- Chase County does not have a planning department or zoning ordinance. Strong City does have a planning committee. What types of efforts should be made to guide potential incompatible development of Preserve and adjacent lands, including commercial service development along highways leading to the Preserve?
- Which viewsheds are important to the setting of the ranch's cultural landscape?
- How can important viewsheds, open spaces, and the region's character be maintained?

- Could/should St. Anthony Cemetery acquire additional adjacent lands currently in NPT ownership for expansion?
- How should the Preserve participate in, or guide the Audubon/Kansas Department of Transportation native species planting program for the Highway 177 Scenic Byway?

Chapter 6 / Treatment Recommendations



6. TREATMENT RECOMMENDATIONS

Introduction

This chapter, which focuses on treatment recommendations for the Tallgrass Prairie National Preserve cultural landscape, presents site managers with an overall vision for the property that is intended to guide long-term management of cultural, natural, and historic resources, and related issues of landscape interpretation. This treatment plan is concerned particularly with the identification, preservation, and protection of existing natural, cultural, and historic resources. The treatment recommendations that follow address these needs by identifying an overall approach to the protection, preservation, and maintenance of all Preserve resources, and providing a body of specific recommendations that support it.

The chapter is divided into two sections: Recommended Treatment Approach, and Treatment Plan. These are followed in Chapter Seven—Implementation Recommendations—with projects that suggest the means for implementing the treatment plan.

The first section—Recommended Treatment Approach—outlines the alternatives recognized by the Secretary of the Interior for treating historic landscapes. The relevance of each alternative to the Preserve landscape is discussed. A single alternative is selected as the primary approach for the treatment of the Tallgrass Prairie National Preserve landscape, the rationale for the selection is explained, and the goals and objectives to be met through treatment are described.

The second section—Treatment Plan—summarizes the recommendations made in this CLR for managing the Preserve's resources in graphic and written form. The management and design recommendations that comprise the plan are organized by management zone. The management zones identified for the Preserve are based on resource types, levels of significance and integrity, and the management areas presented in the Preserve General Management Plan (GMP).

Within each management zone, a specific strategy for landscape management is outlined. Written recommendations that support the strategy are organized in accordance with the landscape characteristics utilized in earlier chapters of this CLR. These written recommendations are illustrated on maps and diagrams.

Identification of the Primary Treatment Approach

The Secretary of the Interior currently recognizes four appropriate treatment alternatives for historic landscapes: preservation, rehabilitation, restoration, and reconstruction. These are defined and discussed in the National Park Service (NPS) guidance document *Director's Order 28*, as well as *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, as follows:

Preservation: the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Includes stabilization work, where necessary, as well as ongoing preservation maintenance and repair of historic materials and features.

Rehabilitation:	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.
Restoration:	the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by removing features from other periods in its history and reconstructing missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.
Reconstruction:	the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

The primary recommended treatment for the Tallgrass Prairie National Preserve landscape is **rehabilitation**. Rehabilitation meets the goals and objectives of the Preserve's GMP by preserving and stabilizing features of the historic ranchlands landscape while also allowing for new uses such as expanded visitor access and interpretation, prairie biodiversity enhancement, and the reinstatement of bison herds. With rehabilitation, new design and management practices within the historic landscape must be sensitive to the nature of a resource's character, particularly the qualities that render it significant. Wherever possible, historic features and land uses should be retained in support of the complex nature of cultural use over time; generally, however, the highest priority will be placed on preserving the features that contribute to the NHL period of significance.

Preservation was considered and rejected due to the overly restrictive nature of the approach when taking into consideration the new uses proposed in the GMP. For example, adopting a preservation approach to landscape management at the Preserve would not allow for the establishment of new features and systems to accommodate visitor access and interpretation, the reintroduction of bison, and prairie biodiversity enhancement.

Restoration and reconstruction were also considered inappropriate treatment approaches for the overall Preserve landscape. Both of these approaches assume, as a prerequisite, that sufficient documentation exists to accurately portray a lost historic condition. At this time, it does not appear that there are documentary sources detailed enough to support restoration or reconstruction of the cultural landscape present in earlier historic periods.

Certain aspects or areas of the Preserve landscape are particularly sensitive to change and disturbance due to human use. These aspects merit more restrictive treatment. Because rehabilitation allows for stabilization, protection, and preservation of historic resources, in addition to the limited accommodation of new uses, this CLR recommends preservation of archeological resources *in situ*, unless a compelling research question or informational need justifies disturbance or excavation, or mitigation to accommodate unavoidable change is necessary.

Guidance Provided in the General Management Plan

Recommendations for both rehabilitation and preservation are found throughout the Preferred Alternative in the GMP, which focuses on the integrated management of natural and cultural resources. The challenge of this integrated approach lies in the establishment of an appropriate balance among the needs of the resource types within each of the management areas. Both natural and cultural features will need to be considered individually as well as components of larger systems for the contributions that they make to the significance and integrity of the Preserve.

The GMP identifies four management areas to accommodate the interpretive and resource management goals developed for the Preserve: Visitor Information and Orientation, Flint Hills Ranching Legacy, Day Use, and the Prairie Landscape.

The **Visitor Information and Orientation Area** consists primarily of visitor and administrative facilities located near the junction of Highway 177 and US Highway 50, or in closer proximity to Strong City. As the “first stop” for visitors at the Preserve, the Visitor Information and Orientation Area will serve multiple functions, some of which are not presently accommodated at the Z Bar/Spring Hill Ranch headquarters.

The **Flint Hills Ranching Legacy Area** extends over the landscape defined by the view from the Z Bar/Spring Hill Ranch headquarters, and the land between the complex and the Lower Fox Creek School. This area will emphasize the cultural components of the complex that express the history of ranching. Historic breeds of domesticated livestock and historic crops will be introduced to heighten interpretation. Buildings and structures located within the area will be treated in accordance with this goal, interpreted, and, in some cases, adaptively reused. Portions of bottomland associated with the Fox Creek corridor will be restored to prairie vegetation.

Extending over the lands east of the Fox Creek bottomland and the agricultural fields adjacent to the east/west county road, the **Day Use Area** will accommodate visitor uses that highlight the tallgrass prairie, American Indian culture, and ranching. Visitation to this area is expected to be moderate to heavy. Cattle will be the dominant grazing animals. Archeological sites and cultural features will be documented, protected, stabilized, and protected as needed. Non-motorized day use activities will be permitted. This area’s proximity to Strong City may encourage private partnerships and the development of concessions.

The fourth and final management area—the **Prairie Landscape Area**—encompasses the majority of the western half of the Preserve. Within this area, management of the prairie will be emphasized through the use of livestock, including domestic cattle and re-introduced bison. This area will possibly allow for guided, motorized visitation, and limited backcountry hiking and camping. Significant archeological sites and cultural features, including roads, will be identified, documented, and evaluated. Consideration will be paid to allowing certain cultural resources to deteriorate. New structures and features will include a dual-purpose handling facility for bison and cattle, a new access road leading to it, and possibly wayside exhibits. Hiking routes will follow existing roads and paths, and stream crossings will be improved or provided where necessary.

Treatment Issues, Goals and Objectives

This section summarizes the treatment issues that pertain to different landscape characteristics and management concerns within the Preserve. It is intended to lay out the opportunities and constraints associated with implementing the treatment approaches established in the GMP and in the introductory sections of the CLR treatment plan above.

Spatial Organization and Views

Spatial division of the landscape by fencing is one of the most important character-defining characteristics of the Preserve landscape, which also contributes to the NHL period of significance. Future treatment should respect the existing patterns of spatial organization and the availability of views by maintaining these patterns and avoiding the development of new clusters of structures, particularly within important viewsheds.

Landform and Topography

The Tallgrass Prairie National Preserve landscape, with its prominent knolls, stone outcrops, high points with commanding views, and sinuous, etched drainageway corridors, has been a constant character-defining feature of the region for thousands of years. The distinctive character of the site, and the long-standing cultural uses associated with its geomorphology and related vegetation communities provides one of the greatest interpretive resources for the Preserve. Future treatment should protect the integrity of the landform and topography of Tallgrass Prairie National Preserve. New site development should be designed to fit the existing landform and topography, lie lightly on the land, and avoid unnecessary cut and fill.

Vegetation

Though management practices aimed at sustaining traditional cattle ranching activities have no doubt altered the character and composition of the prairie ecosystem since the mid-19th century, the basic pattern of open tallgrass prairie and wooded riparian corridors survives from historic and prehistoric periods. The GMP suggests interpreting a portion of the site as a prairie as it existed before ranching, and another portion to reflect its cultural role as a cattle ranching operation. These goals would entail rehabilitation of pre-settlement vegetation patterns over a portion of the Preserve, and preservation of existing patterns over the remainder. Maintenance of traditional cattle ranching practices should occur primarily within those areas that are intended for interpretation of the ranching heritage of the Preserve, particularly within the Flint Hills Ranching Legacy Area identified in the GMP, and as much of the Prairie Landscape Area and Day Use Area as possible where cattle ranching will not conflict with other uses. Retaining this land use enhances the integrity of the historic Preserve landscape. In areas where cattle ranching will continue, the grasslands should be perpetuated using traditional burning practices. The challenges inherent in this approach include protection of cultural resources relating to ranching within areas slated for prairie diversity enhancement, and of natural resource values within areas where traditional ranching is to be interpreted. Scientific study and the collection of empirical data will be a necessary component of the methodology for enhancing prairie community diversity. Vegetation management has the potential to affect water resources, water quality, and cultural resources. Furthermore, historic features and land uses—including vegetation patterns and features affected by vegetation—should be retained wherever possible to ensure protection of our cultural heritage.

Within the Z Bar/Spring Hill Ranch headquarters, windbreak plantings and ornamental trees and shrubs have become overmature or are in poor condition, and are beginning to lose their integrity. As these individual specimens deteriorate and become hazards, those specimens that are clearly associated with the National Historic Landmark (NHL) period should be replaced in kind. Other plants that are not associated with the NHL period should not be replaced. In the meantime, every effort should be made to protect extant vegetation from fire, mechanical injury, and loss due to untreated disease or insect infestation. The objective within this area is to preserve the NHL period character and appearance of vegetation as much as possible, and replace it in-kind if lost.

Natural Systems

The Preserve includes substantial natural resource components, such as Fox and Palmer Creeks, numerous springs and seeps, riparian woodlands, wildlife habitat, bottomland and upland tallgrass prairie communities, rock outcrops, and expansive views. The treatment of natural systems affects water and air quality, soil erosion, wildlife habitat and movement, interpretation of the historic landscape, and land use.

Because the enhancement of biodiversity is a Preserve goal identified in the GMP, and contemporary approaches to enhancing biodiversity differ from historic land management practices, any treatment plan that prioritizes these approaches will result in some change to the appearance of the historic landscape. For example, enhancement of biodiversity will likely entail changing cattle grazing and prescribed burning regimes. Both of these will alter the homogeneity and traditional visual character of prairie vegetative cover and the presence of cattle over the extent of the Preserve landscape. Future management practices within the Preserve should entail striking a balance between historic and natural resource values. The challenge will be to create a new or hybrid approach which respects historic land uses and resources and yet enhances the natural environment.

Another major consideration is protecting water-related systems, which are closely tied to vegetation communities. The proposed approach to protection of riparian systems is maintenance or establishment of vegetative buffers and exclusion of livestock from stream and pond margins. Various strategies are available to support this goal; for example, water quality would be enhanced by preventing grazing populations from accessing perennially wet areas and stream corridors. Little is currently known about where stream crossings were located during the periods of significance, with the exception of the stone bridge associated with the County Road at Fox Creek. This CLR recommends that the majority of future Preserve circulation, both pedestrian and vehicular, utilize existing two-track ranch roads. Where two-tracks cross perennial stream corridors, this CLR recommends establishing systems with the lowest impact possible on stream flow. For pedestrian systems, this may include stepping stones; for vehicular circulation, low water crossings are recommended. During periods of flooding, it is recommended that visitors avoid back-country hiking. Within interpreted bottomland areas, two alternatives for circulation systems should be considered. The first is establishing a trail surface that can survive periodic flooding and allows free movement of water across its surface; the second is a wooden boardwalk system.

Prescribed Burning /Use of Fire to Manage Grasslands

The Preserve's plan to introduce a mosaic approach to prescribed burning will have an impact on the Preserve by changing the appearance, character, and integrity of the historic landscape. This management strategy will lead to a new visual character for the site and a regime that is distinct from the traditional activities practiced on neighboring ranches, as well as from prehistoric cultural practices. The viewsheds of primary visitor use areas will be visibly altered as broad expanses of once uniformly managed prairie become more irregular, and as the fencelines and township/section/range divisions are replaced by natural features as the organizing system for pastures. In support of the maintenance of character-defining features, traditional burning practices should be continued within the Flint Hills Ranching Legacy area at a minimum wherever interpretation of ranching traditions is the focus. It is also recommended that the Preserve consider utilizing landform as it relates to viewsheds to determine the configuration of burn patterns; it may be possible to use ridgelines as the breaks between burn areas thereby retaining a cohesive view of prairie vegetation within each internal space. Careful consideration must be paid to the potential effects of less frequent burning on fuel loads, and the impact of potentially hotter, more intense fires on cultural features. The cultural areas that should be protected against prescribed burns include the Red House site, the corral area, Deer Park Place, the settlement site within Two Section Pasture and the Osage orange hedge. Mowing of grasslands may be necessary to ensure visitor safety and compliance with local ordinances in areas adjacent to road corridors.

Visitor Access

The primary visitor activity and interpretive areas of the Preserve will include the Flint Hills Ranching Legacy area in and around the Z Bar/Spring Hill Ranch Headquarters, the Lower Fox Creek School, and the former Corral Area, as well as the tour bus route, Preserve overlook, any

trails that are established for hiking, and any recreational features that may someday be associated with the Day Use area. While recreational use is a part of the Preserve's mission, recreation should be introduced in a way that respects the delicate nature of the tallgrass ecosystem and impacts the land as little as possible. It should never take priority over resource protection.

At the Preserve, the GMP Preferred Alternative identifies the Day Use Area as the site most appropriate for recreational uses. Any recreational uses allowed in the area should be carefully considered before they are established. Field sports such as soccer or baseball that require extensive grading, the introduction of maintenance-intensive, cool season non-native grasses, and vertical features, are incompatible with the historic character of the Preserve and should not be established. Extensive parking and access road development that would be required for such activities also conflicts with the goals of Preserve protection. Recreational activities like hiking, camping, and fishing, however, are far more compatible uses that could be carefully accommodated within the Day Use area.

Universal accessibility should also be carefully considered. In some cases, it may not be possible to provide ADA accessibility to all interpreted Preserve features and resources. Alternative interpretive experiences should be provided in cases where the establishment of accessible routes will threaten integrity. Access to resources within zones of high integrity, like the Z Bar/Spring Hill Ranch headquarters, must be carefully designed not to detract from the historic setting.

Visitor safety within the Preserve is also of concern to the NPS and National Park Trust (NPT). Former ranching features, such as boxcars, silos, well sites, spring boxes, quarries, and site ruins, that are character-defining for the locally significant ranching period should be evaluated for their threats to visitor safety. All literature provided to visitors should note the resources and sites where care should be taken. Signage should be posted in and around these locations to remind visitors to take care when accessing them. In the case of cultural site ruins, it will be preferable to fence sensitive resources to limit access by visitors as well as cattle. The design of trail systems should take into consideration whether or not to provide access to sensitive resources, and to resources that might serve as an attractive nuisance and a threat to visitor safety. Resources that may need to be restricted from visitor access include the Red House site, and sites in the northwestern section of the Preserve in the vicinity of Palmer Creek.

Circulation

Much of the circulation system present within the Preserve relates to ranchland access and management. Road alignments and road prisms, as well as surfacing materials, are an important character-defining feature of the Preserve. This CLR recommends that these existing roads be retained and adaptively reused, in accordance with the goal identified in the GMP of limiting new interventions within the site. The challenge of enhancing visitor access to Preserve features, while adaptively reusing existing circulation features, will be to ensure that the resources are not changed in ways that result in a loss of historic character. It is also important to ensure that reuse of existing roads does not cause damage to surface and subsurface resources. Preserve roads should be repaired and maintained as needed. Replacement should be in kind. The design of any necessary changes or upgrades should respect the rural vernacular character of the Preserve.

Buildings, Structures, and Small-scale Features

Each of the buildings, structures, and small-scale features present within the Preserve exemplifies the evolving nature of cattle ranching in the Flint Hills. The Z Bar/Spring Hill Ranch headquarters in particular includes both high-style and vernacular buildings and structures. Individually they each support interpretation of an aspect of the site's history. Careful consideration should be paid to the

removal of any building or structure within the Preserve; removal should be undertaken only after issues involving interpretative potential, visitor safety, significance, integrity, mitigation, and potential for reuse have been evaluated in detail. Features that are in poor condition should be replaced in kind whenever possible.

By the same token, reconstruction and re-establishment of missing buildings and structures known to have existed during either period of significance must be considered carefully before implementing. Currently, it appears doubtful that documentation exists to support the careful depiction of any features missing from either period of significance. Additionally, reconstruction of missing features is not compatible with the rehabilitation treatment approach identified for the Preserve. Consideration should be paid instead to developing creative interpretive exhibits that illustrate the role and spatial relationship of missing features within the context of the current Preserve landscape.

Over time, it may be necessary to construct new buildings and structures within the Preserve to support visitor access, interpretation, site administration, management, and maintenance, and cattle and bison handling.

New Design and Construction

New features to support interpretive, management, and visitor access functions at the Preserve should be added without altering existing features or adversely affecting the landscape's rural, agricultural character. Features that facilitate access and interpretation should be designed in such a way as to minimize adverse impacts on the character and features of the landscape. Larger facilities, such as the proposed visitor contact center and cattle/bison handling structure, should be designed to be as non-intrusive as possible while allowing for accessibility and safety. Whenever possible, keeping in mind visitor experience and safety, utilize existing off-site facilities. Limit the construction of new facilities to those that are absolutely necessary. Visitor restroom facilities will be accommodated in any new visitor contact facility established. Restroom facilities will also be necessary within the Z Bar/Spring Hill Ranch headquarters area. Establishment of other facilities should be limited, and accommodated within temporary structures that do not require founding.

Necessary buildings and structures should be sited out of primary and character-defining viewsheds. Low buildings situated below the brows of ridgelines or within valleys would support view protection. The design of a cluster of smaller buildings is preferable to the establishment of one very large building. Based on local traditions, groups of smaller buildings should be clustered tightly together and aligned to conform to orthogonal patterns. It is preferable to situate new structures relatively close to existing major road corridors to avoid the establishment of new roads. New buildings and structures should be compatible with local traditions of design and material, and constructed of locally-available and indigenous materials such as stone and wood. The design of new buildings and structures should be sympathetic to local traditions in terms of scale, massing, roof form, and details. New buildings and structures should be situated to lie lightly on the land, minimizing soil disturbance, particularly cut and fill. Sustainability should be considered in the choice of materials and energy use; consider incorporating passive solar energy conservation strategies into the design of new buildings and structures. Also consider the local climate in the siting and design of buildings, taking into consideration solar orientation, heat gain, shading, prevailing winds, and seasonal average temperatures. Minimize the footprints of new buildings and structures by optimizing use and flexibility of both indoor and outdoor spaces.

Recreational Uses

Hiking is a visitor use that is wholly appropriate for the Preserve. Hiking trails should utilize existing two-track ranch roads wherever possible. Establishment of new roads or trails to accommodate new uses should be kept to a minimum. Careful consideration should be paid to the issue of visitor safety when proposing trail routes that traverse pastures used to graze cattle or bison. Overnight camping is another visitor use that is compatible with the goals of Preserve managers and the site's resources. Locations for overnight camping should be identified and regulated by the Preserve. Trails providing access to the camping areas and the areas themselves should avoid sensitive cultural and natural resources that could be damaged by individuals accessing, disturbing, and potentially damaging the resources. Open fires should be strictly forbidden.

Fishing could relatively easily be accommodated within the Day Use Area in Pond #1 located in Two Section Pasture. Access to the pond area by vehicles should be kept to a minimum. Any new access route or parking area should remain limited in size, and as close to the Preserve boundary as possible. Other developments associated with fishing uses should also be kept to a minimum and designed to be as visually unobtrusive as possible.

Throughout history, from the American Indian bison hunters up to the ranch hands of the 20th century, horseback riding has been a traditional way of experiencing the prairie. While horseback riding could be considered an appropriate activity at the Preserve from a historical viewpoint, recreational equestrian use of the site today presents several important issues that must be considered before such an activity can be permitted.

First, the presence of horses on a trail system requires either a dedicated bridle trail or wider, shared-use trails. For example, a shared-use trail would require at least a five-foot-wide treadway with two additional feet of tread on each side for pedestrians. By contrast, pedestrian use alone requires only a four-foot-wide trail which could be accommodated on existing two-track roads. Although two-tracks could also handle equestrian uses, they would need to be upgraded to handle regular use. Building a separate, entirely new equestrian trail should be discouraged. However, combining hiking and riding on a single trail also presents conflicts between different types of users, increasing safety concerns.

Additionally, horses are common dispersal agents for invasive and exotic plant species. Horses that have arrived from far-flung places increase the risk that problematic plant species might be introduced that could damage the native prairie ecosystem, and result in a major increase in maintenance. It is therefore recommended that horseback riding not be permitted within the Preserve until such time that a plan for controlling and managing these issues is developed. One possibility in the interim is to allow a local resident to operate a limited horseback riding concession that provides chaperoned cross-country excursions within designated areas of the Preserve, using locally kept horses. Riding should not be permitted within the western Preserve pastures. If allowed, horseback riding should be limited to Two Section and East Traps Pastures.

General Management and Design Guidelines and Recommendations

The following section provides a series of management and design guidelines that pertain to the Preserve as a whole and should be used when planning for any landscape change. They are intended to support all landscape treatments proposed as part of this plan and should be considered in conjunction with any project or treatment alternative that is undertaken at the Preserve. These guidelines relate to a philosophy of cultural landscape treatment based on *Director's Order 28*, and

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.

Natural Systems and Features

- Develop a vegetation management plan prior to undertaking any changes to Preserve vegetation or its treatment. Consider carefully, as part of a vegetation management plan, the issues associated with prescribed burning, biodiversity, historically appropriate crop and orchard species, the cultural requirements of the ornamental vegetation at the Z Bar/Spring Hill Ranch headquarters area, gallery forest ecology, Preserve preservation maintenance, crop and orchard management capabilities, and bison, cattle, and historic cattle breed grazing requirements. Conduct additional planning as part of related studies such as a bison management plan.
- Identify, control, and remove exotic invasive plants.
- Establish a periodic monitoring program to record populations of invasive alien plants within the Preserve, and utilize the data collected to inform ongoing maintenance procedures.
- Remove invasive alien species identified during monitoring activities using ecologically-sound removal techniques.
- Monitor water resources for invasive exotic plant species. Remove invasive alien species identified during monitoring activities using ecologically sound removal techniques.
- Retain and enhance riparian forest areas. Consider using prescribed burning to enhance the graminoid understory and help maintain the health of these communities.
- Retain and maintain all existing wetlands. Preserve wetland ecology for its role in flood control, sediment and erosion control, water supply, nutrient retention and removal, and pollution control.
- Preserve or establish vegetative buffers of a minimum 100-foot width along all edges of stream corridors and wetlands, and on erosive soils with slopes greater than 15 percent that abut wetlands, watercourses, and water bodies. Wooded buffer zones along the Preserve's streams can be classified as riparian woodlands, which require special consideration of their hydrology, plant communities, soils, and topography.
- Prevent livestock damage to banks and waterways by fencing stream margins and stock ponds that are in use and piping the water to adjacent troughs.

Prescribed Burning

- Create firebreaks to contain fire within the boundaries of planned mosaic plots by burning blacklines and setting backfires.
- Meet with neighbors and local law enforcement, and fire department officials to explain the proposed new burn regime.

- Consider proposing changes to the grazing lease to accommodate changes in the burn schedule, ensuring that livestock can be fed without disrupting vegetation cycles, and the burn schedule can accommodate livestock grazing needs.
- Coordinate burning activities with grazing regimes on Preserve land, as the two are environmentally and culturally interdependent.
- Consider mowing as an option for vegetation management in areas where life safety concerns are an issue, such as the shoulders of public roads, since smoke from burning can cause traffic accidents.
- Protect contributing historic plantings from fire damage.
- Conform to the procedures, safety recommendations, and state regulations in KSU Agricultural Extension publication L-664, “Prescribed Burning: Planning and Conducting.”
- Monitor carefully wind direction and weather conditions and their potential effects on the success of the burn.
- Consult local law enforcement regarding local ordinances. For example, when planning a burn within 1,000 feet of a public roadway, it is required by law that smoke not impede visibility on the road.
- Keep neighbors, fire department, and law enforcement officials apprised of specific burn plans and schedules.
- Ensure that fire does not travel beyond Preserve boundaries. Take particular precautions when burning occurs at a time that may be undesirable to and unexpected by neighboring ranches.
- Monitor woody species every three years to ensure that burning is preventing their colonization of the Preserve prairie.

Pasture and Agricultural Fields Management

(see Zone 2—Cattle Ranching Interpretation Pastures—for additional treatment recommendations)

- Maintain cattle ranching and grazing activities over the majority of traditional pastureland as much as possible. Continue leasing pastureland to private ranching operations to generate much-needed income where Preserve land is not being utilized for other important interpretive or ecological restoration activities. Take into consideration, however, that cattle ranching is also an important interpretive activity. Ensure that private ranching activities conform to the guidelines developed to protect the Preserve’s historic cultural and natural resources. Work with lease holders to re-establish traditional stocking practices and abandon double-stocking practices that appear to be contributing to detrimental changes in prairie character and composition.
- Maintain and enhance the health and diversity of the prairie landscape.

- Encourage best management practices, integrated pest management, soil and erosion control measures, and the planting of stream-side buffer strips in all lease agreements as well as when establishing agricultural exhibits, to minimize water pollution and degradation of natural systems.
- Avoid agricultural operations on slopes greater than 15 percent in areas of erosive soils adjacent to drainage corridors.
- Retain the open character of prairie tallgrass vegetation.
- Identify, monitor, control, and remove invasive exotic plants.

Visitor Access

- Avoid valuing recreational uses at the Preserve over natural and cultural resource protection.
- Consider confining recreational activities in those areas of the Preserve that are best suited for this use, such as those that are:
 - directly adjacent to existing public roads (affords minimal introduction of roads/parking areas)
 - out of major scenic viewsheds
 - not heavily utilized for livestock or bison grazing
 - not bottomland, floodplain or other fragile natural areas; do not include sensitive cultural resources, such as ruins or archeological sites; are not dangerous to visitor safety; and are not steeply sloped or do not contain rocky, erodible soils
 - existing roads and ponds that might be used for recreational infrastructure (minimal construction of new features to support uses)
- Avoid land use activities, either permanent or temporary, that threaten or impair known or potential archeological resources.
- Monitor and regulate use of the landscape to minimize immediate and long-term damage to cultural resources.
- Consider equally both natural and cultural features of the project area in treatment and land use decisions.
- Protect areas of cultural concentrations against both unwanted burning and trampling by livestock, including cattle and bison. Protection methods should be as minimal and unobtrusive as possible.
- Avoid permitting recreational uses that may endanger visitors, cultural resources, or the delicate prairie ecosystem; require intensive facility development; or conflict with resource protection goals. Examples of incompatible activities include organized field sports, off-trail horseback riding or mountain biking, ATV use, and sport hunting.

- Limit, monitor, and control access to areas that are vulnerable to damage from human access or use.
- Allow fishing only in Pond #1 in Two Section Pasture; limit the development of new features and facilities to accommodate fishing uses.
- Consider carefully the issues involved in allowing horseback riding within the Preserve. To accommodate horseback riding, consider providing the service through a locally-based concessionaire who is available for guided rides. If it is determined that horseback riding is a desirable activity and its negative effects can be mitigated, consider establishing a designated horseback riding trail that is not in conflict with pedestrian hiking trails.
- Limit, monitor, and control unauthorized access to the Preserve.
- Provide ADA accessibility to primary interpretive elements of the Preserve. Strive to accommodate ADA accessibility to all Preserve features, except where implementation of accessibility will threaten the integrity of the Preserve's cultural landscape. Provide alternative interpretive experiences where accessibility is not possible or reasonable.
- Follow the regulations stipulated in the Uniform Federal Accessibility Standard (UFAS) and Americans with Disabilities Act Accessibility Guidelines (ADAAG) for trails and paths in establishing universally accessible circulation that may be designated as "Improved" in a Trail Management Plan. Avoid steep slopes, ensure that trail width meets regulations, and take other precautions to make these trails accessible to all visitors.
- For circulation systems where accessibility for persons with limiting disabilities is not possible, designate these trails as "Natural" in accordance with a Trail Management Plan. However, if significant interpretive efforts will be undertaken along the trail, alternative methods of education should be provided in accessible locations for those persons who cannot use the trail.

Visitor Safety

- Consult with the gas well operator/lessee regarding the extent of their rights-of-way and easements and assess any possible conflicts with planned visitor or livestock uses.
- Assess the financial and legal impact of repurchasing the mineral rights for the active gas well sites and ending the current leases.
- Terminate current mineral rights leases through gradual buy-back, if financially feasible. In the meantime, mitigate the potential negative impacts of mineral extraction on natural and cultural resources.
- Assess and monitor the condition of the plugged gas wells and evaluate their potential impact on visitor safety and soil contamination issues.
- Regulate strictly the use of fire by campers, if camping is permitted, especially in seasons of high fire danger.

Circulation

- Minimize the visual impact of pedestrian and vehicular access systems.
- Establish a primary visitor parking area in the Visitor Contact and Orientation Area in conjunction with a transit/shuttle system. Consider developing or retaining scenic pull-offs along Highway 177 to alleviate conflicts between scenic and through drivers. Also consider establishing small trailhead/interpretive site parking pull-offs along public roads, such as at the edge of the Day Use Area, to control parking and access.
- Allow for emergency vehicle access in all areas.
- Design any new circulation needed to provide access to the proposed livestock handling facility to be as minimal as possible; consider adaptively reusing existing roads.
- Maintain the rustic character of the two-track roads. Repair existing two-track roads in support of proposed new uses. Maintain the character of the roads as much as possible.
- Upgrade roads associated with increased traffic in as minimal a way as possible. Retain the appearance of the road corridor and surfacing as far as practicable.
- Surface upgraded roads with aggregate or crushed stone of a color that blends harmoniously with historic road surfacing and local soil color. Avoid bright or unusual colors. A medium to dark brown crushed local stone would be best.
- In areas of heavy traffic where asphalt is necessary, such as within the Z Bar/Spring Hill Ranch headquarters, or in association with new visitor contact facilities, add aggregate to the asphalt so it appears similar to the crushed-stone road surfacing elsewhere. Use warm brown colored asphalt to achieve the best affect.

Buildings, Structures and Small-scale Features

- Avoid conjectural reconstruction of historical buildings and structures.
- Retain and maintain historic materials, features, finishes, construction techniques, spaces, and spatial relationships.
- Assess significance, condition, usefulness, and negative effects of individual water-related structures including stock ponds, spring boxes, pump houses, and springhouses; give priority to retaining, maintaining, and protecting these features whenever possible.
- Limit the use of destructive techniques, such as archeological excavation, to providing sufficient information for research, interpretation, and management goals.
- Restoration of historic fencelines should be undertaken considering the design, materials, and methods of construction of each type.

New Design and Construction

- Design and situate new buildings and structures in a way that is harmonious, unobtrusive, and has a minimal impact on the character of the site.
- Design and situate 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. Design all new additions and alterations to be a product of their time, and compatible with historic resources in materials, size, scale and proportion, and massing. Differentiate new work from the existing.
- Design and situate 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.
- Avoid constructing new buildings and structures within floodplain areas or in primary or character-defining viewsheds. Screen new development from view of primary interpretive areas.
- Take into account landform and opportunities to access views and vistas in support of interpretive goals when designing new buildings, structures, and circulation features.
- Undertake design of new features, systems, and programs to be as accessible as possible.
- Encourage any utility companies requesting to place infrastructure on Preserve land to consider using the existing gas pipeline/telecommunications line easement thereby avoiding the establishment of new easements and the disturbance of resources.
- Repair, rather than replace, deteriorated historic features. Repair of deteriorated features should be based on archeological, documentary, or physical evidence. Replacement of historic features, if necessary, should be based on archeological, documentary, or physical evidence; the new feature should match the old in design, color, texture, and, where possible, materials.
- Replace in kind whenever possible.
- Avoid landscape changes that create a false sense of historical development, including the addition of conjectural, “typical,” or representative features.
- 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.
- Minimize disturbance associated with the installation of visitor access facilities and systems that cross or abut wetlands to preserve existing landform, and plant and animal life.
- Design any new facilities to be as minimal, low, and unobtrusive as possible.
- Select building materials that are harmonious and blend in with the landscape.

- Respond to existing landform when determining locations and relationships of site features by attempting to have them lie lightly on the land.
- Minimize soil disturbance, excavation, and mass grading.
- Consider the form of any new buildings carefully; minimize disturbance to site character, skyline, vegetation, hydrology, and soils.
- Allow precipitation and runoff to naturally recharge groundwater wherever possible.
- Minimize erosion by avoiding large impervious surfaces, and channelized and closed stormwater management systems, and large building footprints that collect and concentrate runoff. Minimize the overall building footprint by optimizing the flexibility of both indoor and outdoor spaces.
- Retain runoff on site. To mitigate increased runoff due to new developments, consider constructing planted infiltration basins and swales. Consider capturing or directing runoff to supply water for new plantings if feasible. Employ these strategies at roads, building complexes, and parking areas.
- Utilize sustainability principles in the design of all new facilities. Sustainably designed buildings have a lower impact on the environment, are more energy efficient, and cause less disturbance to resources.
- Consider passive energy conservation strategies in the design of new buildings and structures. Be responsive to the local climate, and take into account factors such as solar orientation and heat gain, shading, prevailing winds, and seasonal average temperatures.
- Incorporate, locally-available materials such as stone and wood, and regional construction techniques, such as masonry patterns, in the design and construction of new buildings and other features.
- Incorporate building traditions, including the scale and massing, roof form, materials, and details of the area.
- Design buildings to be low and situate them below the brows of ridgelines or within valleys to support view protection. The design of a cluster of smaller buildings is preferable to the establishment of one very large building. Based on local traditions, groups of smaller buildings should be clustered tightly together and aligned to conform to orthogonal patterns. It is preferable to situate new structures relatively close to existing major road corridors to avoid the establishment of access roads.
- Avoid if possible using freestanding and retaining walls. If walls are necessary, consider using materials that are compatible with proposed new buildings and structures.
- Preserve existing desirable vegetation when siting new buildings and other new developments. Incorporate and integrate it into the design of new features and systems.
- Consider using new plantings to reinforce site design, provide shade, screen undesirable views, diminish the impact and complement the character of built features, and enhance

existing plant communities. Avoid geometric patterns; look to the structure and pattern of existing prairie vegetation communities as design generators.

- Specify locally native nursery-grown plants whenever possible. Avoid the use of invasive alien plants. Avoid high-maintenance plantings that require regular mowing, irrigation, and are not hardy in Chase County.
- Consider designing roads, parking areas, and paths as curvilinear in form and alignment.
- Consider integrating surface materials without curbing into the design of an entrance drive and parking areas. Avoid constructing headwalls and endwalls at culverts, and other vertical elements, whenever feasible.
- Surface primary walks and paths accessing parking areas and building entrances using a densely compacted and even surface. Use materials such as crusher fines of local stone, preferably of a warm and medium to dark brown color to be as unobtrusive as possible.
- Minimize light pollution associated with new facilities, and throughout the Preserve, by designing lighting that complies with the NPS dark sky initiatives. The installation of lighting should be limited to parking areas and building perimeters. Incorporate only the minimum lighting necessary to fulfill safety and security concerns. Consider using low bollard-type fixtures to illuminate necessary paths and parking areas rather than overhead lights. Use full cut-off luminaires for all outdoor lighting.
- Consider placing overhead utility lines that currently cross Two Section Pasture, and any future proposed utility lines, underground. Retain and maintain above ground utility line connections to the Z Bar/Spring Hill Ranch headquarters that are character-defining.

Adjacent Lands and Visual Quality

- Monitor and participate in regional and local planning activities in order to protect adjacent resources, the setting of the Preserve, and the scenic value of the areas along the highways leading to the Preserve.
- Develop and maintain working relationships with adjacent property owners. Work with local citizens to develop a program to monitor unauthorized access and destruction of resources.
- Maintain existing views into adjacent open areas that are compatible with the historic scene or survive from the period of significance. Of particular importance are the views to the west of the Preserve from the high points located within the Western Preserve Pastures. Views in this direction are spectacular, and provide the best opportunity to experience a vast and relatively pristine expanse of continuous prairie. Monitoring proposed change on adjacent properties, coupled with working relationships with adjacent land owners, will yield information about any issues that may require viewshed mitigation measures.
- Minimize the impacts of change on lands adjacent to and near the Preserve by working with owners during the planning process and suggesting the least intrusive siting and character of improvements and structures. Special consideration should be given to preserving and protecting the visual quality and rural character of the site and the region. Ensure that local organizations involved in community development understand the value of protecting the visual and historic character of the entrance corridors to the Preserve. Support local consideration of scenic easements and agricultural districting that protects rural agricultural

use of the land on private property within the viewshed of the Preserve and along the Preserve approach routes.

- Avoid the addition of new vertical elements in the landscape whenever feasible, including signage, structures, antennas, windmills, cellular transmission and other towers, tall fences, flagpoles, and screening vegetation.
- Consider entering into negotiations with the Catholic Diocese that maintains St. Anthony Cemetery to discuss options for expansion. Consider donating a limited number of acres of land adjacent to the existing cemetery to the Diocese that will allow for its expansion without affecting the visual character and contributing resources of Tallgrass Prairie National Preserve. Consider carefully existing soil conditions for their suitability for cemetery use prior to donating land.

Interpretation

- Exploit the potential of existing landscape features to enhance interpretation.
- Develop an interpretive program for the Preserve that addresses cultural resources and natural systems, and their interrelationships.
- Minimize the visual and physical impacts of interpretive and visitor access facilities on cultural resources and natural systems. Develop the least-intensive physical improvements to accommodate interpretive systems and visitor access.
- Minimize the number of signs needed to identify, direct, interpret, and regulate the Preserve.
- Utilize NPS standard sign systems that are appropriate for rural, vernacular parks.
- Develop accessible interpretive programs and media.

Role of Preservation Specialists

- 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.

Documentation

- Document all changes and treatments through drawings, photographs, and notes. Maintain records of treatment and preserve documentation according to professional archival standards.
- Undertake sufficient study and recordation of landscape features requiring modification, repair, or replacement before work is performed to protect research and interpretation values.

Management Zones

In order to organize the treatment recommendations that follow, JMA has identified eleven management zones for the Preserve that take into consideration the site's complexity, significance, integrity, and management issues. Within the overall framework of rehabilitation, the treatment plan provides a resource-driven approach to landscape management that is specific to each zone; the specific treatment approach for each is defined and outlined below. Individual recommended landscape treatments and projects follow that are intended to be compatible with the zone's management approach. The eleven management zones are as follows.

Management Zone 1

Western Preserve Pastures

Consistent with the Prairie Landscape Area outlined in the Preferred Alternative of the GMP, this area retains a high degree of integrity relating to the early settlement and ranching periods of significance. The area has been designated for resource protection and possible bison re-introduction. A low to moderate level of visitor use of this area is envisioned.

The recommended approach to managing this zone involves rehabilitating prairie flora and fauna to increase biodiversity through modifications to burning and grazing practices. It is also recommended that wherever possible, existing cultural and historic resources and patterns of spatial organization contributing to the site's significant ranching legacy be retained, protected, and maintained. Consideration should be paid to interpreting the many examples of cultural uses and resources that are adaptations of natural resources.

Management Zone 2

Livestock Ranching Interpretation Pastures

This zone includes the GMP-defined Flint Hills Ranching Legacy Area as well as the Visitor Orientation and Interpretation Area. The zone has been designated for livestock grazing and visitor uses, particularly interpretation.

The recommended approach to managing this zone involves retaining, protecting, and maintaining existing cultural and historic resources that contribute to the site's significant ranching legacy, and protecting existing patterns of spatial organization to the extent possible while allowing for the development of facilities to support proposed new uses, such as a joint bison and cattle handling facility.

Management Zone 3

Eastern Preserve Pastures

This area is consistent with the GMP's Day Use Area. The GMP indicates that this area will witness a moderate to heavy level of visitor use, including recreation, as well as some ongoing cattle grazing.

The recommended approach to managing this zone involves rehabilitating the area to accommodate appropriate new uses, while retaining, protecting, and maintaining many, if not all, of the existing cultural and historic resources and patterns of spatial organization that contribute to the site's ranching legacy.

Management Zone 4

Z Bar/Spring Hill Ranch Headquarters

This area encompasses the ranch headquarters at Z Bar/Spring Hill, which includes a concentration of features identified as contributing the NHL status. The main ranch house is individually listed on the National Register. It is critical within this area to maintain the features, systems, and character associated with the NHL period of significance. The GMP Preferred Alternative proposes that this area house the Preserve's primary interpretive and administrative functions, and predicts heavy levels of visitor use.

Rehabilitation is the recommended approach to managing this zone. Specifically, historic resources should be preserved and interpreted, and existing cultural, natural, and historic resources and patterns of spatial organization should be retained and maintained. The complex currently accommodates, and will likely continue to accommodate administrative, service, supply, and storage uses. These needs should be considered secondary to NHL-related resource management. All recommendations that involve new construction and changes to accommodate contemporary needs and uses should be carefully considered prior to implementation in order to avoid altering significant known and potential resources. This is particularly important in regard to archeological resources.

Management Zone 5

Lower Fox Creek School

This management zone is comprised of the parcel, marked by perimeter rock fencing, which encompasses the Lower Fox Creek School. The property is individually listed on the National Register. The school site is designated in the GMP as a resource with possible interpretive value.

The recommended approach to managing this zone involves preserving and interpreting its historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate interpretive uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological resources.

Management Zone 6

Deer Park Place

Deer Park Place includes the buildings at the former Lantry ranch headquarters that are located to the north and west of the access road. The GMP Preferred Alternative designates this area as a possible site for management/operations usage; it is not anticipated that it will be accessible to visitors. Storage and maintenance may occur here temporarily; however, it will be preferable in the long term to establish a new maintenance facility in conjunction with a visitor contact station.

The recommended approach to managing this zone involves preserving historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate Preserve uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological

resources. For example, staff offices would be a more appropriate use for these buildings than maintenance.

Management Zone 7

Riparian Woodlands

This constitutes an overlay zone that may coincide with other management zones. It encompasses natural resources associated with woodland areas along the bottomlands of Fox Creek and Palmer Creek. This zone is highly sensitive to change and disturbance. Recommendations of the overlay zone take precedence over the coincidental zone. Grazing livestock should be excluded from this zone.

Management Zone 8

Archeological Resources Overlay Zone

This overlay management zone is comprised of all known and potential archeological resources. It encompasses known resources but should be expanded as additional sites are discovered through archeological investigation. This management zone is highly sensitive to change and disturbance. It is designed to protect known and potential archeological sites throughout the Preserve landscape, and takes precedence over the coincidental zone.

The approach to managing this zone involves the protection of all known resources, except where their investigation is warranted in order to address important research questions or in support of interpretation. This treatment plan recommends identification, inventory, and documentation of all known and potential archeological resources as soon as possible to avoid unnecessary disturbance. It also recommends that the NPS consider the interpretive potential of all significant archeological resources as part of the development of a long-range interpretive plan.

Management Zone 9

Water Resources Overlay Zone

This is also an overlay zone that encompasses the Preserve's wet areas and water resources, including perennial and ephemeral streams and creeks, and the springs and seeps where they originate. In addition to water resources, the zone also encompasses a 100-foot-wide band to either side of each waterway that constitutes a buffer.

The recommended approach to managing this zone is to protect and enhance water-related resources primarily through soil erosion control and vegetation management, including maintenance of the 100-foot-wide buffer in vegetation with fibrous root systems.

Management Zone 10

Cultural Concentrations Overlay Zone

This zone overlays other zones. It encompasses the areas of extant cultural resources, including those that reside within otherwise broad expanses of prairie landscape. This zone addresses the specific needs of sites that contain cultural concentrations, including buildings and structural ruins and other remnant cultural features that require protection from the management approach of the

coincidental zone. It is important to carefully consider protecting cultural resources and ruins from new uses and introductions that may lead to deterioration.

Management Zone 11

Zones of Potential New Development

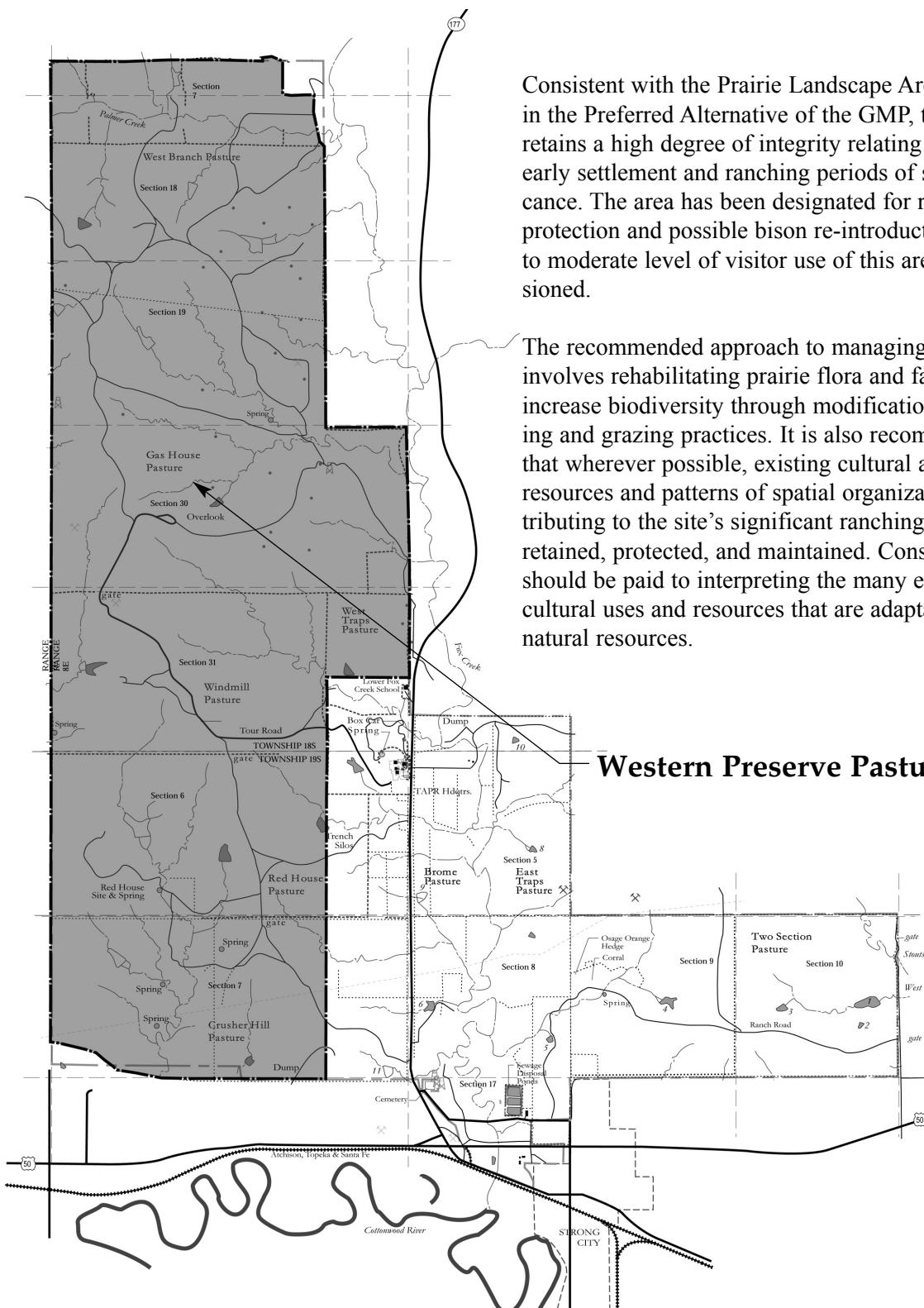
This management zone relates to potential future development to accommodate the new facilities and uses proposed in the GMP. It is meant to address potential siting and/or general design and construction guidelines for proposed new buildings and structures. To date, no locations have been identified as zones of potential new development. New features that may be critical to operation of the Preserve in the future may include a bison/livestock handling facility, visitor contact station, and maintenance facility.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area)

List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
<u>NHL Significance</u>				
Palmer Creek	H	•		
Fox Creek	H	•		
Springs	H	•		
Gallery and riparian forest	H	•		
Prairie vegetation	H			• (hiking)
Stone perimeter walls	M	•		
Township/Range/Section pattern	H		•	
Pasture pattern	H		•	
Stone outcrops and quarries	H		•	
Agricultural use (pasture)	H		•	
County Road trace	L			
Trace of north/south highway	M			• (tour road)
<u>Local Significance</u>				
Ponds with dam #s 13-16, 18-20, 23-25	H	•		
Ponds with dam #s 21-22	M	•		
Two-track ranch roads and spurs	H			• (tour route, hiking)
Gas lines and wells	H	•		
Views from high points	H	•		• (hiking)
Named pastures	H		•	
Post and wire perimeter fencing	H		•	
Red House spring box	H	•		
Red House structural ruins	L	•		
Red House stone fencing	M	•		
Settlement site(s) near Palmer Creek	L	•		
American Indian artifact concentrations	H (archeo.)	•		
Snubbing post	H	•		
Salt licks	H		•	
Mineral extraction sites	H	•		
Highway 177	H	•	•	
Red House site spring box	H			
Named pastures	H		•	
Bison wallows	H	•		

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area)



Consistent with the Prairie Landscape Area outlined in the Preferred Alternative of the GMP, this area retains a high degree of integrity relating to the early settlement and ranching periods of significance. The area has been designated for resource protection and possible bison re-introduction. A low to moderate level of visitor use of this area is envisioned.

The recommended approach to managing this zone involves rehabilitating prairie flora and fauna to increase biodiversity through modifications to burning and grazing practices. It is also recommended that wherever possible, existing cultural and historic resources and patterns of spatial organization contributing to the site's significant ranching legacy be retained, protected, and maintained. Consideration should be paid to interpreting the many examples of cultural uses and resources that are adaptations of natural resources.

Western Preserve Pastures

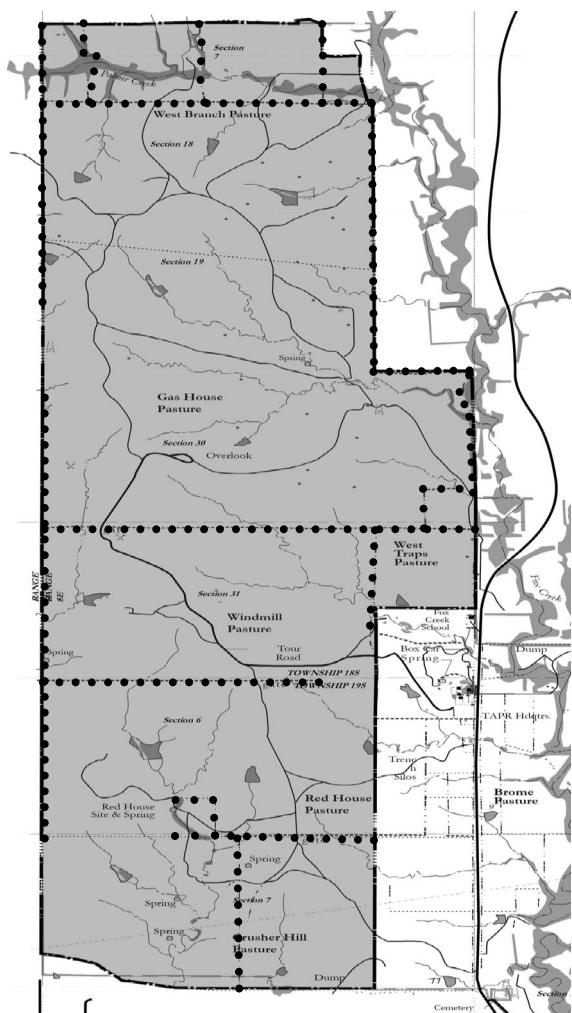
Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Spatial Organization and Views

1. Protect and preserve views from the Tour Road and overlook.



Source: John Milner Associates, Inc.

2. Protect and preserve patterns of spatial organization established through pasture fencing.

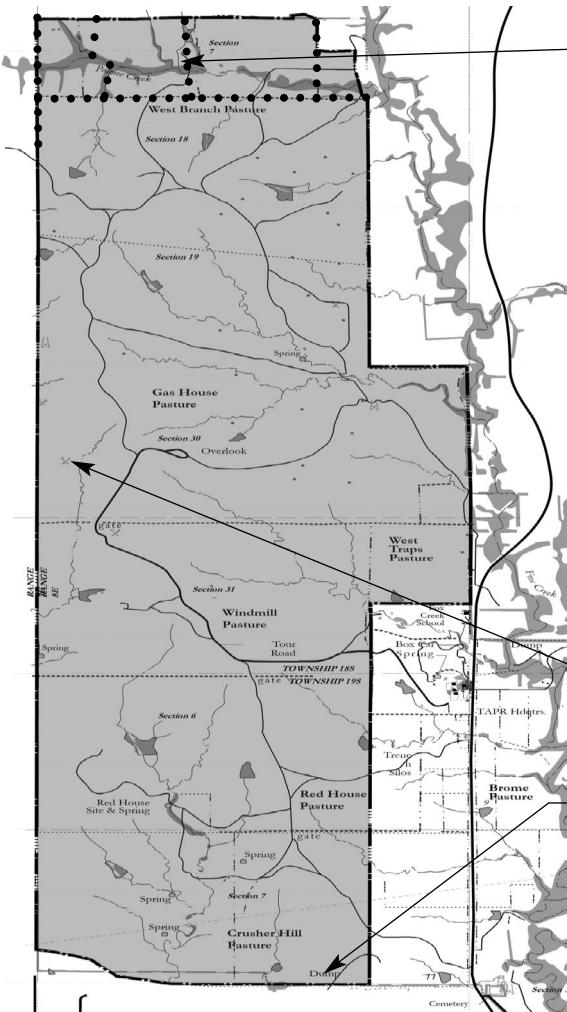


Legend

..... Stone pasture fencing (existing)

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area)

Responses to Natural Features and Systems

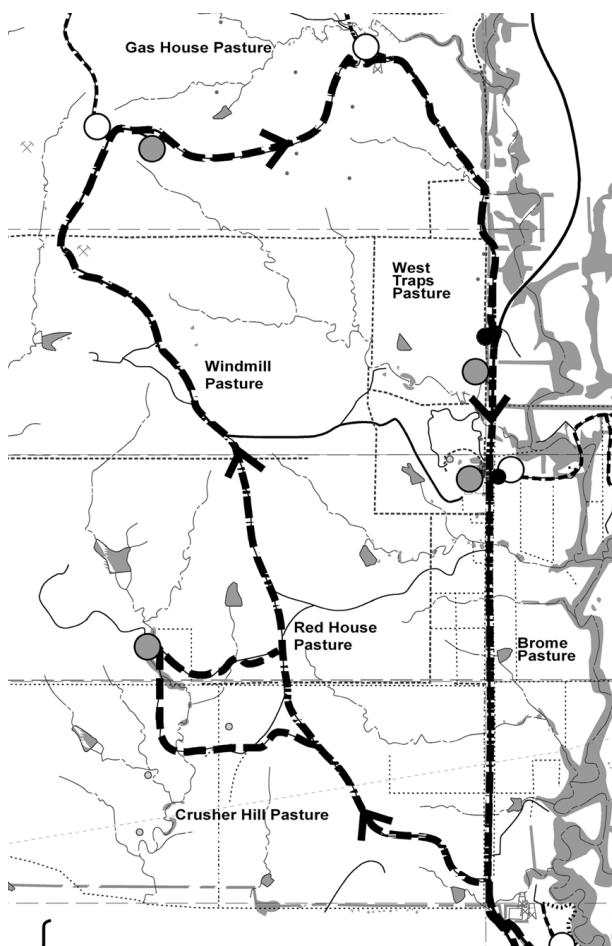


1. Retain and maintain fenced pastures along Palmer Creek corridor (stone fence remnant shown below).
2. Assess whether any of the quarry sites (such as the one indicated here) pose a risk to visitor safety.
3. Conduct archeological study of the dump located along southern site boundary.
4. See Water Resources Overlay Zone for treatment recommendations relating to ponds and waterways.



Source: John Milner Associates, Inc.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Circulation



1. Discourage and do not accommodate public parking or private vehicular access in the isolated backcountry that comprises the Western Preserve Pastures (as shown at left). One visitor parking pulloff may be placed along 177 at the county road to serve the Lower Fox Creek School.
2. Retain, repair, and maintain portions of the primary ranch roads (as shown at left) for use as a tour road/shuttle route and for operations access. Extend the existing Tour Road route as shown to create a longer tour loop route. This route would access additional pastures and views, as well as cultural sites. In addition to expanding guided interpretive opportunities, the road would also serve as a shuttle loop route, providing connections to Preserve interpretive sites such as the Z Bar/Spring Hill Ranch headquarters, Lower Fox Creek School, and bottomlands trail, as well as providing drop-off for hikers taking backcountry trails (see map at left for drop-off locations, and see next page for back-country trail routes).

○ Potential shuttle stop
● Interpretive stop
● Potential parking pulloff

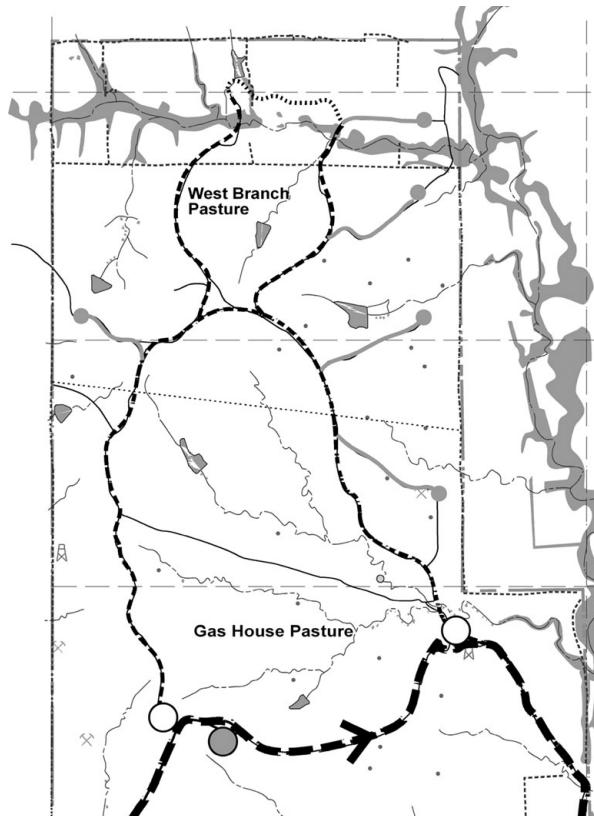
Expanded shuttle/tour route

3. Upgrade existing roads and two-tracks as necessary to repair drainage and erosion problems and uneven surfacing, or to prepare them for pedestrian use. Maintain the surface of these routes in good condition to ensure erosion control.



Source: John Milner Associates, Inc.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Circulation



4. Design backcountry trail systems to follow the routes of existing two-tracks and other circulation whenever possible. Avoid constructing new trails, except in short segments to connect existing roads and create loop trails (as shown at left, north of Palmer Creek). Connect the backcountry trails to shuttle drop-off points along the Tour Road. Provide spur trails to designated primitive campsite locations. Consider locations that are out of view of the trail and Tour Road.

Legend

- Potential shuttle stop
- Interpretive stop
- - - Proposed trails along existing two-tracks
- - - Expanded shuttle/tour route
- - - - Proposed new trail segment
(Palmer Creek Trail)
- Possible alternative locations for spur trails and campsites



Source: Mike Hough, Kansas Trails.

5. Design trails of the minimal width necessary to provide positive drainage and an even surface. Establishment of narrow, uneven, or poorly-drained trails can result in trampling of vegetation, soil compaction, erosion, and damage to the surrounding landscape and serve as a hazard to visitors.
6. Provide a firm and reliable trail prism within wet areas, using minimal and unobtrusive techniques. In remote areas, for instance, locally collected or quarried stepping stones or a rock treadway (as shown at left) are preferable to a wooden boardwalk, bridge, or culvert, one of which would be necessary on a heavily used or universally accessible trail.
7. Retain and maintain existing low-water crossings.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Circulation

8. Locate campsites out of view of the main trail. Provide relatively direct spur trails to campsites to discourage trampling and the creation of informal paths. Utilize existing two-track spur roads wherever possible to avoid building new trails.
9. Provide visitor access to bison re-introduction areas only as part of guided tours.
10. At points where the tour road crosses through bison fences, install cattle guards in the roadway sized to keep bison from crossing them. Such guards should be a minimum of 12 to 15 feet in length, with bars spaced such that gaps are 6-7 inches on center.



Source: Konza Prairie.

11. Route visitor circulation away from active gas wells and structures, and from sensitive archeological resources and cultural sites.



Source: John Milner Associates, Inc.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Vegetation



Source: John Milner Associates, Inc.

1. Retain and maintain native trees growing along fencelines and at water sources. Burn prairie grasses around and possibly within these stands of trees to decrease fuel load and retain the isolated character of the scattered trees on the prairie.



Source: Konza Prairie.

2. Conduct prescribed burning in the Western Preserve Pastures according to the Preserve-wide guidelines discussed earlier in this chapter.

3. Plant native species to retain soil on eroded slopes including those adjacent to gas wells.
4. Assess the contamination level of the soil surrounding plugged and disused gas wells. Consult state and federal environmental protection guidelines and investigate the possibility of funding or assistance from EPA and other agencies. Consider retaining site soil if it does not pose a hazard, and plant the site with native prairie species. It is preferable to retain and not disturb the prairie topsoil and topography in so far as possible. Consider capping the site or removing the contaminated soil if toxin levels prohibit plant introduction, or are otherwise considered an active hazard. Remove the contaminated soil to an appropriate landfill (as identified by the State of Kansas).

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area)

Buildings and Structures



Source: John Milner Associates, Inc.

1. Retain and maintain the stock ponds in the Western Preserve Pastures that contribute to the site's local significance. They should continue to support the watering of grazing populations, potentially including bison and cattle. (See recommendations included in Water Resources Overlay Zone for additional information.)
2. Retain, protect, and maintain existing spring structures.
3. See archeology and cultural concentrations overlay zones for recommendations relating to the Red House site.

Small-scale Features: Gas Lines and Wells

1. Evaluate inactive gas well sites and features for visitor safety issues. Keep active gas well sites and any attendant features (pipes, etc.) off-limits to visitors; fence active gas well and pump operations. Document and remove gas pipelines when feasible, particularly if they are dilapidated or easily accessed by visitors.
2. Monitor above ground gas flowlines, such as those visible in Gas House Pasture, for corrosion and other conditions that might affect visitor safety.
3. Consider retaining a portion of the gas-related infrastructure—pipelines, meters, pump machinery—to interpret the history of mineral resource extraction and the Davis Gas Field.
4. Assess gas metering stations, particularly older or disused ones, for possible hazards, particularly mercury contamination. Consult the Kansas Department of Health and Environment for guidelines regarding assessment and remediation of mercury contamination at gas pipeline sites.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area)

Small-scale Features: Livestock and Farming



Source: John Milner Associates, Inc.



Source: John Milner Associates, Inc.



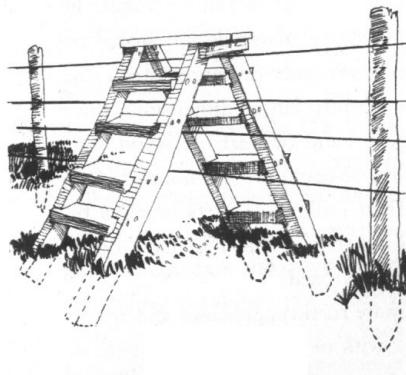
Source: Konza Prairie.

1. Retain and maintain historic small-scale features including stone walls and fences, barb-wire fences, cattle guards, and the last snubbing post. Repair, or, if necessary, replace deteriorated features in kind whenever possible.
2. Minimize the removal of historic stone walls to the extent possible. If historic cross-pasture fences interfere with bison management, document the walls carefully before removing them.
3. Consider interpreting bison wallows (shown in photo at left) and cattle paths.
4. Retain plastic feed or watering bins as necessary to serve livestock; otherwise remove them. Retain evidence of limestone block salt licks; avoid using exposed features such as these to provide salt and minerals for livestock that can leach into the soil and kill vegetation.
5. Establish new fencing as necessary within pastures slated to accommodate bison (such as the barbed wire bison fence at Konza Prairie, shown at left). Fence specifications include a 6-foot minimum height and at least 5 strands of barbed wire, spaced 12 inches vertically, beginning no more than 12 inches above the ground. Install fencing on the inside edge of existing stone and post and barbed wire Preserve pasture fencing in order to retain historic fencing features. Document and remove cross-pasture fencing if it interferes with bison herd management. The design of new fencing to retain bison should be carefully considered; new fencing should be as visually unobtrusive as possible while ensuring the retention of the herd.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) Small-scale Features: Visitor Use

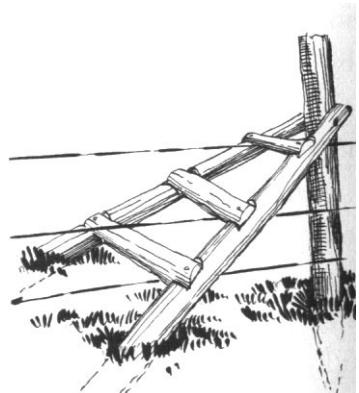


Source: Kansas Sierra Club.



Source: Demrow & Salsbury.

1. Incorporate local stone as much as possible into trail-related structures including water bars, stepping stones, steps, treads, stream crossings, stone boxes or treadways crossing marshy areas, retaining walls, trail markers, shelters, and stiles to provide access over stone walls. Stone is not only more durable and requires less maintenance, it is a more suitable and traditional material for the Flint Hills. Design these features to clearly be a product of their time.
2. Use logs or wood collected locally for fence stiles (left and below) and signage.
3. Designate primitive, backcountry campsites with as little development as possible. Do not permit open fires; allow containerized fuel stoves only. Avoid any vertical elements or structures, such as shelters, tall signs, flagpoles, pack bars, picnic tables, or antennas within designated campsites.
4. Keep signage in this area as minimal as possible. Design and install signage that is low, rustic, unobtrusive, and non-institutional in appearance. Use local materials wherever possible.



Source: Demrow & Salsbury.

Management Zone 1: Western Preserve Pastures (Prairie Landscape Area) List of Associated Projects

(See Chapter Seven for project descriptions)

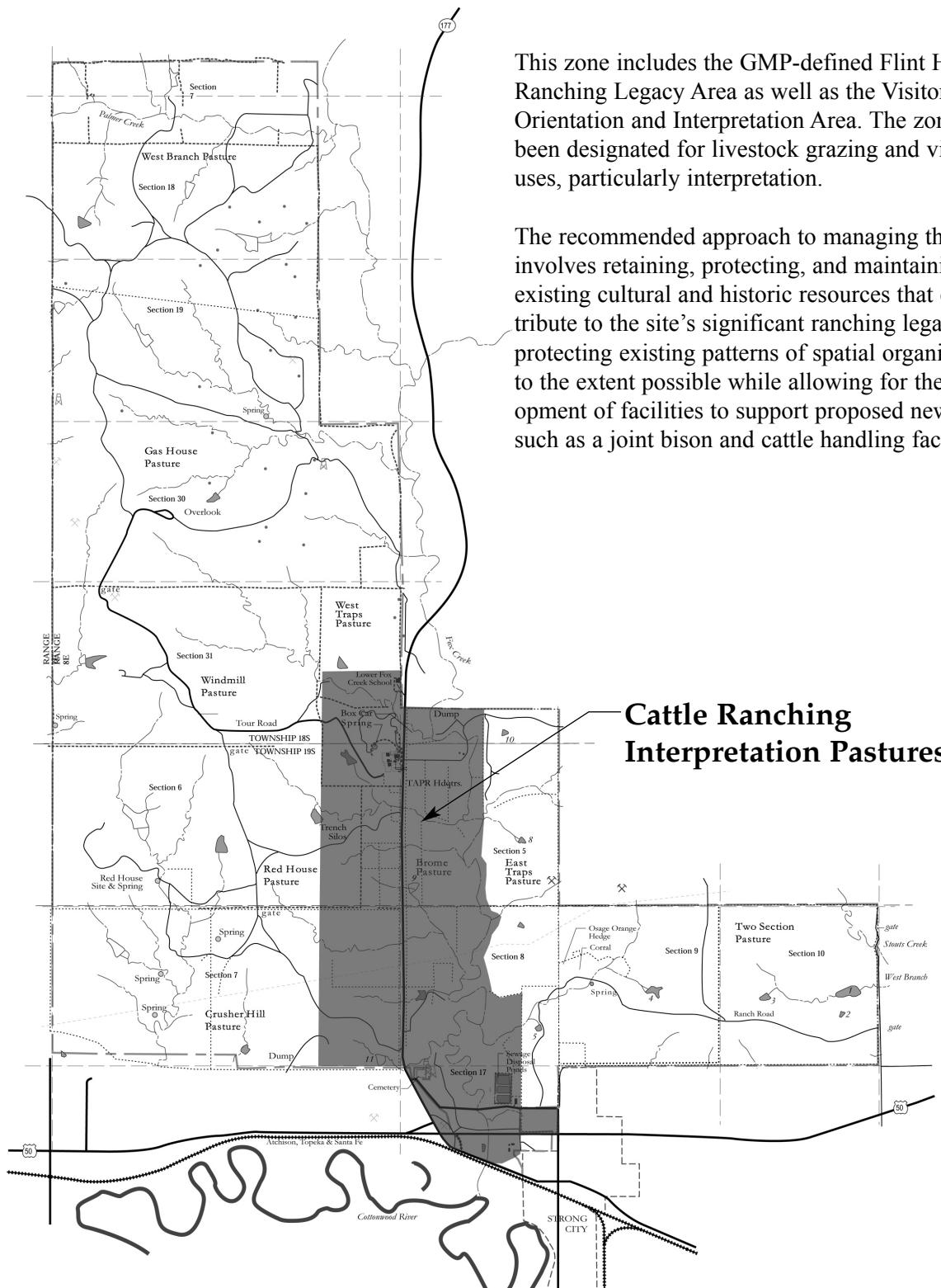
Project #	Project
1.	Stabilize and rehabilitate stone walls and fences
3.	Mitigate effects of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses, including Red House site
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
8.	Establish backcountry trails (Ridge and Palmer Creek trails)
9.	Expand shuttle tour route
13.	Mitigate effects of bison on cultural resources
16.	Inventory, identify, control, and remove exotic invasive plants
18.	Assess and develop treatment and interpretive plans for mineral extraction sites

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

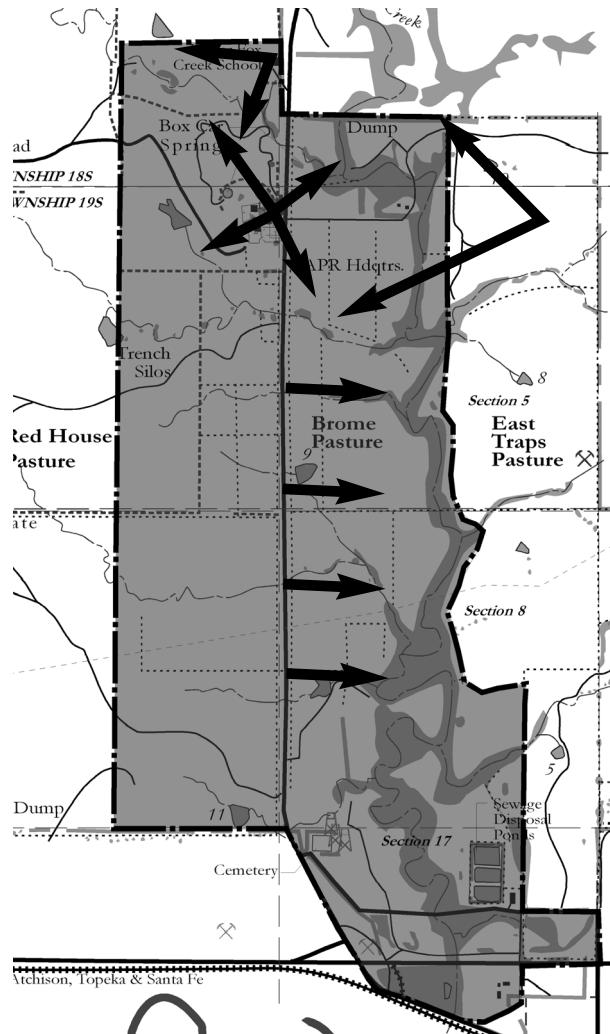
List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
<u>NHL Significance</u>				
Fox Creek	H	•		
Springs	H	•		• (tour route)
Trace of north-south highway	M			• (tour route)
County Road	M			
Fox Creek bridge	H		•	
Riparian woodland	M	•		
Prairie Vegetation	H			• (hiking)
Crop fields within bottomlands	M			
Stone perimeter walls	M			
Township/Range/Section pattern	H		•	
Pasture pattern	M		•	
Stone outcrops and quarries	H		•	
View west from high point - East Traps pasture	H	•		• (hiking)
Agricultural use (pasture)	H		•	
Railroad spur grade south of County Road	M	•		
<u>Local Significance</u>				
Boxcar(s)	H		•	
Rail line grade	M	•		
Trench silo	M			
Grain silo	H			
Highway 177	H		•	
Feed lot at corral area	M			
Ponds with dam #s 9, 11, 17	H	•		
Gas lines and wells	H	•		
Well and pump houses	H			
Metal barn	H			
Metal post and wire perimeter fencing	H		•	
Salt licks	H		•	
Two-track ranch roads and spurs	H			• (tour route, hiking)
Trees along fencelines	M			
Scattered trees at water sources	M			
Named pastures	H		•	
Low water crossing	M		•	
Telephone and electrical lines	M			

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)



Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area) Spatial Organization and Views



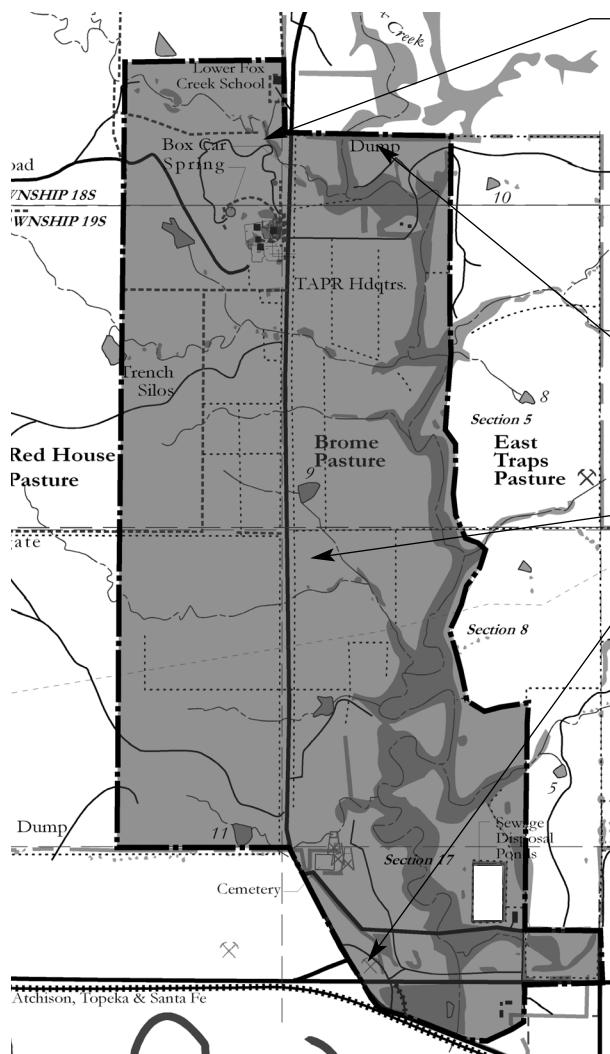
1. Avoid development within the primary viewsheds in this area, including, but not limited to, the area visible from the rock cairn on the knoll in East Traps pasture; views east from Highway 177; and views around the Lower Fox Creek School and Z Bar/Spring Hill Ranch headquarters.
2. Maintain and retain the contributing historic features located within these viewsheds, such as hills flecked with outcrops, stone walls, prairie vegetation, cultural concentrations, and riparian woodland vegetation marking stream corridors.



Source: John Milner Associates, Inc.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Responses to Natural Features and Systems

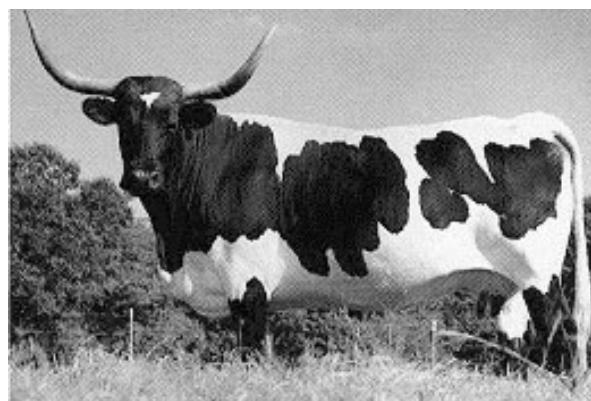
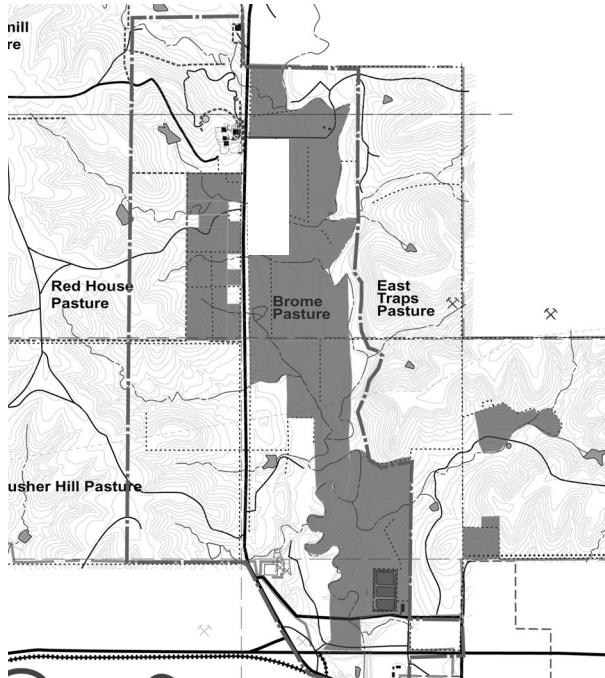


1. Maintain the Southwind Nature Trail. Continue to maintain land between the Z Bar/Spring Hill Ranch headquarters and the Lower Fox Creek School in prairie vegetation. Consider grazing cattle in this area. The ca. 1895 map suggests that this area was utilized as pasture. The map also suggests that a road once traversed this area.
2. Conduct an archeological assessment of the dump site near Fox Creek in the northeastern part of the Cattle Ranching Interpretation Pastures.
3. Retain and maintain the flood control structure in the bottomland east of Highway 177.
4. Evaluate quarry sites, such as the one indicated here, for visitor safety concerns.
5. See Water Resources Overlay Zone for treatment recommendations on ponds and waterways.
6. Retain and maintain existing low water crossings.



Source: John Milner Associates, Inc.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area) Land Use



Source: Texas Longhorn Breeders Assoc. of Amer.

1. Continue to graze livestock on selected pastureland within this area. Discuss with lessee the possibility of altering the stocking regime to resemble historic practices more closely.
2. Re-introduce historically appropriate livestock—breeds known to have been grazed here during the early to mid-20th century as interpretive features for visitors (possibly, for example, longhorn breeds such as the one shown at left).
3. Avoid land use conflicts, such as establishing a highly accessible trail within actively grazed pastureland.

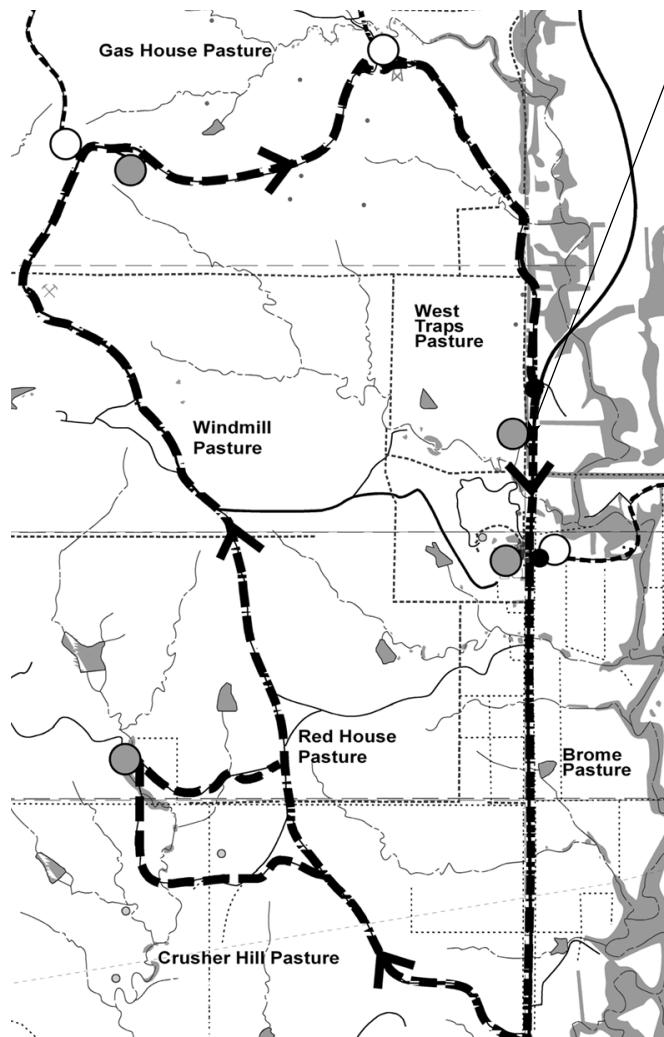


Source: John Milner Associates, Inc.

Utilities

1. Communicate with utility providers regarding future plans to upgrade telephone and utility lines that are located within the Highway 177 right-of-way. Suggest that future lines be placed underground.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area) Circulation



Legend

- Potential shuttle stop
- Interpretive stop
- Proposed trails along existing two-tracks
- Expanded shuttle/tour route
- Proposed new trail segment (Palmer Creek Trail)
- ~ Possible alternative locations for spur trails and campsites

1. Retain and utilize the former Highway 177 road grade (see photo below) for internal circulation as part of a new tour road/shuttle route.



Source: John Milner Associates, Inc.

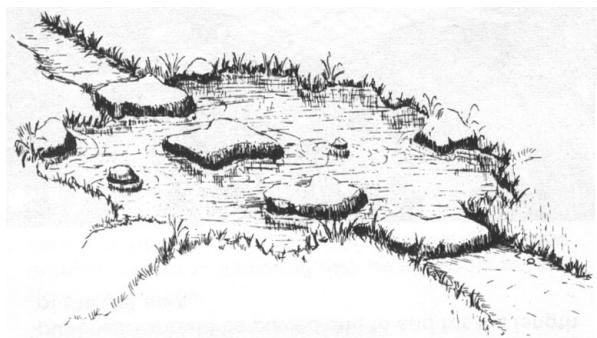
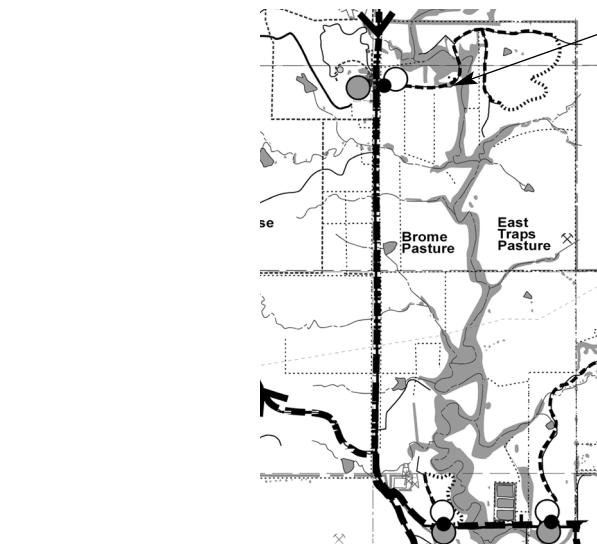
2. Upgrade existing roads and two-tracks when necessary to repair drainage and erosion problems and uneven surfacing, or to prepare them for more intensive use. Maintain the surface of these routes in good condition to ensure erosion control.
3. Retain and maintain existing low-water crossings (such as the crossing of Fox Creek shown below).



Source: John Milner Associates, Inc.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Circulation: Trails



Source: BTCV.



Source: John Milner Associates, Inc.

1. Establish a trail to provide access to restored crop fields and rehabilitated bottomland prairie along Fox Creek, as well as to the knoll in East Traps Pasture to take advantage of views.
2. Design trails to follow the routes of existing two-tracks and other roadways and paths as much as possible. Avoid constructing new trails except in minimal stretches to connect existing roads and paths and create loop trails. In areas where it is not possible to utilize existing two-track routes, design new trail segments as minimal, well-drained, three- to four-foot-wide earthen treadways.
3. Utilize stepping stones (illustrated at left), stone boxes, or a treadway of large stones for crossings of wet areas on trails. Stones will allow stream flow to move freely. Ensure that stones are level and do not present a trip hazard.
4. Provide a firm and reliable trail prism within wet areas, using minimal and unobtrusive techniques. In remote areas, for instance, locally collected or quarried stepping stones are preferable, while it might be necessary to use a wooden boardwalk on a heavily used and highly accessible trail.
5. Design trails of the minimal width necessary to provide positive drainage and an even surface. Establishment of too-narrow, uneven, or poorly-drained trails can result in trampling of vegetation, soil compaction, erosion, and damage to the surrounding vegetation, and serve as a hazard to visitors.
6. Retain the Southwind Trail (shown at left) for interpretive purposes. Provide connections between this trail and new trails developed within the Preserve's western pastures.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Vegetation

1. Retain trees along fencelines and scattered trees at water sources.
2. Retain and maintain prairie vegetation. As noted earlier in this section, graze cattle on existing prairie vegetation to interpret the Flint Hills ranching legacy.
3. Eradicate brome grass (shown at left). Replant existing brome fields in a combination of native bottomland prairie plants and historic crop field exhibits.
4. Restore bottomland prairie vegetation in areas not targeted for crop field exhibits.

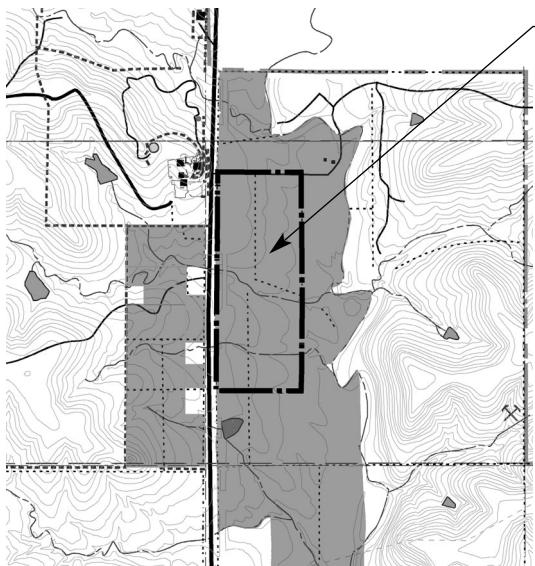


5. Consider using vegetation to screen from view the three municipal sewage treatment ponds adjacent to the Preserve.
6. Support the Audubon/Kansas Department of Transportation (KDOT) native species planting program by providing guidelines for the Highway 177 Scenic Byway in the vicinity of the Preserve. Provide suggestions for species and maintenance regimes east of the ranch headquarters. Species selected should provide seasonal interest, be capable of surviving infrequent mowing, and should not exceed three feet in height. Examples include goldenrod, coneflower, aster, catclaw sensitive brier, ground-plum milk vetch, lead plant, moth mullein, plains wild indigo, dotted gay-feather, prairie larkspur, and milkweed (shown at left).

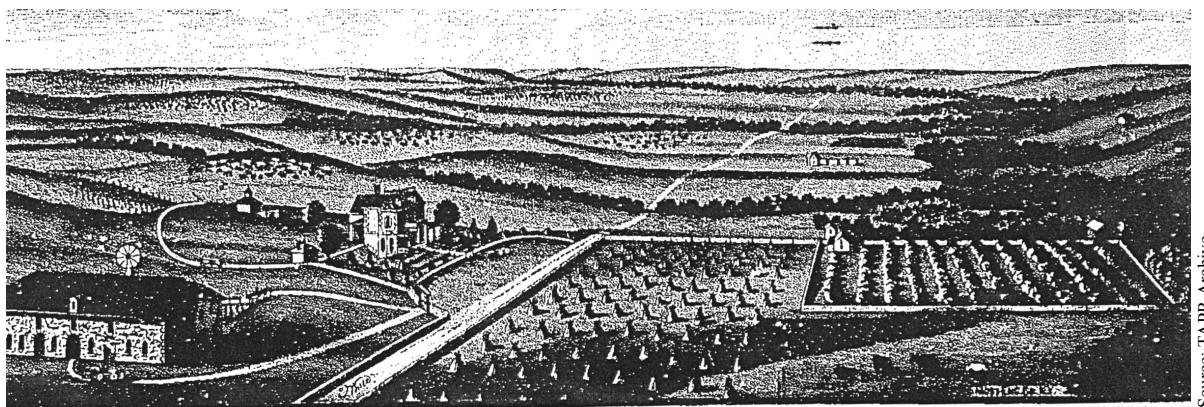


Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Vegetation: Crop Fields and Orchard



1. Consider planting up to 80 acres of the land located to the east and southeast of the Z Bar/Spring Hill Ranch headquarters as a crop field exhibit that illustrates the range of agricultural endeavors that occurred within the ranch property over the period of significance.
2. Consider establishing a fruit tree orchard within the same area consistent with late 19th-century illustrations of the ranch. The fruit orchard should be between 4 and 8 acres in size.
3. Locate crop and orchard exhibits within the shaded areas shown in the diagram at left. The dashed outline represents a recommended 80-acre area. Utilize a viewshed analysis from the ranch headquarters to help determine the best location for the exhibit.
4. Consider the appearance of the fields shown in historic depictions in designing cropfield exhibits (such as the 1887 lithograph below). Also refer to agricultural census data and any available information included in ranch records and diaries.



Source: TAPR Archive.

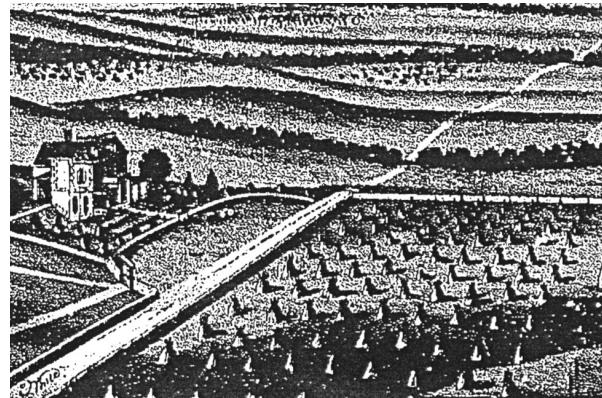
5. Select crops based on historically documented varieties that were grown on the site or in the Flint Hills. Consider varieties of corn, alfalfa, oats, millet, and other crops. The detail of the

1887 lithograph of Spring Hill Ranch at left shows cornfields east of the house; below, the same image depicts an orchard enclosed by a wall or fence also located east of the house.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Vegetation: Crop Fields and Orchard

7. Grow crops that are historically appropriate to the period or periods interpreted, and make every effort to cultivate the crops in a manner that is consistent with the practices of the period(s).
8. Consider carefully modifying historically accurate methods when sustainability concerns arise. Utilize sustainable, low-impact maintenance practices, integrated pest management, and other best management practices in establishing and maintaining these exhibits. Interpret modifications of historic farming practices to educate visitors about sustainability.
9. Avoid no-till methods of crop farming within this area. This method is inappropriate for the exhibit. No-till is a contemporary method of cultivation that is not consistent with farming at the Preserve in the period of significance. In addition, it requires heavy use of chemical pesticides and is not beneficial for relatively level bottomland areas such as the area in consideration for the exhibit.
10. Utilize crop rotation to control weeds and pests.
11. Promote sustainability by avoiding the use of chemical additives such as pesticides, herbicides, and excessive use of chemical fertilizers as much as possible. Interpret these possible deviations from historic practices and encourage similar stewardship in interpretive materials.
12. Employ the NPS document “Managing Culturally Significant Agricultural Landscapes in the National Park System,” by Richard Westmacott, 1998.
13. Avoid planting crops on slopes of 10 percent or greater.



Source: TAPR Archive.



Source: Collection of Deone Benninghoven.

14. Avoid planting crops that are considered invasive alien or noxious weed species in Kansas. Establish guidelines for site access by farm equipment that ensure invasive species seed germ is not brought on site; for example, require cleaning or washing of the equipment off-site.
15. Consider methods for crop irrigation that are consistent with historic practices. If irrigation is needed, consider utilizing the existing wells and pump house near Fox Creek.
16. Establish or maintain minimum 100-foot-wide buffers of natural vegetation between crop fields and perennial watercourses.
17. Restrict grazing cattle and bison from accessing the crop field and orchard.

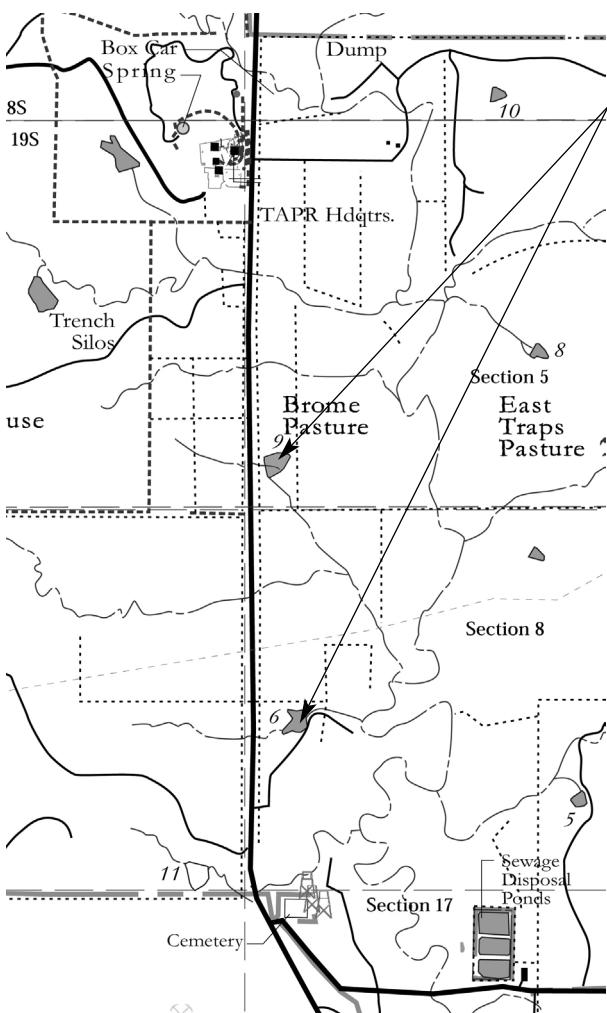
Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Buildings and Structures



1. Retain existing corrals, trench silos, boxcars, and the metal barn as examples of the post-NHL period ranching history of the site. Interpret these features.

2. Evaluate well and pump houses, spring structures, boxcars, and the area around any other structures for visitor safety concerns. Fence structures that may be considered hazardous to visitors.



3. Consider removing the stock ponds located in the floodplain of Fox Creek, such as stock ponds #6 and #9 in the Brome Pasture. Discontinue grazing in pastures where ponds have been removed and consider re-establishing bottomland prairie where crop exhibits are not planned.

4. See Water Resources Overlay Zone section later in this chapter for further recommendations regarding stock ponds.

Management Zone 2: Cattle Ranching Interpretation Pastures (Flint Hills Ranching Legacy Area)

Small-scale Features

1. Incorporate local stone as much as possible into trail-related structures, as described in Management Zone 1: Western Preserve Pastures. Use logs or wood, available locally, for fence stiles and signage, or substitute these for stone if stone is not available.



2. Retain and maintain stone walls and fences, barbwire fences, cattle guards, water bins, troughs, and other small-scale features related to the Preserve's ranching legacy. Repair or, if necessary, replace deteriorated features in kind whenever possible.



Appropriate signage



Inappropriate signage
(too tall)

3. Consider interpreting salt licks and cattle paths.

4. Retain plastic feed or watering bins as necessary to serve livestock; otherwise remove these features. Retain evidence of limestone block salt licks; avoid using exposed features that allow their contents to leach into the soil and kill vegetation, to provide salt and minerals for livestock.

5. As in the Western Preserve Pastures, keep signage in this area as minimal as possible. Design and install signage that is low, rustic, unobtrusive, and non-institutional in appearance (see illustration at left). Use local materials wherever possible.

6. Consider alternatives in the design of interpretive materials, such as waysides, that can survive prescribed burning, can be removed during burning, or can otherwise be protected from unwanted burning.

7. Use temporary fencing to exclude livestock from eroded areas (see Water Resources Protection Overlay Zone for more information).

**Management Zone 2: Cattle Ranching Interpretation Pastures
(Flint Hills Ranching Legacy Area)**
List of Associated Projects

(See Chapter Seven for project descriptions)

Project #	Project
1.	Stabilize and rehabilitate stone walls and fences
2.	Rehabilitate historic crop fields and orchard
3.	Mitigate effects of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses
5.	Re-establish bottomland prairie
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
9.	Expand shuttle tour route
14.	Create guidelines/recommendations for native species planting program for Highway 177 scenic byway (in conjunction with KDOT)
15.	Protect cultural concentrations and features from prescribed burning
16.	Inventory, identify, control, and remove exotic invasive plants

Management Zone 3: Eastern Preserve Pastures (Day Use Area) List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
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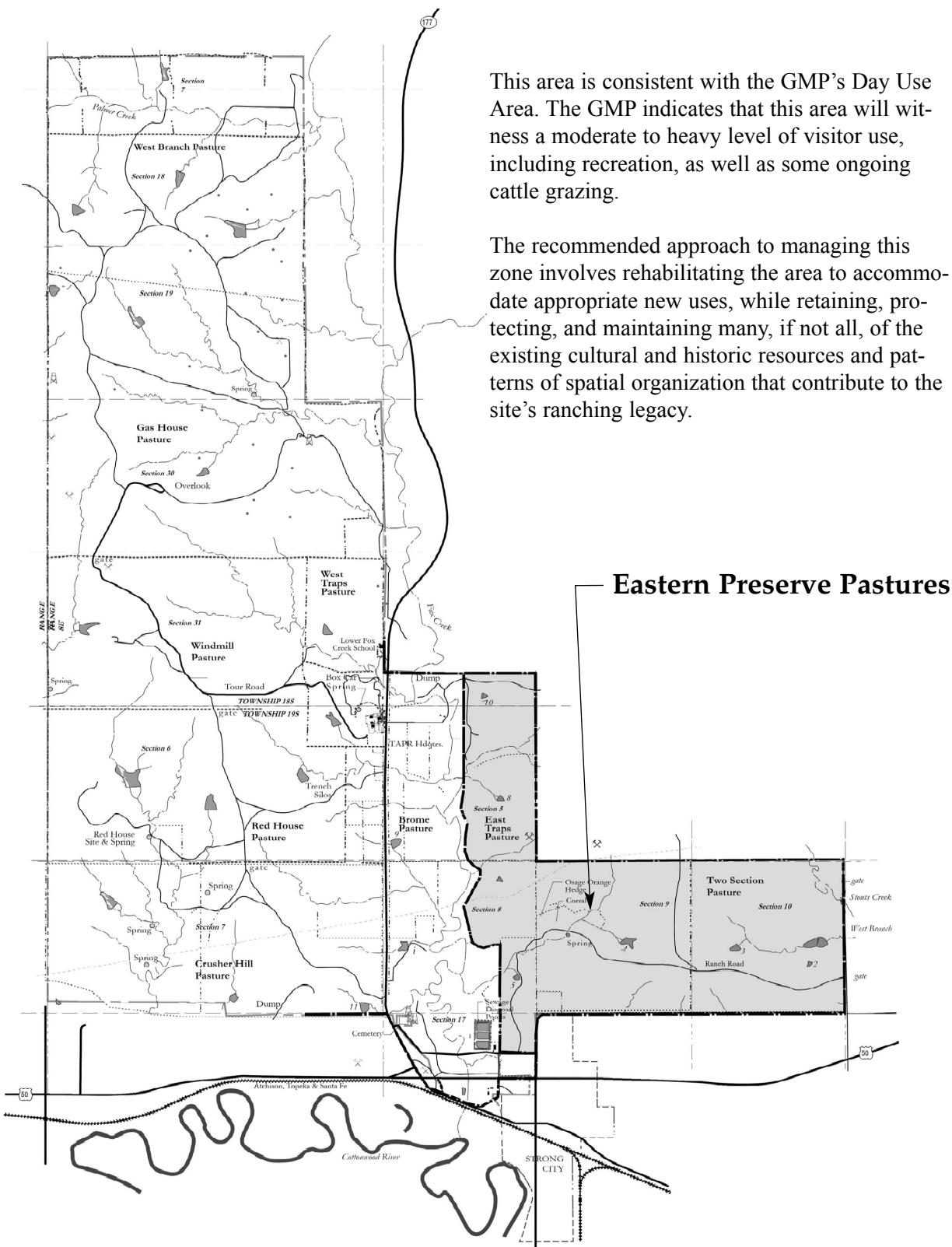
NHL Significance

Prairie vegetation	H			• (hiking)
Stouts Creek	H	•		
Springs and seeps	H	•		
Agricultural use (pasture)	H		•	
Pasture patterns	M		•	
Stone perimeter walls	M	•		

Local Significance

Rock cairns				
Ponds w/dam #s 2-5, 7, 8, 10	H	•		
Two-track ranch roads and spurs	H			• (tour route, hiking)
Osage orange hedgerow	H	•		
Post and wire perimeter fencing	H		•	
Named pastures	H		•	
Electrical lines	M		•	

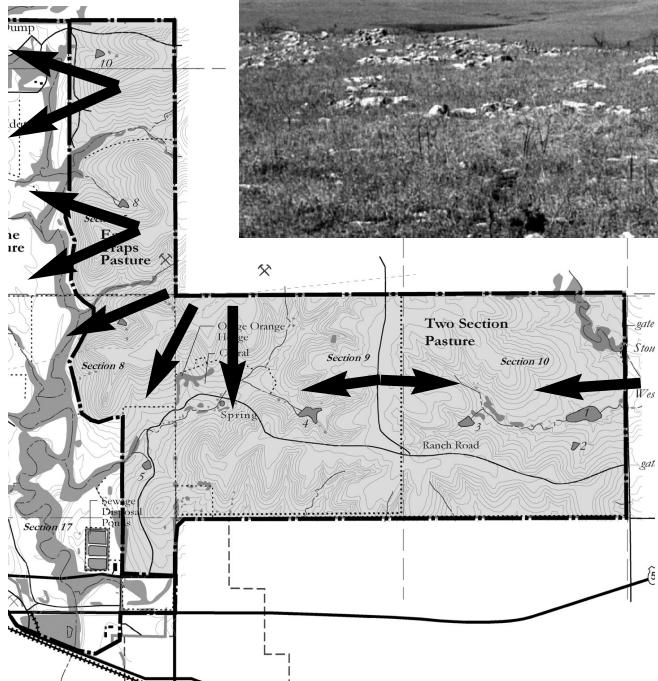
Management Zone 3: Eastern Preserve Pastures (Day Use Area)



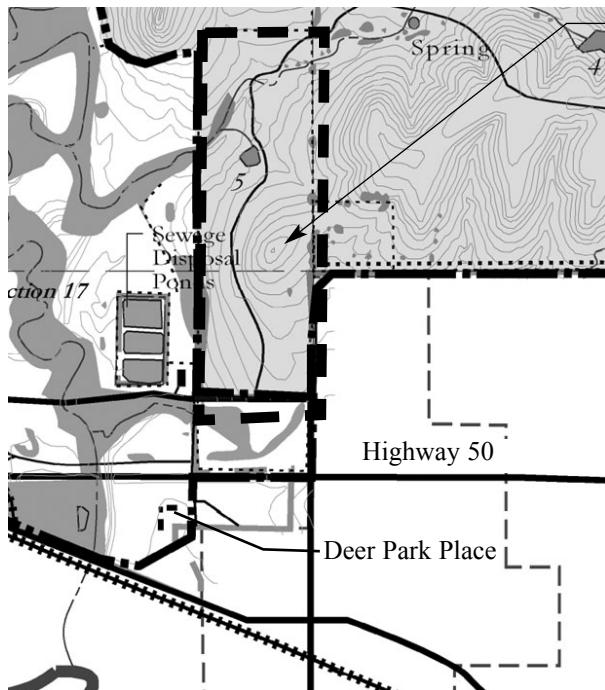
This area is consistent with the GMP's Day Use Area. The GMP indicates that this area will witness a moderate to heavy level of visitor use, including recreation, as well as some ongoing cattle grazing.

The recommended approach to managing this zone involves rehabilitating the area to accommodate appropriate new uses, while retaining, protecting, and maintaining many, if not all, of the existing cultural and historic resources and patterns of spatial organization that contribute to the site's ranching legacy.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) Spatial Organization and Views



Source: John Milner Associates, Inc.



1. Protect viewsheds within and along the boundaries of the Eastern Preserve Pastures, such as the view from the rock cairns to the Z Bar/Spring Hill Ranch headquarters (above).

2. Retain, maintain, and interpret the Cow Meadow.

"We had what we called a cow meadow. It was down that lane, where Highway 50 goes across. You go down that and then right at the end of the lane, there was a cow pasture, what we called a cow pasture. And that's where the milk cows were all kept. I suppose it was maybe 80 acres..." - Fred Howard, Jr.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) Land Use

1. Consider carefully the appropriateness of any proposed recreational uses. Introduce recreation in a way that respects the delicate nature of the tallgrass ecosystem and requires minimal development. See the guidelines provided earlier in this chapter.
2. Avoid introducing recreational uses that require facilities needing extensive grading, introduction of non-native grasses or other vegetation requiring intensive maintenance, and introduction of vertical features, all of which would diminish the integrity of the Preserve landscape.
3. Establish guidelines for appropriate uses and activities prior to considering private partnerships and concession opportunities around the Day Use Area.
4. Prohibit ATVs and other motorized vehicles, as well as mountain bikes, from accessing the Preserve.
5. Allow fishing only in designated areas and require a permit. See guidelines regarding associated development provided earlier in this chapter.
6. Consider carefully the potential impacts of equestrian usage—ground disturbance, modifications to trails, visitor-use conflicts, introduction of exotic vegetation—before permitting it within the Preserve.

Appropriate Uses



Source: Konza Prairie.



Source: Fly Fishing USA.

Inappropriate Uses



Source: Highland Community College.



SOURCE: ATVA.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) Vegetation



Source: John Milner Associates, Inc.

1. Retain, maintain, and protect trees along fencelines and at water sources, and the Osage orange hedgerow (at left).
2. Conduct prescribed burning in this area in accordance with Preserve-wide recommendations discussed earlier in this chapter.

Utilities

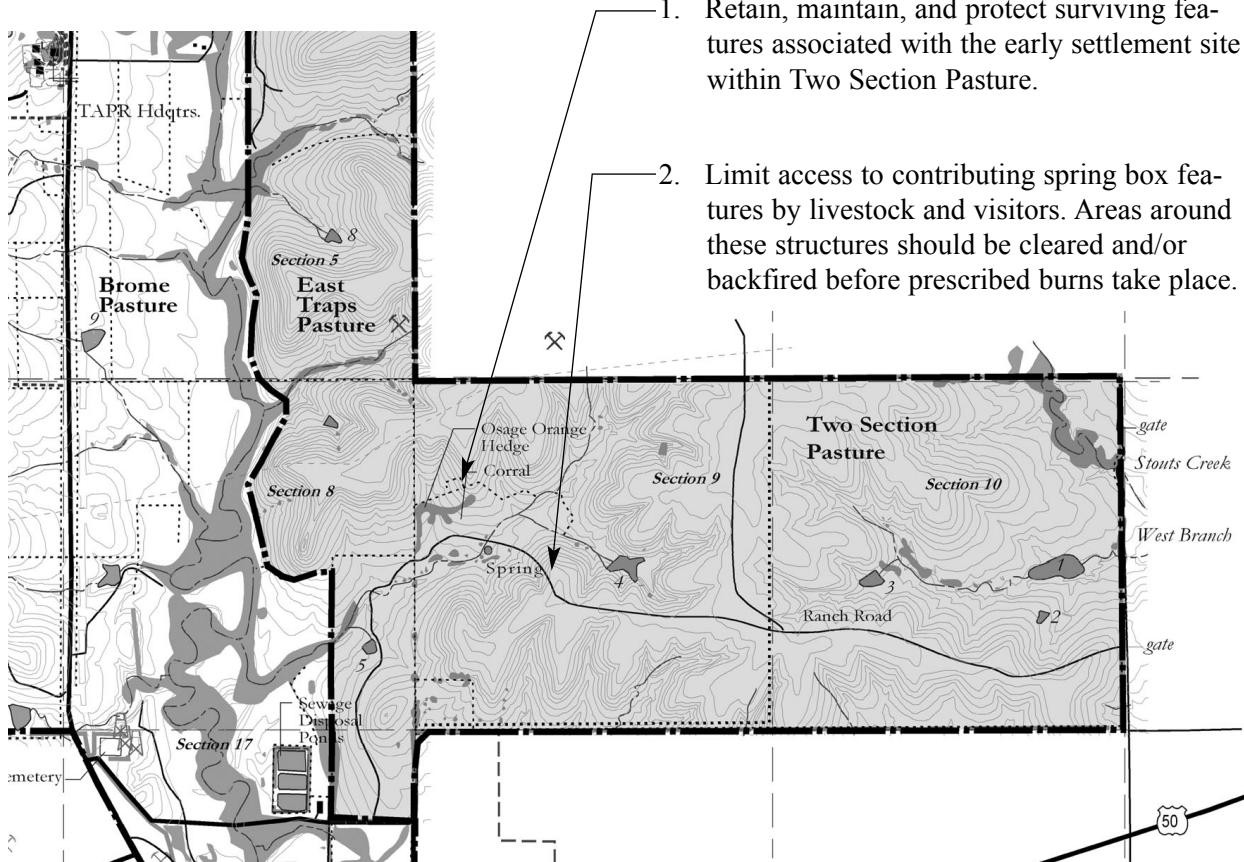


Source: John Milner Associates, Inc.

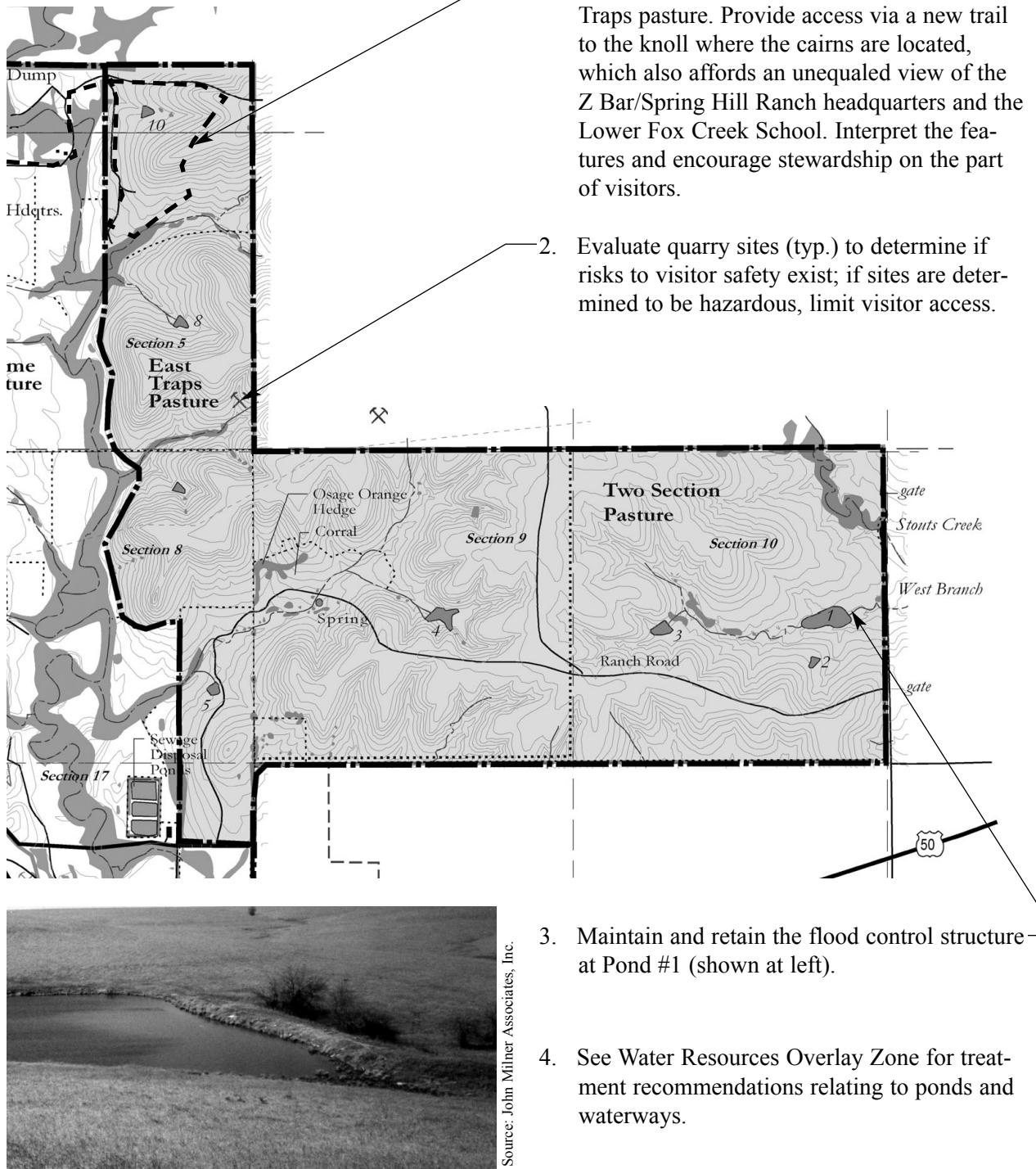
1. Work to remove overhead transmission lines in Two Section Pasture, as possible.
2. Work with utility companies to ensure that any future utility lines remain within existing easements, and recommend that they be placed underground.



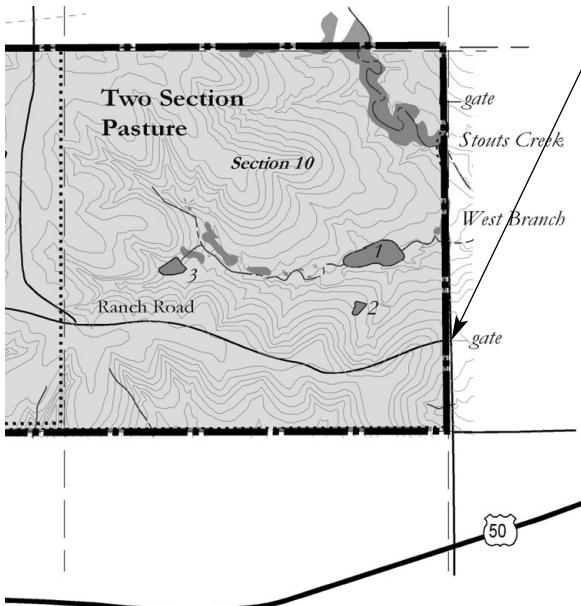
Management Zone 3: Eastern Preserve Pastures (Day Use Area) Buildings and Structures



Management Zone 3: Eastern Preserve Pastures (Day Use Area) Responses to Natural Features and Systems



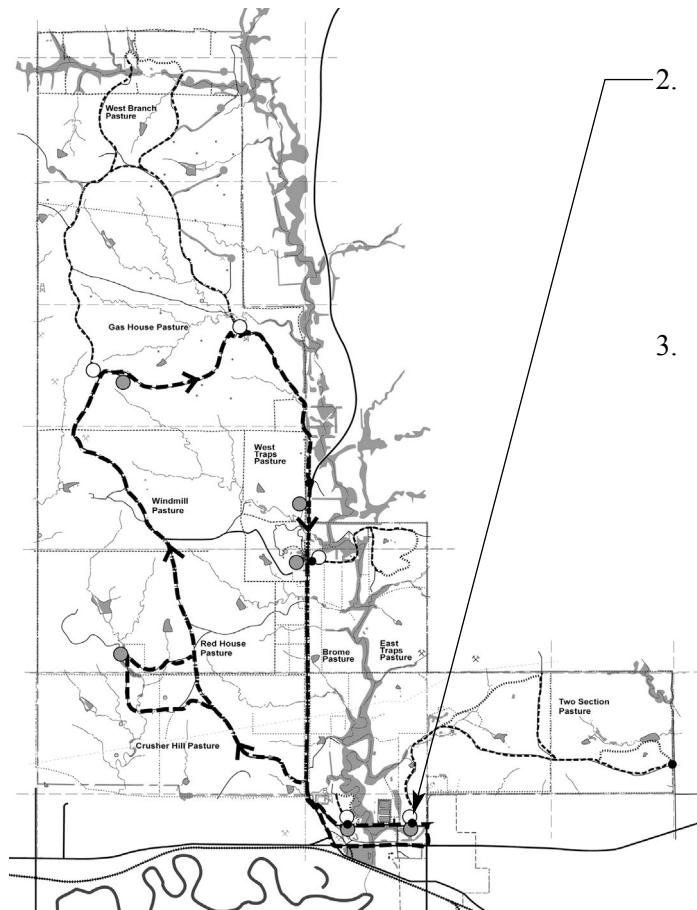
Management Zone 3: Eastern Preserve Pastures (Day Use Area) Circulation: Access



1. Provide access to recreational opportunities located within Two Section Pasture via an entrance along the county road edging the Preserve's eastern boundary (see photo below).



Source: John Milner Associates, Inc.



2. Limit the development of new roads and parking to accommodate recreational uses. Provide access to this area via the Preserve's shuttle bus system (see diagram of proposed shuttle route at left).
3. Repair drainage and erosion problems and uneven surfacing along existing roads and two-tracks. Improve existing roads and two-tracks to accommodate predicted heavy use. Maintain the surface of these routes in good condition to ensure erosion control.

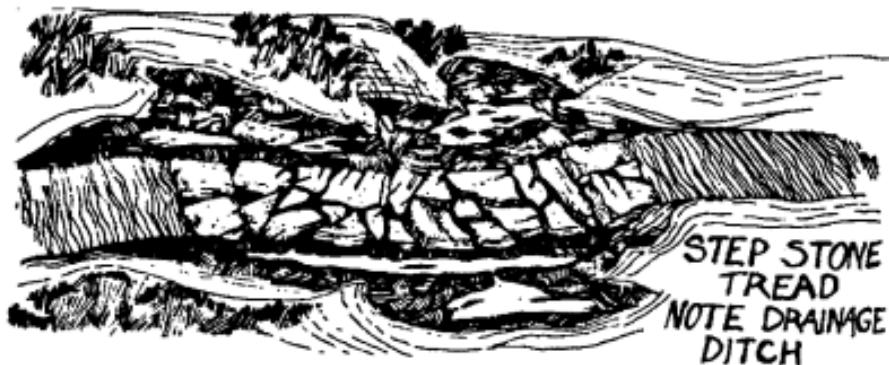
Management Zone 3: Eastern Preserve Pastures (Day Use Area)

Circulation: Trails



Source: John Milner Associates, Inc.

1. Accommodate hiking on former two-tracks wherever possible. Construct new segments in as minimal a fashion as possible to create loop trails or to access points of interest. Provide a range of circuit lengths and accessibility/difficulty levels to serve a wide variety of visitors. Design new trail segments in upland areas where it is not possible to utilize two-track alignments as minimal, well-drained, three to four-foot-wide earthen-surfaced treadways. Establishment of too-narrow, uneven, or poorly-drained trails can result in trampling of vegetation, soil compaction, erosion, and damage to the surrounding ecosystem, and serve as a hazard to visitors.
2. Utilize stepping stones, stone boxes, or a treadway of large stones (see below) on trails that pass through wet areas to allow drainage and water to move freely and prevent erosion and compaction. Ensure that stones are level and do not present a trip hazard for pedestrians. In remote areas, for instance, locally collected or quarried stepping stones are preferable to a wooden boardwalk that might be used on a heavily traveled and highly accessible trail.



Source: Appalachian Trail Club.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) Small-scale Features



Source: John Milner Associates, Inc.

1. Retain, maintain, interpret, and protect Osage orange fence posts, rock cairns (in photo at left), stone walls and fences, barbwire fences, cattle guards, and troughs located in this zone. Repair or, if necessary, replace deteriorated features in kind whenever possible.



Source: John Milner Associates, Inc.

2. Retain plastic feed or watering bins as necessary to serve livestock; otherwise remove. Retain evidence of limestone block salt licks (as shown at left); avoid using them to dispense cattle supplements that can leach salt and minerals into the soil and kill vegetation.
3. Consider interpreting salt licks and cow paths.
4. Incorporate local stone as much as possible into trail-related structures including water bars, stepping stones, steps, treads, stream crossings, stone boxes or treadways crossing marshy areas, retaining walls, trail markers (such as cairns), shelters, and stiles crossing stone walls. Stone is not only more durable and requires less maintenance, it is a more suitable and traditional material for the Flint Hills. Design these features to be clearly a product of their time. Use logs or wood, collected locally, for fence stiles and signage, or substitute these for stone in uses listed above if stone is not available.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) Small-scale Features

6. Keep signage in this area as minimal as possible. Design and install signage that is low, rustic, unobtrusive, and non-institutional in appearance. Use local materials wherever possible.
7. Consider alternatives in the design of interpretive materials, such as waysides, that can survive prescribed burning, be removed during burning, or otherwise protected from unwanted burning.

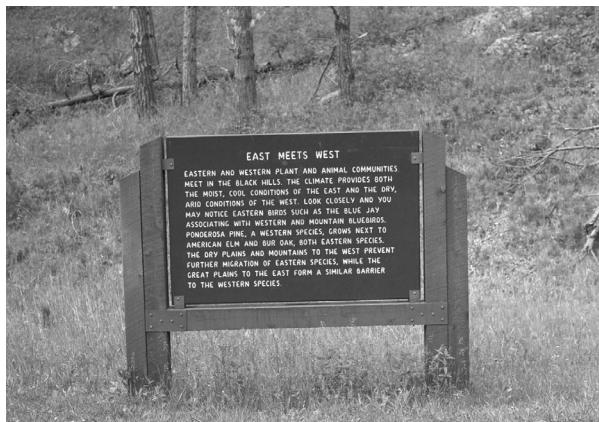
Appropriate signs



Source: John Milner Associates, Inc.

This wayside and sign at Tallgrass Prairie are constructed of fire-resistant materials and are relatively low and unobtrusive.

Inappropriate signs



Source: John Milner Associates, Inc.

This sign at Wind Cave NP, while rustic in style, is not appropriate for use at Tallgrass due to its tall profile and wood construction that would not survive prescribed burning.

Management Zone 3: Eastern Preserve Pastures (Day Use Area) List of Associated Projects

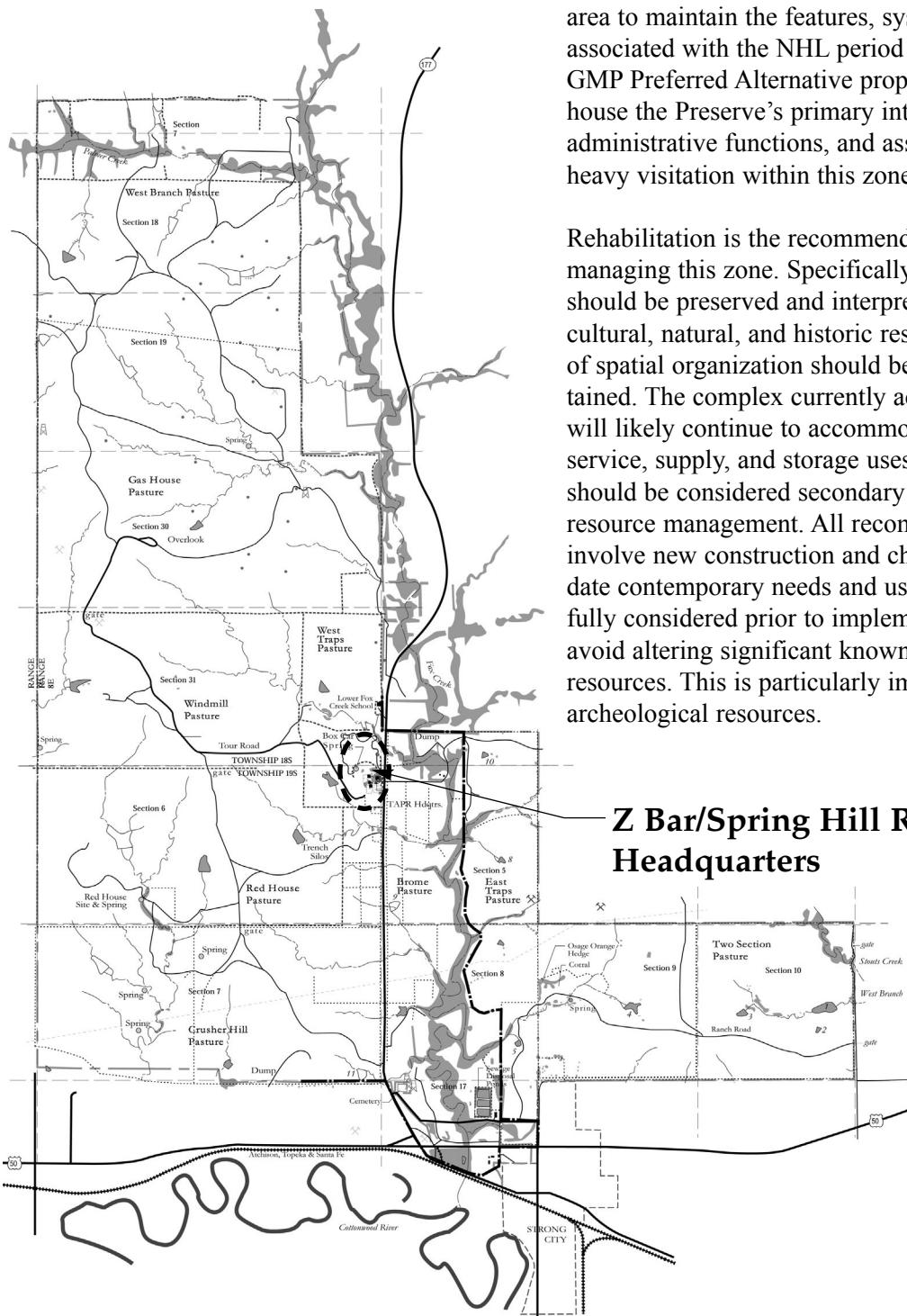
(See Chapter Seven for project descriptions)

Project #	Project
1.	Stabilize and rehabilitate stone walls and fences
3.	Mitigate effects of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses
5.	Re-establish bottomland prairie
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
7.	Establish Day Use Area trails (Two Section trails, Cairn Overlook trail)
11.	Mitigate effects of visitation on Day Use Area resources
12.	Rehabilitate Cow Meadow pasture, and provide interpretation
15.	Protect cultural concentrations and features from prescribed burning
16.	Inventory, identify, control, and remove exotic invasive plants
17.	Establish vegetation on eroded drainageway banks

Management Zone 4: Z Bar/Spring Hill Ranch Headquarters List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
<u>NHL Significance</u>				
Prairie vegetation	H			• (hiking)
Main entrance walk	H	•		
Perimeter stone walks and steps	M	•		
Barn ramps	M	•		
Cedar plantation	M	•		
Shade trees around house	M	•		
Main house	H	•		
Barn	H	•		
Tunnel	M	•		
Curing room/springhouse	H	•		
Privy	H	•		
Icehouse	H	•		
Cistern	H	•		
Poultry house	H	•		
Corral	H	•		
Retaining walls/garden terraces	H	•		
Decorative iron fencing	H	•		
Fountain basin	M	•		
Fishpond	M	•		
Rubble edging, former pond	L	•		
<u>Local Significance</u>				
Scratch house	H	•		
Carriage house	H	•		
Main entrance drive	M			
Access and service drives	M			
Paths	M			
Main ranch road	M			
Ranch Hand House	M			
Silo	H	•		
Post and wire fencing	H		•	
Board fencing	M			
Concrete troughs	M			
Metal watering bins	M			
Cistern	M			
Telephone and electrical lines	M			

Management Zone 4: Z Bar/Spring Hill Ranch Headquarters



This area encompasses the ranch headquarters at Z Bar/Spring Hill which includes a concentration of features contributing to the NHL status of the property. The main ranch house is also individually listed on the National Register. It is critical within this area to maintain the features, systems, and character associated with the NHL period of significance. The GMP Preferred Alternative proposes that this area house the Preserve's primary interpretive and administrative functions, and assumes there will be heavy visitation within this zone.

Rehabilitation is the recommended approach to managing this zone. Specifically, historic resources should be preserved and interpreted, and existing cultural, natural, and historic resources and patterns of spatial organization should be retained and maintained. The complex currently accommodates, and will likely continue to accommodate administrative, service, supply, and storage uses. These needs should be considered secondary to NHL-related resource management. All recommendations that involve new construction and changes to accommodate contemporary needs and uses should be carefully considered prior to implementation in order to avoid altering significant known and potential resources. This is particularly important in regard to archeological resources.

Z Bar/Spring Hill Ranch Headquarters

Management Zone 4: Z Bar/Spring Hill Ranch Headquarters Responses to Natural Features and Systems

1. Control surface runoff and drainage to protect cultural resources in the Z Bar/Spring Hill Ranch headquarters area.



2. Direct drainage away from buildings and structures using appropriate materials and methods (PVC pipe, shown at left at the barn, should be replaced with a more appropriate, less visually intrusive material).



3. Lower terrace grades east of the main house that have built up behind or atop the retaining walls, by gently removing by hand any soil or vegetation that has accumulated.

4. Repair terrace retaining wall weep holes as possible to improve drainage. Clear and stabilize weep holes to allow proper drainage. Monitor and maintain weep holes associated with all retaining walls.

5. Re-direct terrace flow, if drainage problems continue, into a new trench drain system that collects overland flow at the top of each wall. Direct water into pipes that empty into dry wells located to either end of the terraces.

6. Establish the historic grade line against buildings and structures by identifying discoloration and staining of building stone from past contact with earth. Utilize this understanding of the historic grade to repair the grade. Ensure positive drainage away from buildings and structures through minimal filling if necessary. Avoid, wherever possible, channelizing or concentrating stormwater flow. Work to establish sheet flow across relatively level grassy or otherwise vegetated surfaces wherever possible to encourage filtration.



Management Zone 4: Z Bar/Spring Hill Ranch Headquarters Responses to Natural Features and Systems



Source: John Milner Associates, Inc.

7. Minimize landform changes to accommodate positive drainage. Focus re-grading efforts on those critical locations where ponding, pooling, and erosion is occurring, particularly where water stands for more than 24 hours and where ponding occurs in association with pedestrian walks leading to year-round slip hazards.
8. Refer to the Historic Structures Report for more detailed information regarding necessary improvements to roof drains, footings, foundations and foundation drains in the immediate vicinity of buildings and structures. Coordinate re-grading with necessary improvements around the buildings.

Management Zone 4: Z Bar/Spring Hill Ranch Headquarters Spatial Organization and Views



Source: John Milner Associates, Inc.

1. Retain and maintain expansive views from the Z Bar/Spring Hill Ranch headquarters including views to Fox Creek, Flint Hills, and the Lower Fox Creek School.



Source: John Milner Associates, Inc.

1. Retain interpretation as the primary land use in this area.
2. Limit access to spring features by livestock and visitors.

Management Zone 4: Z Bar/Spring Hill Ranch Headquarters List of Associated Projects

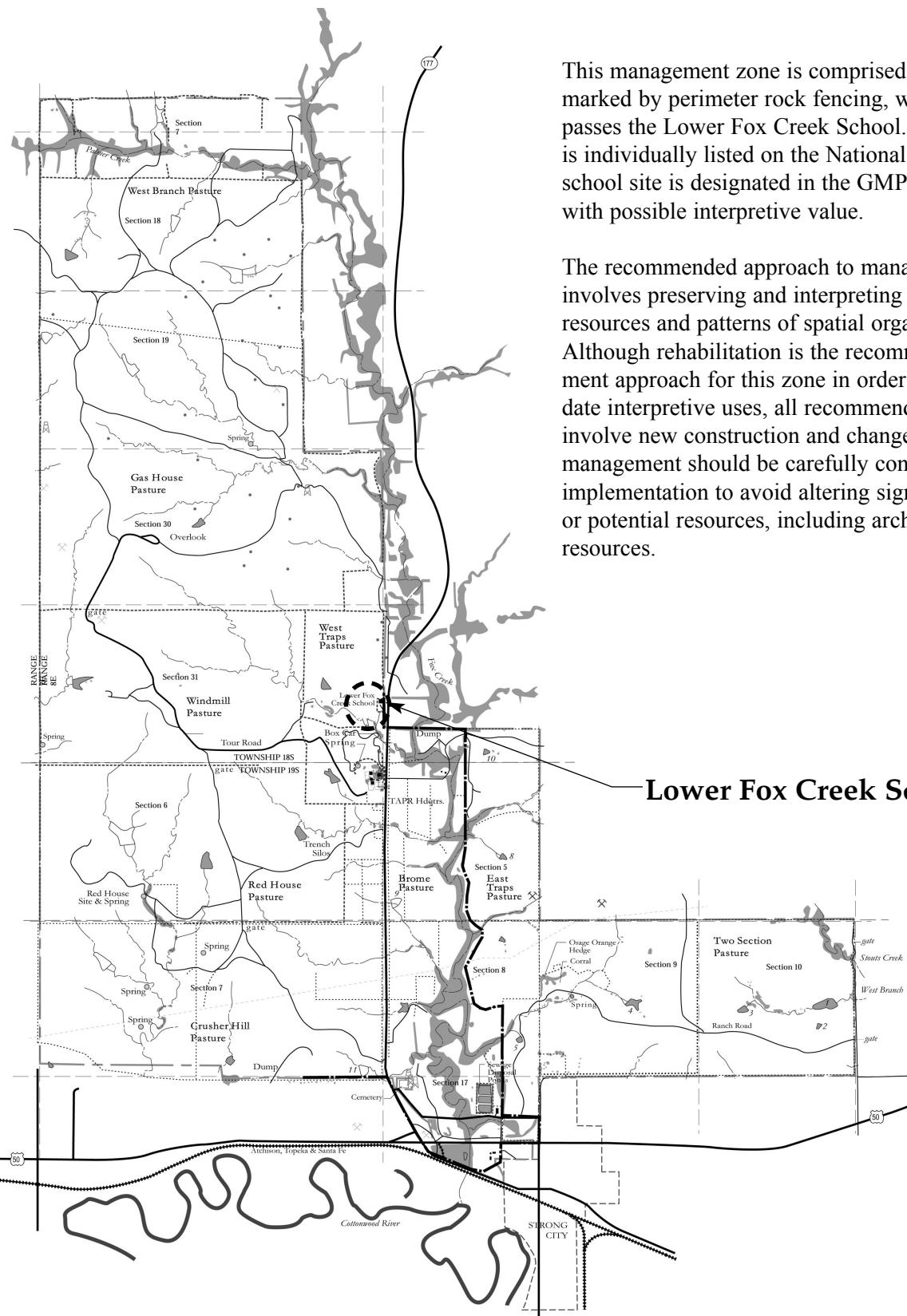
(See Chapter Seven for project descriptions)

Project #	Project
1.	Stabilize and rehabilitate stone walls and fences
4.	Mitigate threats to spring boxes and springhouses
9.	Expand shuttle tour route
10.	Improve drainage in Spring Hill main house precinct and rehabilitate terraces
15.	Protect cultural concentrations and features from prescribed burning
16.	Inventory, identify, control, and remove exotic invasive plants
19.	Establish circulation plan, including ADA access, between buildings within Z Bar/Spring Hill Ranch headquarters
20.	Establish long-term plan for parking
21.	Rehabilitate groves and plantings of trees at Z Bar/Spring Hill Ranch headquarters area

Management Zone 5: Lower Fox Creek School List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
<u>NHL Significance</u>				
Stone perimeter walls	M	•		
Views of and to the school	H	•		
Trace of north/south highway	M			• (tour route)
Prairie vegetation	H			• (hiking)
Lower Fox Creek School House	M	•		
<u>Local Significance</u>				
Access road, path to privy	M			
Highway 177	H		•	
Foundations of former structures	L	•		
Gas flowlines	M	•		
Cistern	M	•		

Management Zone 5: Lower Fox Creek School



This management zone is comprised of the parcel, marked by perimeter rock fencing, which encompasses the Lower Fox Creek School. The property is individually listed on the National Register. The school site is designated in the GMP as a resource with possible interpretive value.

The recommended approach to managing this zone involves preserving and interpreting its historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate interpretive uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological resources.

Management Zone 5: Lower Fox Creek School Spatial Organization and Views



Source: John Milner Associates, Inc.

1. Retain, maintain, and protect the views from the schoolhouse and knoll to the broad prairie.

Land Use

1. Provide access to the school and grounds for visitors during Preserve hours. If staffing the school during these hours is not possible, provide access to the building on a by-appointment basis. Provide interpretation, and use the space to hold special events, exhibitions, or small lectures.

Buildings and Structures



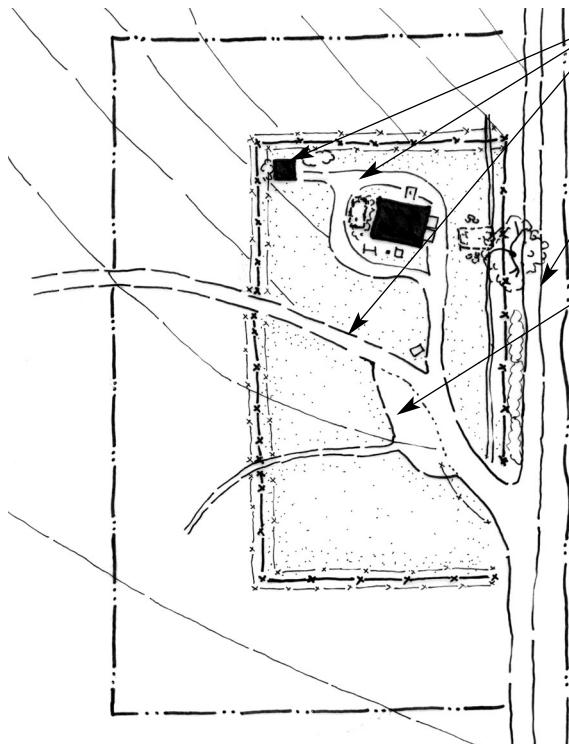
Source: John Milner Associates, Inc.

1. Retain and maintain the School House (at left).
2. Consider using the Lower Fox Creek School House for museum/interpretive purposes.
3. Remove the privy if it can be proven that the structure was relocated to the site from elsewhere. Interpret the original configuration of outbuildings and other features that were associated with the site while it was used as a school.



Source: John Milner Associates, Inc.

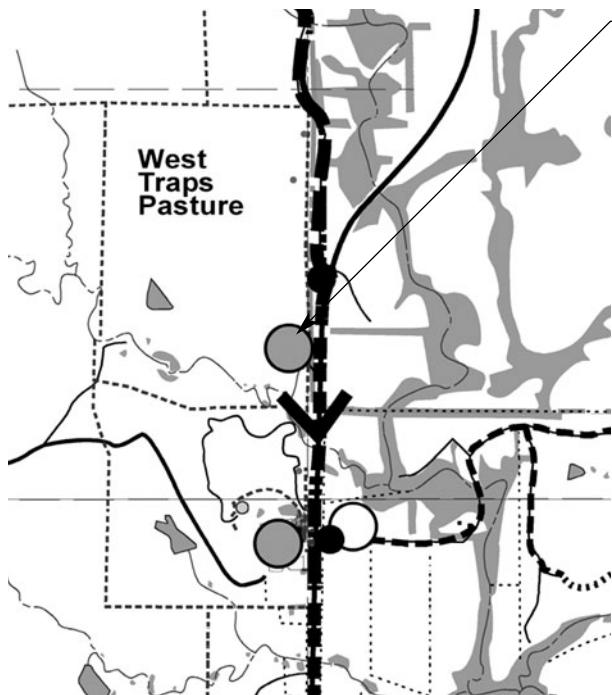
Management Zone 5: Lower Fox Creek School Circulation



1. Retain, maintain, and protect the path to the privy, the two-track, and the circular earthen drive or path around schoolhouse.

2. Retain and maintain the trace alignment of the road paralleling Highway 177.

3. Remove unpaved informal parking area and repair the area by seeding it with prairie grasses.



4. Consider locating a new parking area to the north of the school in conjunction with a scenic pull-off, shuttle stop, and trailhead parking area that takes advantage of views into the West Traps pasture. This location would accommodate visitor access and interpretation of bison reintroduction areas, and the trailhead to a potential backcountry trail. Site the parking area carefully so as not to interfere with views from the school house. The multiple-use parking area will allow a smaller facility to serve several different types of park users (see figure at left).

Management Zone 5: Lower Fox Creek School Vegetation



Source: John Milner Associates, Inc.

1. Retain and maintain native and planted historic vegetation on the site, including the sumac, iris, and cottonwood tree near the school house.
2. Protect the structures and features at the Lower Fox Creek School during prescribed burns using the procedures provided in the Preserve-wide recommendations included earlier in this chapter.
3. Conduct additional archeological, documentary, and oral history investigation to determine more about the school site when it was in active use. Determine, if possible, what the character of the vegetation was on the site during the period of significance.

Management Zone 5: Lower Fox Creek School Small-scale Features

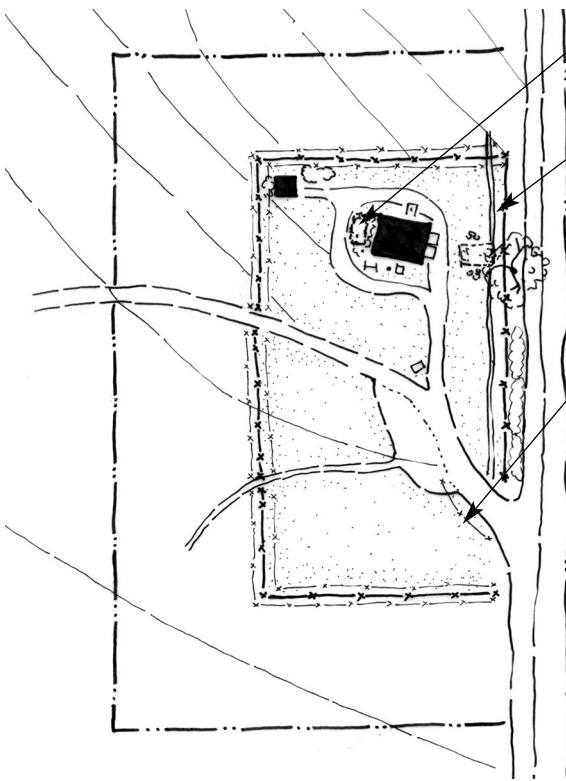


Source: John Milner Associates, Inc.

1. Maintain the existing cover on the well to ensure visitor safety. Repairs or changes made to the cover should maintain its current character as much as possible.
2. Retain, maintain, and protect the site's stone fence, trough, steps, and plaque. Consider removing the flagpole and swing set.



Source: John Milner Associates, Inc.



3. Protect the foundation of the former coal shed.
4. Remove the gas pipeline if the extant leases are re-purchased. Interpret this land use elsewhere on the Preserve.
5. Remove metal post and rope fencing.

Management Zone 5: Lower Fox Creek School List of Associated Projects

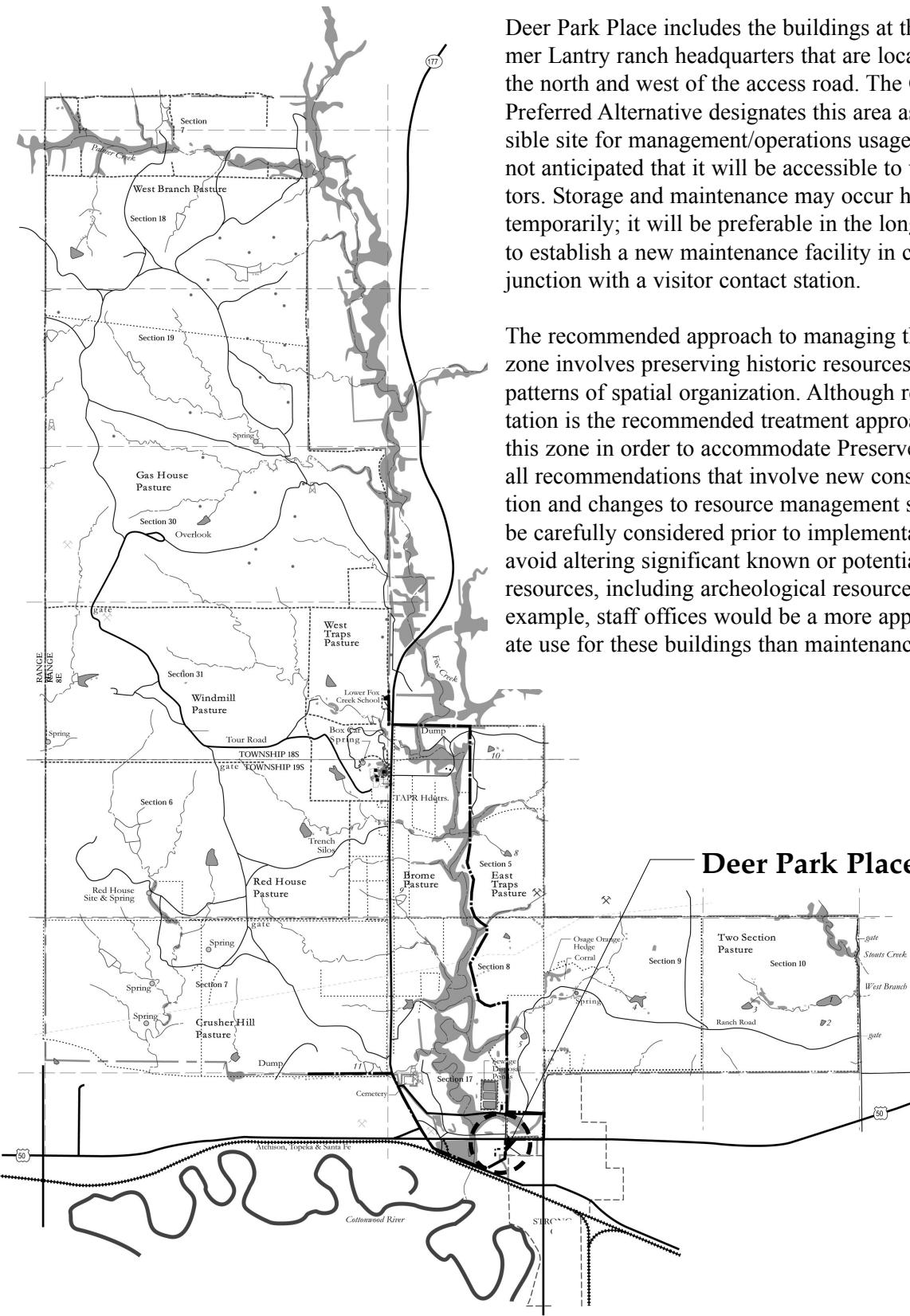
(See Chapter Seven for project descriptions)

Project #	Project
1.	Stabilize and rehabilitate stone walls and fences
9.	Expand shuttle tour route
14.	Create guidelines/recommendations for native species planting program for Highway 177 scenic byway (in conjunction with KDOT)
15.	Protect cultural concentrations and features from prescribed burning
16.	Inventory, identify, control, and remove exotic invasive plants
18.	Assess and develop treatment and interpretive plans for mineral extraction sites
22.	Investigate and rehabilitate Lower Fox Creek School House and schoolyard

Management Zone 6: Deer Park Place List of Features

Features that Contribute to Understanding Site's Ranching History	Relative Level of Integrity	Highly Sensitive and Require Protection against New Visitor Uses	Contributing, with High Integrity and Low Degradation Potential	Might Accommodate Recreational Uses
<u>NHL Significance</u>				
Residential and outbuilding complex	M	•		
Board-and-batten barn	M	•		
<u>Local Significance</u>				
Poultry house	M	•		
Hollow-tile barn	M	•		
Foundations of former structures	M	•		

Management Zone 6: Deer Park Place



Deer Park Place includes the buildings at the former Lantry ranch headquarters that are located to the north and west of the access road. The GMP Preferred Alternative designates this area as a possible site for management/operations usage; it is not anticipated that it will be accessible to visitors. Storage and maintenance may occur here temporarily; it will be preferable in the long-term to establish a new maintenance facility in conjunction with a visitor contact station.

The recommended approach to managing this zone involves preserving historic resources and patterns of spatial organization. Although rehabilitation is the recommended treatment approach for this zone in order to accommodate Preserve uses, all recommendations that involve new construction and changes to resource management should be carefully considered prior to implementation to avoid altering significant known or potential resources, including archeological resources. For example, staff offices would be a more appropriate use for these buildings than maintenance.

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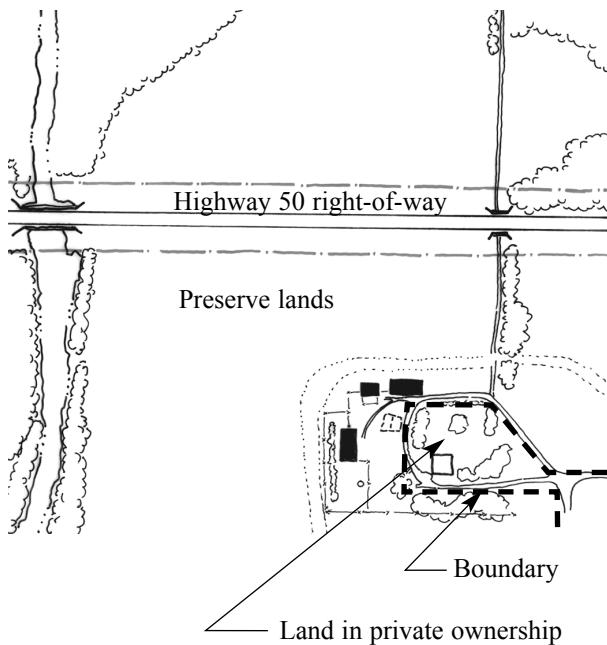
Management Zone 6: Deer Park Place Natural Features and Systems



Source: John Milner Associates, Inc.

1. Retain and maintain flood control structures and berms (berm visible in middle ground of photograph at left).

Land Use



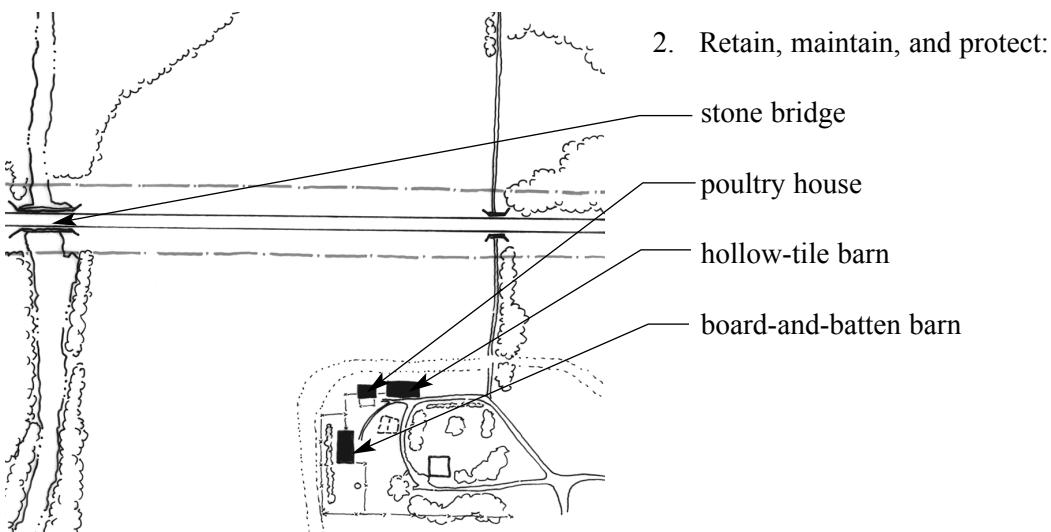
1. Retain existing agricultural/pasture land use on Preserve lands around Deer Park Place.
2. Limit visitor access to this area.
3. Consider temporary use of the Preserve structures in this area for storage and maintenance.
4. Incorporate maintenance facilities as possible into the new visitor contact facility.

Management Zone 6: Deer Park Place Buildings and Structures



Source: John Milner Associates, Inc.

1. Evaluate structures for visitor and staff safety concerns, and repair as needed to ensure safety.



2. Retain, maintain, and protect:
 - stone bridge
 - poultry house
 - hollow-tile barn
 - board-and-batten barn

Management Zone 6: Deer Park Place Vegetation



Source: John Milner Associates, Inc.

1. Avoid burning in this area.
2. Protect the structures and features in the Preserve at Deer Park Place from unwanted burning during prescribed burns by carrying out the procedures set out in Management Zone 4, Z Bar/Spring Hill Ranch Headquarters recommendations.



Source: John Milner Associates, Inc.

Small-scale Features

1. Retain, maintain, and protect fences and the foundations of former structures within this area.

Management Zone 6: Deer Park Place

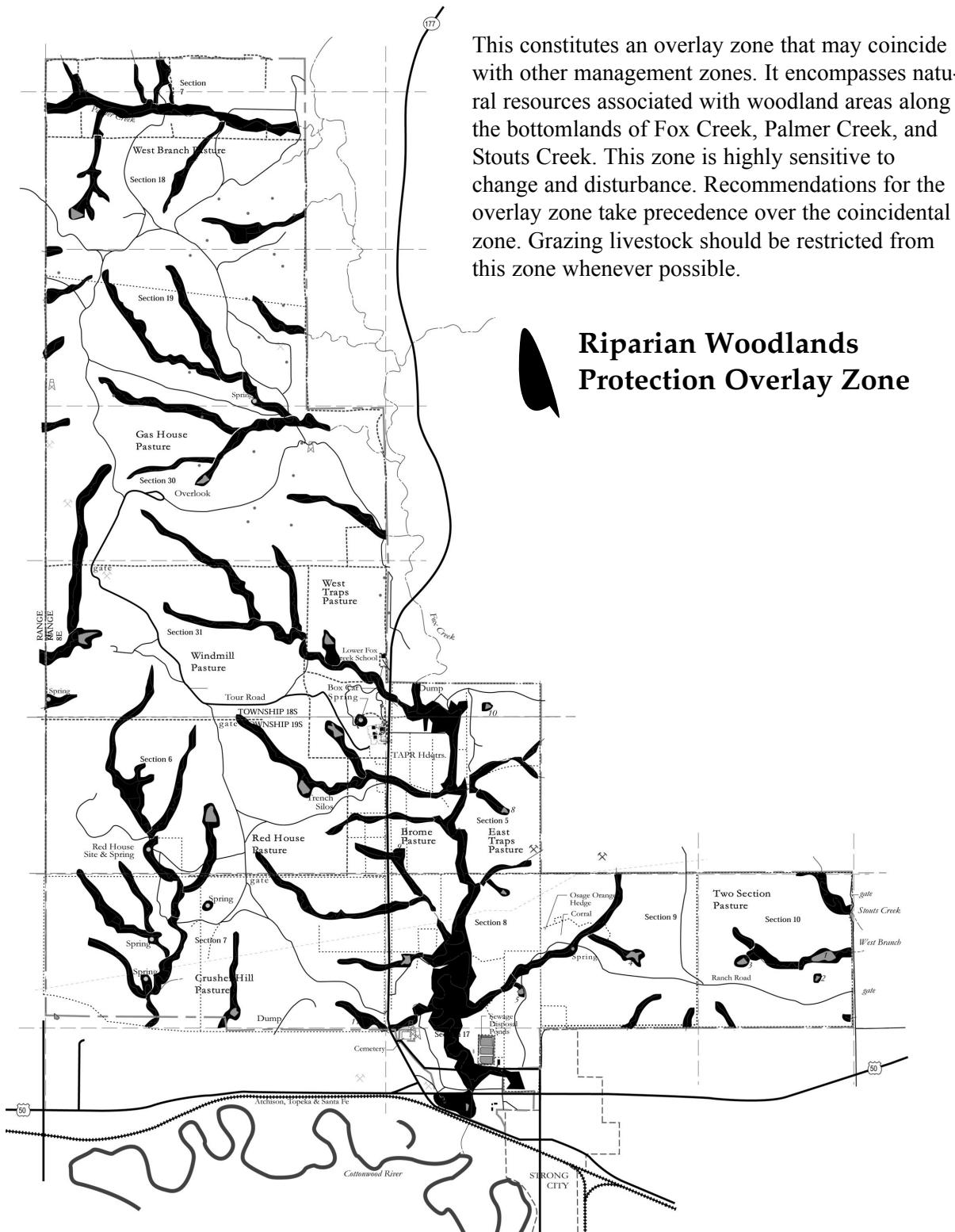
List of Associated Projects

(See Chapter Seven for project descriptions)

Project #	Project
------------------	----------------

- | | |
|-----|--|
| 1. | Stabilize and rehabilitate stone walls and fences |
| 15. | Protect cultural concentrations and features from prescribed burning |
| 16. | Inventory, identify, control, and remove exotic invasive plants |

Management Zone 7: Riparian Woodlands Protection Overlay Zone



Management Zone 7: Riparian Woodlands Protection Overlay Zone

1. Retain, maintain, and protect woodland cover, including gallery forest. Institute prescribed burning within riparian woodlands to enhance open wooded character and promote growth of grasses in association with these areas. The root systems of grasses will help retain soil.
2. Consider interpreting the role of the regional bottomland woods, both as a source of timber for prairie inhabitants and in water resource protection.
3. Allow for access to floodplain and bottomland areas only via designated trails.
4. Exclude livestock from accessing sensitive riparian areas including seeps, springs, creeks or other perennial waterways: see recommendations in Zone 9 later in this chapter.
5. Carefully consider potential archeological resources when addressing restoration of riparian areas.



Source: John Milner Associates, Inc.

Management Zone 7: Riparian Woodlands Protection Overlay Zone

List of Associated Projects

(See Chapter Seven for project descriptions)

Project #	Project
3.	Mitigate effects of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses
5.	Re-establish bottomland prairie
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
13.	Mitigate effects of bison on cultural resources
16.	Inventory, identify, control, and remove exotic invasive plants
17.	Establish vegetation on eroded drainageway banks

Management Zone 8: Archeological Resources Overlay Zone

This overlay management zone is comprised of all known and potential archeological resources. It encompasses known resources but should be expanded as additional sites are discovered through archeological investigation. This management zone is highly sensitive to change and disturbance. It is designed to protect known and potential archeological sites throughout the Preserve landscape, and takes precedence over the coincidental zone.

The approach to managing this zone involves the protection of all known resources, except where their investigation is warranted in order to address important research questions or in support of interpretation. This treatment plan recommends identification, inventory, and documentation of all known and potential archeological resources as soon as possible to avoid unnecessary disturbance. It also recommends that the NPS consider the interpretive potential of all significant archeological resources as part of the development of a long-range interpretive plan.

Because specific location information regarding archeological resources is restricted, a map of this zone is not provided in this CLR.

Management Zone 8: Archeological Resources Overlay Zone

1. Protect archeological sites from disturbance, except for investigations necessary to address important research questions. The key to archeological site preservation is avoidance of subsurface disturbance. Thus, the best soil management strategy for archeological site preservation is that which involves the least disturbance. Maintaining grass is an excellent strategy for preserving subsurface archeological resources. Mown or unmown meadows and pastures protect resources from erosion or other surface disturbance. Plowing causes significant disturbance to archeological sites that have never been plowed. Integrity of features may be lost, and artifacts are moved. Once a site has been plowed, repeated plowing does not add significant damage. Artifacts tend to be broken into smaller pieces, but movement within the site is relatively confined. Thus, continued use of plowed land for agriculture does not cause significant new damage unless the plow is deep enough to penetrate the subsoil and possible deep features. Land maintained in forest is likely to preserve archeological integrity. Groundcover generally protects resources, although growing tree roots will penetrate and disturb features. When trees are uprooted, significant disturbance is caused within and around the root ball. Removal of trees by means that uproot trees and plants or scrape the ground are also

destructive practices. Grinding stumps causes significant disturbance for several feet around the stump. Avoid grinding stumps in areas that may include subsurface resources. In these cases, cut tree flush with the ground.

2. Evaluate archeological sites to determine visitor safety and resource protection concerns.
3. Avoid establishing trails in areas associated with known sensitive archeological resources.
4. Ensure that known and potential archeological resources are protected when restoring riparian areas.
5. Monitor water resource margins for erosion and associated emerging archeological resources.
6. Stabilize sites of known archeological resources affected by erosion by establishing and maintaining grass cover. Install erosion control measures such as textiles and grass using methods that do not further disturb subsurface resources. Avoid the use of material that is visually incompatible with the character of the area, such as riprap or other large stone.
7. Fence sensitive archeological resources to prevent damage by grazing animals.
8. Prevent the buildup of large fuel loads (brush) which can generate excessive heat when conducting prescribed burning.
9. Avoid constructing trails nearby sensitive archeological resources. Do not publicize their locations in order to prevent potential theft or damage.



Source: John Milner Associates, Inc.

Management Zone 8: Archeological Resources Overlay Zone List of Associated Projects

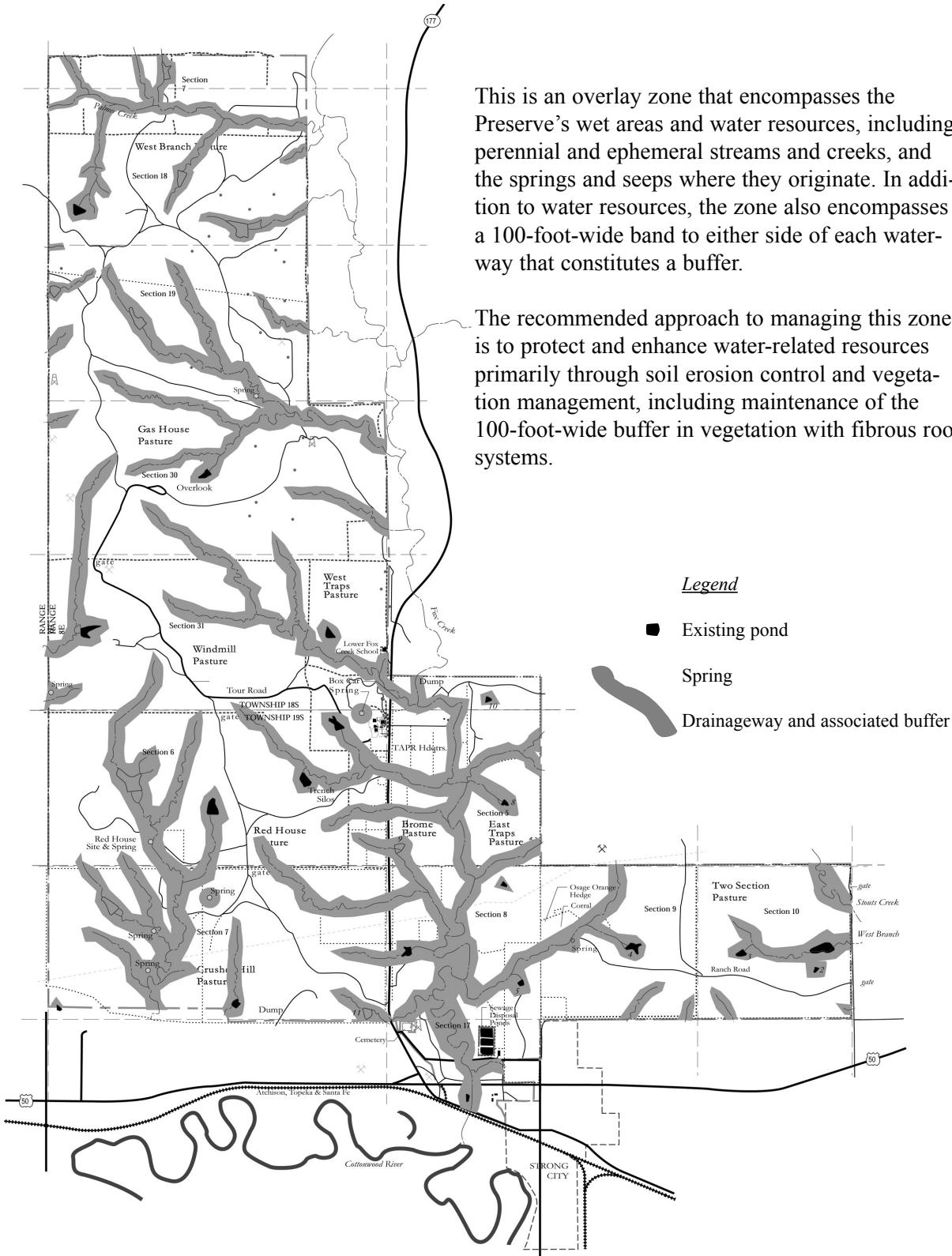
(See Chapter Seven for project descriptions)

Project #

Project

1. Stabilize and rehabilitate stone walls and fences
2. Rehabilitate historic crop fields and orchard
4. Mitigate threats to spring boxes and springhouses
5. Re-establish bottomland prairie
11. Mitigate effects of visitation on Day Use Area resources
13. Mitigate effects of bison on cultural resources
15. Protect cultural concentrations and features from prescribed burning

Management Zone 9: Water Resource Protection Overlay Zone



This is an overlay zone that encompasses the Preserve's wet areas and water resources, including perennial and ephemeral streams and creeks, and the springs and seeps where they originate. In addition to water resources, the zone also encompasses a 100-foot-wide band to either side of each waterway that constitutes a buffer.

The recommended approach to managing this zone is to protect and enhance water-related resources primarily through soil erosion control and vegetation management, including maintenance of the 100-foot-wide buffer in vegetation with fibrous root systems.

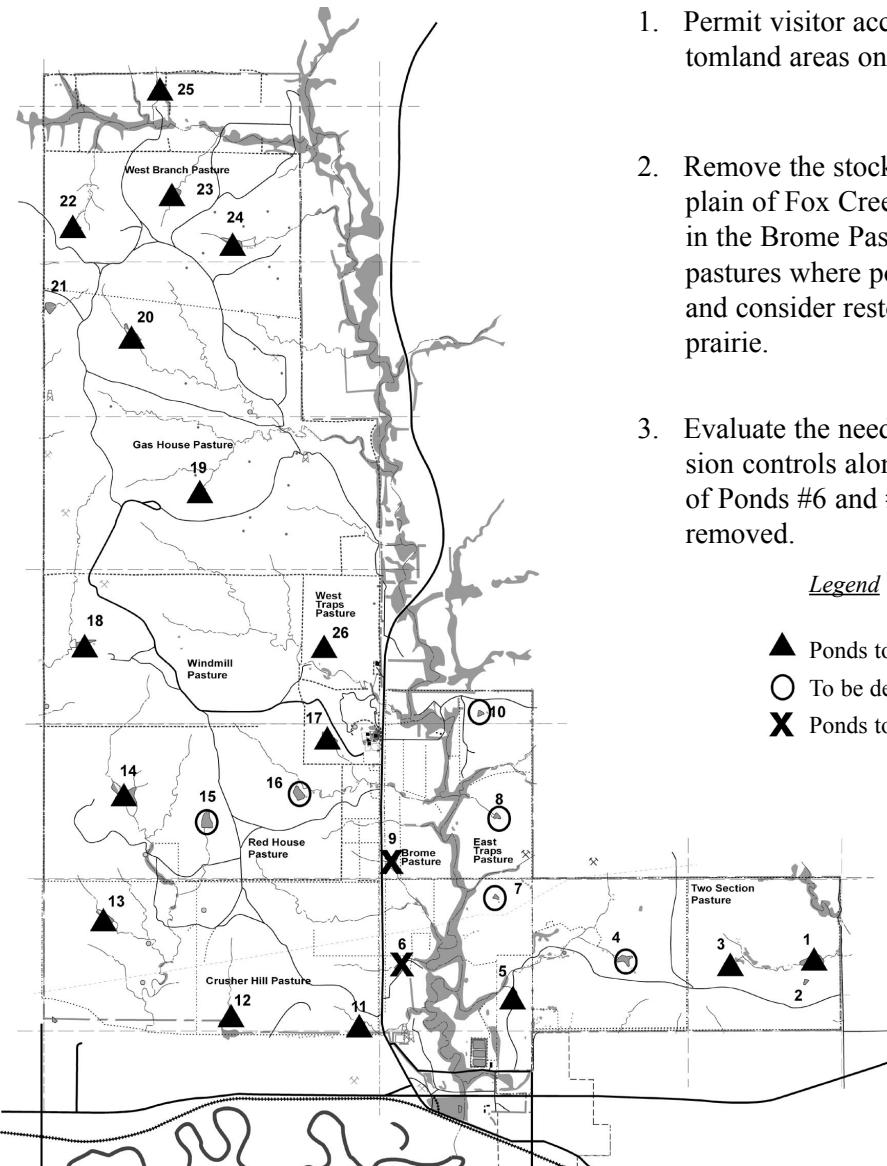
Legend

Existing pond



Drainageway and associated buffer

Management Zone 9: Water Resource Protection Overlay Zone



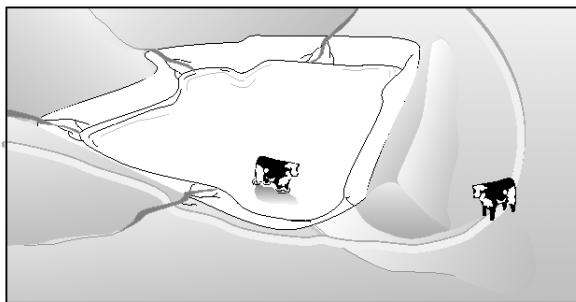
1. Permit visitor access to floodplain and bottomland areas only via designated trails.
2. Remove the stock ponds located in the floodplain of Fox Creek, such as Ponds #9 and #6 in the Brome Pasture. Discontinue grazing in pastures where ponds have been removed, and consider restoring the area to bottomland prairie.
3. Evaluate the need for alternate flood and erosion controls along Highway 177 in the area of Ponds #6 and #9 after these ponds are removed.
4. Maintain existing stock ponds in grazed pastures as necessary for livestock watering (see Water Resources Overlay Zone section for recommended water quality improvements at ponds).
5. When addressing restoration of riparian areas, protection of known and potential archeological resources must be considered (see Archeological Resources Protection Overlay Zone).
6. See Riparian Woodlands Protection Overlay Zone for recommendations relating to riparian woodland.

Management Zone 9: Water Resource Protection Overlay Zone

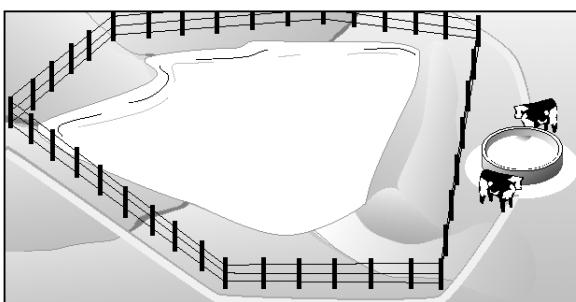


Source: John Milner Associates, Inc.

Typical Stock Pond Management



Ideal Stock Pond Management



Source: KSU/Kansas Agricultural Extension.

1. Maintain existing stock ponds in grazed pastures as necessary for livestock watering.
2. Exclude livestock from accessing sensitive riparian areas including seeps, springs, creeks or other waterways by adding fencing.
3. Introduce water resource protection measures at existing ponds that are to be retained as stock ponds or for watering bison. See diagrams at left from Kansas Agricultural Extension.
 - Fence the entire perimeter of existing ponds and dams to exclude livestock from trampling vegetation and causing erosion and siltation problems that can affect the health of the downstream environment. Fencing also keeps livestock from walking out onto the ice in winter or getting mired in silt during low water periods.
 - Add a water pipeline under the dam to feed water troughs located outside the fenced area. Set the troughs on gravel to reduce erosion potential.

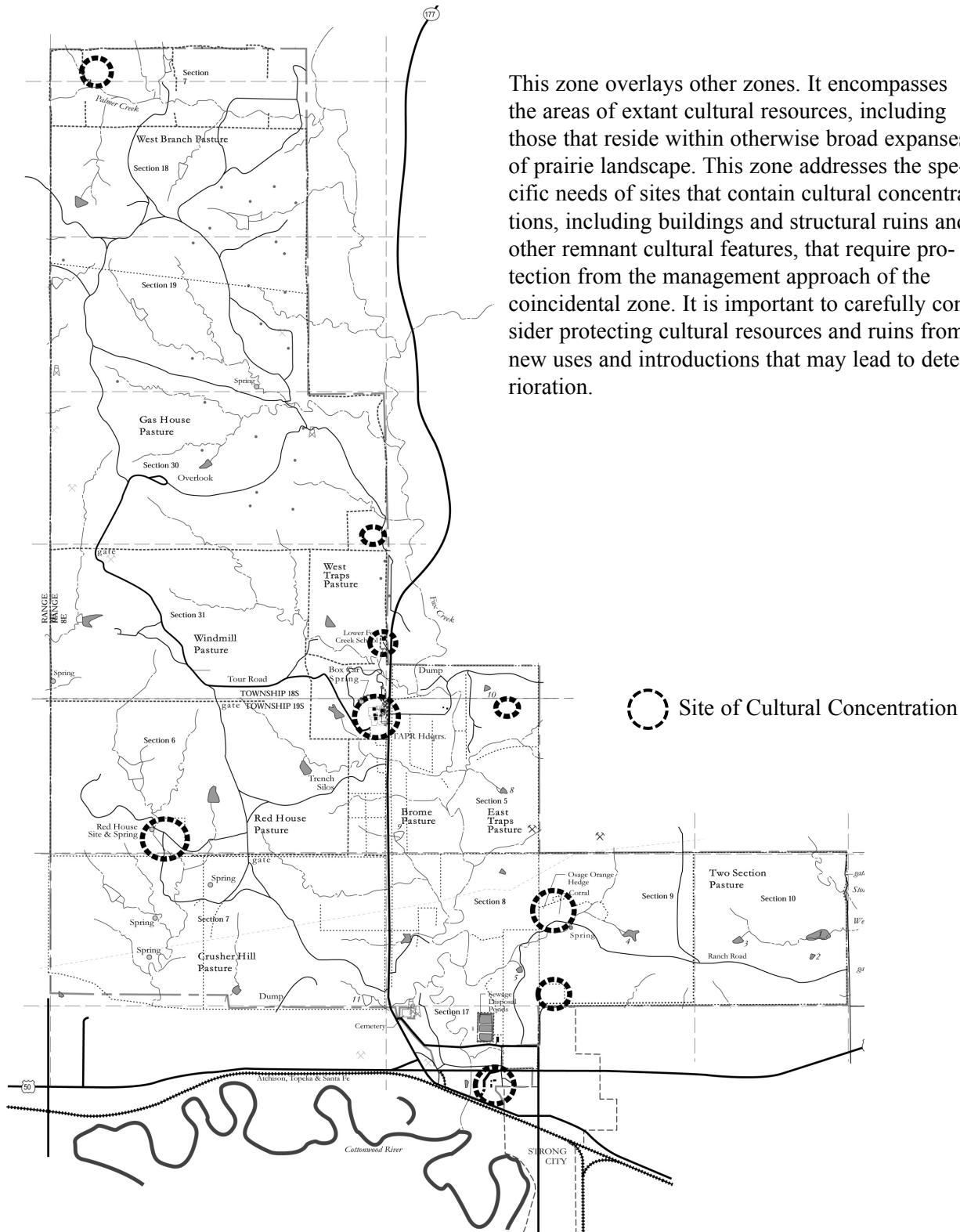
Management Zone 9: Water Resource Protection Overlay Zone

List of Associated Projects

(See Chapter Seven for project descriptions)

Project #	Project
2.	Rehabilitate historic crop fields and orchard
3.	Mitigate effects of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses
5.	Re-establish bottomland prairie
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
11.	Mitigate effects of visitation on Day Use Area resources
13.	Mitigate effects of bison on cultural resources
16.	Inventory, identify, control, and remove exotic invasive plants
17.	Establish vegetation on eroded drainageway banks

Management Zone 10: Cultural Concentrations Overlay Zone



This zone overlays other zones. It encompasses the areas of extant cultural resources, including those that reside within otherwise broad expanses of prairie landscape. This zone addresses the specific needs of sites that contain cultural concentrations, including buildings and structural ruins and other remnant cultural features, that require protection from the management approach of the coincidental zone. It is important to carefully consider protecting cultural resources and ruins from new uses and introductions that may lead to deterioration.

Management Zone 10: Cultural Concentrations Overlay Zone

1. Fence and otherwise limit livestock and visitor access to sites of cultural concentrations that are not interpreted.
2. Avoid establishing trails in the vicinity of cultural concentrations that are not interpreted.
3. Protect cultural concentrations from prescribed burning.
4. Periodically remove vegetation from remnant cultural resources.
5. Maintain and protect cultural concentrations.



Source: John Milner Associates, Inc.

Management Zone 10: Cultural Concentrations Overlay Zone List of Associated Projects

(See Chapter Seven for project descriptions)

Project #	Project
2.	Rehabilitate historic crop fields and orchard
3.	Mitigate the impacts of livestock on riparian systems and stock ponds
4.	Mitigate threats to spring boxes and springhouses
5.	Re-establish bottomland prairie
6.	Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
11.	Mitigate effects of visitation on Day Use Area resources
13.	Mitigate effects of bison on cultural resources
16.	Inventory, identify, control, and remove exotic invasive plants
17.	Establish vegetation on eroded drainageway banks

Management Zone 11: Zones of Potential New Development

This management zone relates to potential future development to accommodate the new facilities and uses proposed in the GMP. It is meant to address potential siting and/or general design and construction guidelines for proposed new buildings and structures. To date, no locations have been identified as zones of potential new development. New features that may be critical to operation of the Preserve in the future may include a bison/livestock handling facility, visitor contact station, and maintenance facility.

Management Zone 11: Zones of Potential New Development Visitor orientation and interpretation facility

1. Situate new facilities in close proximity to Highway 177, beyond the viewshed of the Z Bar/Spring Hill Ranch headquarters. Consider locations that are at lower elevations and nestled within landforms that prevent the building from being visible from Preserve pastures, two-track ranch roads, and high points.
2. Allow for views of the prairie from the contact station. Initiate Preserve interpretation by establishing a complementary relationship between the building and its associated landscape. Consider interpreting cultural adaptations to natural systems by expressing building and service functions and their connection to the land.
3. Introduce new buildings and structures to facilitate access and interpretation while minimizing adverse impacts on the historic character and features of the landscape. New construction should be compatible with the historic resources in materials, size, scale, proportion, and massing. Differentiate new work from existing historic resources.
4. Minimize vertical elements and maintain the open character of the area and the views across the landscape.
5. Design and situate new additions or alterations to the landscape in such a way that they do not destroy historic materials, features, and spatial relationships that characterize the cultural landscape.
6. Design and situate new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and integrity of the landscape would be unimpaired.
7. Design new construction to have muted, neutral, earth-tone colors and materials to blend new facilities with the historic and natural context.
8. Ensure that the design and construction of new facilities and systems constitutes a new layer that is subordinate to the surviving built and natural landscape. This new layer inserted on an already complex landscape should be as invisible as possible without sacrificing functionality.
9. See also the general management and design guidelines and recommendations section on new design and construction earlier in this chapter for additional information.

Management Zone 11: Zones of Potential New Development

Livestock handling facility

1. Consider carefully the location, siting, design, and materials of this new facility, which has the potential to be a highly visible intrusion on the character of the historic and natural landscape of the Preserve.
2. Maintain as a priority a goal of minimal impact.
3. Avoid siting the facility in the floodplain or in any of the primary viewshed areas.
4. Locate the structure in close proximity to Highway 177 to limit the amount of new road construction necessary. Otherwise take advantage of existing road systems whenever possible.
5. Design carefully any additional infrastructure necessary to enable the re-introduction of bison, as it has the potential to affect the appearance and integrity of the landscape over a far wider area than the handling facility alone. Such features include new or upgraded perimeter and pasture fencing, an access road to the handling facility, new gates and cattle/bison guards, and any other structures needed for managing the herd.
6. Consider carefully the needs identified in the Bison Management Plan in order to design the most limited facility necessary to accommodate proposed uses.
7. See also the general management and design guidelines and recommendations section on new design and construction earlier in this chapter for additional information.

Chapter 7 / Implementation Recommendations



7. IMPLEMENTATION GUIDELINES

Identification and Description of Treatment Projects

This chapter describes the means for implementing the recommendations included in Chapter Six. The implementation guidelines for the Tallgrass Prairie National Preserve (Preserve) treatment plan has been divided into a series of twenty-two projects, described in detail below. The descriptions of the projects are organized to be compatible with the format of the National Park Service's (NPS) Project Management Information System (PMIS) forms that are used to render funding requests. The implementation projects are intended to respond to the goals outlined in the Preserve's General Management Plan (GMP); the management issues identified by Preserve personnel in the development of this report; the findings of earlier sections of the Cultural Landscape Report (CLR); as well as life safety, visitor accessibility, and interpretation considerations. All projects are subject to review under the federal Section 106 Regulations.

Each project is presented individually, with a summary description; the considerations or justifications associated with its inclusion in the treatment plan; identification of the project's location; recommendations for further research, study and investigations; and estimated costs. The breakdown of tasks for each project does not include project management, compliance-related reviews, and other management elements typically undertaken by NPS personnel as part of the planning, design, and construction phases of a project.

Budget data includes an estimate of probable costs for each of the projects involving construction. All cost estimate data presented in this report is intended to be used for general planning purposes only. Construction cost estimates are based on average costs typical in 2003 and do not account for inflation. The cost data was developed using NPS planning-level "Class C" cost estimating data and the R.S. Means cost estimating data service. In addition, costs for items not covered by these sources were developed from auxiliary sources that address pricing for livestock-related items (Priefert Ranch Equipment, American Fence and Supply Co.) and interpretive signage (NPS Harpers Ferry Center Media Development Group). Estimates of costs and fees for construction- and planning-related professional services are based on a percentage of construction cost. For the purposes of this project, professional design fees for construction-related services are estimated to be 15 percent of the estimated construction cost. Professional fees and other fees for services are based on JMA's experience estimating order of magnitude fees for services. Fees and costs are based on the assumption that all work will be performed by consultants, vendors, and/or private contractors. 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 not available. JMA, endeavoring to support subsequent planning efforts, has included very rough estimates for some project elements. In some cases, additional studies will be required to determine the full extent of a

project and its costs. In others, it is not possible to determine order of magnitude or conceptual-level project budget costs. For example, when little is known about the scope of a project because significant additional research or planning and feasibility studies are needed to develop sufficient levels of information to support cost estimating, project cost data has not been included.

Treatment Projects

The twenty-two treatment projects explored in this chapter are as follows:

1. Stabilize and rehabilitate stone walls and fences
2. Rehabilitate historic crop fields and orchard
3. Mitigate effects of livestock on riparian systems and stock ponds
4. Mitigate threats to spring boxes and springhouses, including Red House site
5. Re-establish bottomland prairie
6. Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
7. Establish Day Use Area trails (Two Section trails, Cairn Overlook trail)
8. Establish backcountry trails (Ridge and Palmer Creek trails)
9. Expand shuttle tour route
10. Improve drainage in Z Bar/Spring Hill house precinct and rehabilitate terraces
11. Mitigate effects of visitation on Day Use Area resources
12. Rehabilitate Cow Meadow pasture, and provide interpretation
13. Mitigate effects of bison on cultural resources
14. Establish long-term coordination with Kansas Department of Transportation and National Scenic Byway Program to preserve and enhance the tallgrass prairie right-of-way along Highway 177, reinforcing the visitor experience of native prairie plants and historic scene
15. Protect cultural concentrations and features from prescribed burning
16. Inventory, identify, control and remove exotic invasive plants
17. Establish vegetation on eroded drainageway banks
18. Assess and develop treatment and interpretive plans for mineral extraction sites
19. Establish circulation plan, including ADA access, between buildings within Z Bar/Spring Hill Ranch headquarters
20. Establish long-term plan for parking
21. Rehabilitate groves and plantings of trees at Z Bar/Spring Hill Ranch headquarters
22. Investigate and rehabilitate Lower Fox Creek Schoolhouse and schoolyard

Most of the projects listed above depend on the completion of one or more Preserve-wide studies or plans, some of which are currently underway. Preserve-wide studies mentioned in numerous projects that follow include a long-range interpretive plan, vegetation management plan, prescribed burn plan, grazing study, invasive plant management plan, and archeological study. Due to the relatively recent initiation of the Preserve as public land, relatively few studies have been accomplished to establish guiding management principles for carrying out large projects. For example, a Preserve-wide grazing study is needed to determine the preferred level of pasture use in the future, and therefore to determine the number of cattle guards, types of fencing, etc. to be utilized.

In addition, many projects require a certain level of specific study or assessment prior to their being undertaken, such as treatment of stone walls. These studies are noted within each project's planning budget as well.

Treatment Recommendations by Project

1. *Stabilize and rehabilitate stone walls and fences*

Description

While some of the Preserve's stone walls and fences retain a high level of integrity of materials, others have deteriorated almost to the point of disappearance. Each of the Preserve's stone walls and fences should be inventoried, documented, and assessed in detail for their condition, and potential threats to integrity identified. Walls and fences found to contribute to the NHL significance of the Preserve, particularly those located within areas where interpretation is a high priority, should be stabilized, preserved, and rehabilitated. Stone walls located within the viewshed of the Z Bar/Spring Hill Ranch headquarters should be given priority, and sections should be rehabilitated to reflect their former appearance as an interpretive aid for visitors. Other NHL period walls should be stabilized rather than rehabilitated. All stone walls that will undergo change should be documented before work is initiated, particularly those that must be removed to accommodate new uses.

Considerations / Justification

The Preserve's system of stone walls and fences that mark pasture and property boundaries is an essential feature of the historic Preserve livestock ranching landscape. A primary characteristic of the late 19th century ranching period in the American West was the enclosure of the prairie landscape by walls and fences, and the shift from unbounded rangeland to fenced pasture. This shift served to irrevocably alter the social structure of the Flint Hills region and the visual appearance of its landscape. Preserve walls and fencelines demarcate more than a century of pasture boundaries and property lines and are crucial to the visitor understanding of the site's ranching legacy. These stone pasture boundary walls and some internal fencelines contribute to the character of the historic landscape. They should be retained and maintained, and potential negative impacts to these features should be mitigated. Wherever possible, the walls should be restacked using sections in good condition as a guide to the stacking pattern.

Currently, the Preserve's many miles of stone walls and fences are generally in fair to poor condition, and are in great need of stabilization. Stones have been "borrowed" from some walls over time, resulting in a loss of materials; woody vegetation is destabilizing some sections of wall as well. Dry-laid limestone walls that were originally five feet high and three feet thick now range from a few inches to up to three feet in height.

Additional Studies Recommended

Action needed prior to work to includes: condition inventory of all walls and fences, including evaluation of appropriate treatment for each wall and impact of work on surrounding resources.

Project Implementation Process

Task	Expertise needed	Estimated Cost	Notes
1. Additional Studies	Historical landscape architect, Archeologist, Preserve staff	\$ 15,000-25,000	Condition inventory and assessment of walls and fences. Identify and delineate historic stone walls and fences throughout the Preserve landscape. Mark sections of wall to be rehabilitated or removed, evaluate the impact of recommended actions.
2. Prioritization of walls based on assessment criteria and planned treatment	Historical landscape architect, conservator, Preserve staff	\$ 2,000-3,000	Includes day-long meeting, creation of memo and map with location of priority ratings of wall sections
3. Stabilization of selected walls	Conservator, Artisan	\$ 22-27/sq. ft. of face	Assumes the use of stone brought on site, in quantity half of that required for rehabilitation of stone walls (see below)
4. Rehabilitation of selected walls	Conservator, Artisan	\$ 25-30/sq. ft. of face	Includes restacking and rebuilding dry-laid stone wall (labor, materials, and transport of materials)
5. Removal of selected walls	Landscape contractor, Preserve staff	\$ 15-20/ton	Assumes some stone could be stockpiled for reuse
6. Documentation of walls to be removed	Historical landscape architect, Archeologist	\$400-600/day/ person	
7. Monitoring of condition of walls	Archeologist	\$400-600/day	Periodically evaluate impact of visitor use, grazing, fire, vegetation growth, and other factors on the condition of walls

2. *Rehabilitate historic crop fields and orchard*

Description

This project addresses the rehabilitation of historic crop fields and a fruit tree orchard in the vicinity of the Z Bar/Spring Hill Ranch headquarters. The bottomlands of the Fox Creek corridor and other lands along the current Highway 177 were historically cropped, beginning in the early settlement period, continuing on through the Jones and Lantry periods, and for much of the 20th century. For the NHL period, the best sources of information regarding the historic location of crop fields are the 1895 Lantry ranch map and 1887 Everts lithograph. The Lantry map indicates that much of the area to the east of the highway was used to grow corn, with a small section shown as under alfalfa, while millet and oats are indicated in fields to the south of the ranch headquarters.

Much of the land to the south and east/southeast of the Ranch headquarters lends itself to the exhibit of historic cropping on the property. Approximately eighty acres are available to support this effort. Within the viewshed of the headquarters, and proximate to it, the crop fields will be used to interpret the NHL period, using the Lantry map as a design guide for locating features. Later periods could be interpreted moving south and southwest through the identified area, using historic aerial photographs and agricultural census data to guide the design of the exhibits. Crops would include historically appropriate varieties of sorghum, corn, millet, alfalfa, oats, or other species as identified during research.

Also recommended is the establishment of an approximately eight-acre fruit tree orchard in the field to the east of the Ranch headquarters to exhibit NHL period historically appropriate cultivars of apple, peach, plum, cherry, and pear and interpret the orchard illustrated in the 1887 Everts lithograph. According to the 1885 agricultural census, Jones had 230 young, non-bearing, fruit trees, including 200 apple, 10 peach, 6 plum, 6 cherry, and 8 pear. He also had 176 bearing fruit trees: 1 apple, 50 peach, 100 plum, and 25 cherry. The census indicates that Jones also maintained one acre of vineyard at that time. Some of these trees may have been planted during the early settlement period prior to Jones' ownership of the property. Cropping will be carried out using NPS Best Management Practices (BMP) to ensure environmental sustainability.

Considerations / Justification

Planting crops and fruit trees within selected areas where these activities are documented to have occurred in the late 19th century will provide valuable interpretive opportunities to help visitors understand an integral aspect of the settlement history of the region, and the limited suitability of local soils and geology to crop farming. Using period census data, mapping, and lithographs, the area could support interpretive exhibits relating to various periods of the property's history. Re-establishing a portion of this cropland will support an understanding of the historic scene not currently possible at the Preserve. By planting in locations historically utilized for crop fields, only previously disturbed sites will be used, limiting the potentially negative effects on the prairie ecosystem. Other areas of the bottomlands would be returned to prairie grasses. To prevent the re-introduction of invasive exotics through the establishment of crop field exhibits,

special care should be taken to select species that will not spread, and equipment used to sow and harvest crops will need to be washed to avoid contaminating the area with undesirable seed germ.

Additional Studies Recommended

A Preserve-wide vegetation management and action plan should be prepared in consultation with local experts. Soil testing of recommended crop field and orchard locations should be conducted. Historically, corn was grown on to the east of the highway, oats and millet to the west. An analysis of the soils and hydrology over the possible extent of crop fields will likely suggest the best locations for specific crops. The vegetation management plan should include cost estimates and a maintenance plan. Selection of historically appropriate species will need to be based on additional study.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Historical Landscape Architect, Botanist/Ecologist, Preserve staff	Vegetation management plan \$ 25,000-30,000	
2. Soil testing	Soil testing laboratory; Preserve staff	\$ 12,000-25,000	Soil testing in conjunction with bottomland prairie re-establishment (Project #5)
3. Selection of historic crop and fruit tree species	Historical Landscape Architect, Horticulturist, Preserve staff	\$ 8,000-12,000	Determine appropriate species
4. Design	Historical landscape architect	10% of construction costs	Create planting plan
5. Clearing and grubbing	Landscape contractor	\$ 4,000-5,000/acre	Assumes sparse vegetation
6. Limited minor grading and erosion control	Landscape contractor	\$ 1,000-2,000/acre	
7. Limited chemical control of existing field cover; removal of noxious plants	Landscape contractor or certified herbicide applicator	\$ 1,000-2,000/acre	
8. Permanent seeding of orchard ground	Landscape contractor	\$ 1,000-1,500/acre	Native grasses, to be determined
9. Discing fields and drilling crop seeds	Landscape contractor	\$ 2,000-4,000/acre	Annual expense, depends on crop, tilling method employed

10. Planting orchard trees	Landscape contractor	\$ 400-600/tree	Includes cost of 2-3"-caliper (diameter) nursery grown tree and installation.
11. Monitoring of land disturbance	Archeologist	\$ 400-600/day	Monitoring will end when fields are well re-established.

3. *Mitigate effects of livestock on riparian systems and stock ponds*

Description

This project is intended to protect environmental conditions associated with the Preserve's water resources by addressing the condition, use, and treatment of stock ponds. As noted in Chapter Six, the existing stock ponds have each been considered individually in terms of their contribution to the historic Preserve landscape, their potential usefulness for future livestock and bison ranching needs, and their condition. The treatment plan recommends that certain stock ponds should be retained and others removed. In some cases, those recommended to be retained should be protected by perimeter fencing, with a new system for watering livestock implemented. This new system would involve placing a trough adjacent to the exterior of the fencing, with water fed into the trough by a pipe system, following the guidelines developed by the Kansas Cooperative Extension Service. Stock ponds slated for removal should be drained and filled. The recommendations included below are those that the CLR has followed through cost estimating. However, there may be other means for mitigating the effects of the stock ponds that the NPS will elect to pursue, based on the need to investigate the flood control and hydrology value of the existing systems prior to their removal.

- Based on the preliminary assessment of these features, the following actions should be undertaken:

Retain and maintain—

- Pond #1 for its ongoing water retention use;
- Ponds #3, 5, 11, 12, 13, 14 for potential continued use as stock ponds for livestock;
- Ponds #18, 17, and 26 as potential stock ponds for bison, and for their scenic value located near areas of high visitation;
- Ponds #17, 22, 23, 24, and 25 to ensure Topeka Shiner habitat downstream is not corrupted.

No action—

- Pond #21, the dam of which has already been breached.

Remove—

- Ponds #6 and #9 and restore area to bottomland prairie habitat;

Not yet determined—

- for any structures associated with springs in Crusher Hill, Windmill, Gas House, and Two Section pastures; Boxcar Spring; the pump houses east of Z Bar/Spring Hill headquarters; and Ponds #2, 7, 8, 10, 15, 16, 19, and 20. More information is needed to complete recommendations for these features.

Considerations / Justification

Generally in considering treatment for Preserve stock ponds, the following goals have been identified:

- Sensitive habitats should be preserved.
- Features with scenic and historic value should be retained.

The riparian system at the Preserve has historically been altered by humans to support settlement and agriculture through impoundment and collection of surface water. Stock ponds are an important reminder of this cultural adaptation that survives from the later local period of significance. Within the Flint Hills, man-made ponds succeeded windmill-driven wells and water tanks as a means for watering livestock sent to graze in far-flung pastures. This shift occurred towards the end of the Dust Bowl years in the 1930s, as ranchers searched for alternative methods to collect and store precious water. The Preserve's stock ponds illustrate one of the region's cultural adaptations to the paucity of surface water in the Flint Hills, and the inter-relationship of human settlement to natural resources.

There will be a need for stock ponds to continue to function in areas where livestock are grazed and where bison are to be re-introduced. However, uncontrolled access of stock ponds by livestock results in pollution, soil compaction and disturbance, sedimentation, erosion, and ultimately damage to the banks of the fragile waterways. The exclusion of livestock from the interior and edges of stock ponds will help to enhance the health of the Preserve's riparian system.

The Preserve's twenty-five stock ponds were evaluated in the 1998 Dam Inventory as having a low hazard level regarding human life and property damage. However, most of the ponds were found to exhibit some degree of degradation due to erosion, cracking, scouring, or livestock damage. Removal of ponds that are not likely to support livestock and bison should be carefully considered. Removal of some may effect the natural resources of the Preserve—impoundments upstream from the habitat of the endangered Topeka Shiner may retain predatory species, sediment, and other factors that could damage the habitat if dams were breached. Others, such as those in the bottomland of Fox Creek, may be negatively affecting stream hydrology and bottomland prairie ecology and should be removed.

Some Preserve stock ponds should be retained for the recreational, scenic, or interpretive value for visitors. Ponds located in the eastern Preserve pastures should be evaluated for their potential use for day use recreational activities such as fishing.

Additional Studies Recommended

Action required prior to undertaking projects:

- Development of a detailed assessment of each pond based on criteria of historic status, usefulness, condition, potential negative effects, and additional information gathered via an inventory of the features listed above, updated to reflect current conditions and planning information.

Other studies that will impact the treatment of ponds:

- Bison management plan;
- Bottomlands revegetation project; and
- Grazing plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Historical Landscape Architect, Archeologist, Botanist/Ecologist, Preserve staff	Vegetation management plan, \$ 25,000-30,000; Grazing study, \$ 15,000-25,000; Bison management plan, \$ 15,000-25,000	
2. Further research (detailed inventory and assessment)	Water resources consultant, Ecologist, Civil engineer, Historical landscape architect, Preserve staff	\$ 20,000-40,000	Includes assessment of stock ponds on watershed capacity (see PMIS Project #37362)
3. Preserve-wide studies	Historical Landscape Architect, Botanist/Ecologist, Preserve staff	Vegetation management plan \$ 25,000-30,000	
4. Clear vegetation as necessary	Landscape contractor, Preserve staff	\$ 4,000-5,000/acre	Sparse vegetation
5. Light grading as necessary	Landscape contractor	\$ 10-15/sq. yd.	
6. Repair dams (erosion, seepage, cracking) as necessary to prevent breaching	Landscape contractor	Not yet determined	

7. Add fencing, pipes, and water tanks to actively used stock ponds to prevent livestock trampling	Landscape contractor, Preserve staff	Cattle fencing, \$ 7.60/lin. ft.; 3-inch galvanized steel pipe, in place cost, \$33.50/lin. ft.; galvanized 717-gallon round tank, not delivered or installed, \$ 275.00 each
8. Remove selected ponds	Landscape contractor	Not yet determined
9. Monitor removal of ponds	Archeologist	\$ 400-600/day
10. Disturbed land reclamation with native plants	Landscape contractor	\$ 8,000-12,000/acre

4. *Mitigate threats to spring boxes and springhouses, including Red House site*

Project Description

Each of the Preserve's spring boxes and springhouses should be inventoried, documented, and assessed. Based upon the documentation and assessments, they should be stabilized, repaired, rehabilitated, and maintained as needed.

Recommendations

- **Retain, rehabilitate, and maintain** springhouse at Spring Hill Ranch Headquarters; well and pump at the Lower Fox Creek Schoolhouse; and spring box at Red House ruin which has deteriorated badly.
- **Retain and maintain** structures associated with springs in Crusher Hill, Windmill, Gas House, and Two Section pastures; Boxcar Spring; the pump houses east of Spring Hill Headquarters. Protect structures by enclosing within fencing.

Considerations / Justification

Water collection structures such as springhouses and spring boxes were constructed within the Preserve landscape as early as the 1870s, and continued to be utilized until relatively recently. Water from springhouses and wells was used for domestic consumption, while spring boxes were utilized for watering livestock. These features illustrate human cultural adaptations to the paucity of surface water in the Flint Hills, and the inter-relationship of human settlement to natural resources. The existing spring structures and springhouses are threatened by roaming livestock and exposure to the elements over time, and are a safety hazard for visitors. They generally require maintenance and repair. Access to these features needs to be controlled to protect visitors and the features from further damage. Visitor access, however, should be permitted at some level

to allow for interpretation of these important cultural landscape features. The spring features at Red House are already slated to be fenced as part of an effort to reduce damage to the fragile ruins at the site.

Additional Studies Recommended

Spring structures should be inventoried and assessed, although more information exists about those associated with cultural concentrations (such as Red House spring box and the springhouse at Spring Hill).

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Complete detailed inventory and assessment	Water resources consultant, Archeologist, Historical landscape architect, Preserve staff	\$ 15,000-25,000	
2. Stabilize structures as necessary	Conservator, Artisan	Not yet determined	
3. Repair structures as necessary	Conservator, Artisan	Not yet determined	
4. Add fencing to prevent trampling and unauthorized access	Landscape contractor, Preserve staff	\$ 5-6/lin. ft.	Fence type suitable for bison retention: assume 5-strand, 6-foot-tall fence on stout wooden posts
5. <i>Re-establish bottomland prairie</i>			

Project Description

This project involves the re-establishment of selected areas of Fox Creek bottomland prairie community where former crop fields have disturbed the soil, altered the hydrology, and introduced invasive alien plant species. Non-native species such as brome grass should be removed and the area restored as a native bottomland prairie.

Considerations / Justification

The removal of brome grass and other non-native species, and installation of native prairie species will enrich the ecological diversity and health of this sensitive ecosystem and thus of the Preserve as a whole. Re-establishment of bottomland prairie will enhance interpretation of the site.

Additional Studies Recommended

A Preserve-wide vegetation management and action plan should be prepared in consultation with local experts and should include soil testing, cost estimates, and a maintenance plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Historical Landscape Architect, Botanist/Ecologist, Preserve staff	Vegetation management plan, \$ 25,000-30,000	
2. Soil testing	Soil testing laboratory; Preserve staff	\$ 12,000-25,000	Soil testing in conjunction with crop field and orchard re-establishment (Project #2)
3. Restoration plan	Botanist/ecologist, Archeologist, Historical landscape architect, Preserve staff	\$ 10,000-20,000	Determine appropriate species
4. Design	Historical landscape architect	10% of construction costs	Create planting plan
5. Clearing and grubbing	Landscape contractor	\$ 4,000-10,000/acre	Assuming sparse to moderate vegetation
6. Limited minor grading and erosion control, soil preparation	Landscape contractor	\$ 1,000-2,000/acre	
7. Monitoring of land disturbance	Archeologist	\$ 400-600/day	
8. Removal of noxious and invasive plants	Landscape contractor or certified herbicide applicator	\$ 850-2,000/acre	Varies depending on density of invasive plants
9. Restoration of bottomland prairie and riparian savanna	Landscape contractor, Preserve staff	\$ 8,000-12,000/acre	Assumes reseeding, minor grading
10. Restoration of native wetland areas	Landscape contractor, Preserve staff	\$ 10,000-15,000/acre	Includes reseeding, minor grading, does not include wetland construction
11. Monitoring wetland ecosystem	Ecologist/botanist, Preserve staff	\$ 300-600/day/person	Monitoring will end when fields are well re-established.

6. Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems

Description

This project identifies locations within the Preserve where both existing and planned roads and trails (forming integral components of the circulation system for visitor and/or Preserve maintenance and management) are required to cross waterways, followed by the design and construction of appropriate crossing structures. Taking into account factors such as the expected levels and types of uses, visitor safety, soil erosion, siltation, flooding, soils, and historic character, proposed locations for designed stream crossings should be determined. Once the locations have been identified, appropriate stream crossing structures should be designed and constructed that are suitable to the individual needs of each crossing.

Considerations / Justification

Preserve trails and roads require frequent crossings of perennial and seasonal waterways to access important cultural features, and each of the property's pastures. Review of site mapping reveals more than twenty points at which roads currently cross waterways without a bridge or other type of structure. The majority of these crossings are informal low-water crossings, where a two-track simply crosses the stream bed, creating muddy, impassable, and potentially dangerous conditions for visitors and staff, both in vehicles and on foot. Erosion, siltation, and other damage to the riparian habitat in, around, and downstream from these crossings will occur or be exacerbated by the increase in use that will likely occur in coming years. Provision of appropriate crossing will help to enhance water quality and protect the Preserve's riparian habitats.

Additional Studies Recommended

Inventory and condition assessment of stream crossings based on planned future use of route (pedestrian, vehicular).

Preferred Alternative Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Inventory and condition assessment of stream crossings	Historical landscape architect, water resources consultant	\$ 5,000-10,000	
2. Design	Historical landscape architect	10% of construction cost	
3. Site preparation including minor grading and erosion control	Landscape contractor	\$ 1,000-2,000/acre	
4. Monitor grading	Archeologist	\$ 400-600/day	

5. Stepping stones	Landscape contractor	\$ 10-15/sq. ft.	For backcountry pedestrian crossings
6. Stone treadway	Landscape contractor	\$ 35-40/sq. yd.	For more heavily traveled trails in wet areas
7. Concrete with crushed stone aggregate for vehicular and accessible crossings	Landscape contractor	\$ 80-150/cu. yd.	For vehicular and accessible crossings
8. Culvert	Landscape contractor	\$	For deep vehicular and accessible crossings
9. Foot bridge	Landscape contractor	\$ 70-90/sq. ft. bridge; \$ 80-90/lin. ft. railing	For accessible pedestrian crossings; assumes all wood or concrete with wood railings
10. Vehicular bridge	Landscape contractor	\$ 125-200/sq. ft. of surface	For deep and wide vehicular and accessible crossings; one lane

7. Establish Day Use Area trails (Two Section trails, Cairn Overlook trail)

Description

This project entails the design and establishment of designated trails to provide visitor access within the Day Use Area and the eastern pastures of the Preserve as indicated in the GMP. The trails should provide a range of experiences, and will likely vary in level of difficulty, length, and accessibility, and allow for interpretive and recreational opportunities as well as access to points of interest. In order to minimize the impact of visitor use on the Preserve, it is proposed that the majority of the future trails be established along existing two-track roads. The proposed new trail sections proposed in the treatment plan are intended to be as minimal as possible, and are indicated to form a series of loops—connecting the trail segments along the two-track roads—that are of manageable lengths, and provide access to points of interest and interpretive opportunities where none currently exists. The design of these new routes is intended to have as minimal impact on the landscape as possible: trails should be surfaced with hard-packed earth or darkly-colored crushed stone, and grading should be minimal.

Proposed trail locations include a route to the overlook east of Fox Creek; and one through Two Section Pasture. The trailheads for many of the trails have been considered in conjunction with small parking pull-offs along public roadways.

Considerations / Justification

Visitors of varying abilities, interests, and available time should have opportunities to experience and enjoy the Preserve landscape. The Day Use Area within the Eastern Preserve Pastures is intended to be accessible to visitors, with a recreational focus. However, with access come other issues such as increased maintenance, visitor safety, and potential damage to resources. The provision of a minimally intrusive pedestrian trail network will balance the goals of visitor access and resource protection in this area.

Additional Studies Recommended

Actions needed prior to work include: Development of an interpretation plan that will establish resources important to access as part of trail; determination of whether horseback riding will be permitted; if so, design of a separate trail system to separate pedestrians from equestrians.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Additional studies: determine potential effects and appropriateness, and establish plans for implementing horseback riding, fishing uses	Preserve staff	\$ 10,000-20,000	In conjunction with Project #11, mitigate effects of visitation on Day Use Area resources
3. Design	Historical landscape architect	10% of construction cost	
4. Construction of stone treadways in wet areas and stream crossings	Landscape contractor	35-40/sq. yd.	For more heavily traveled trails in wet areas
5. Minor regrading of two-tracks to accommodate trail use	Landscape contractor	8-12/sq. yd.	Minimal, to repair erosion/correct drainage problems
6. Information, wayfinding, and regulatory signs	Landscape contractor	\$ 4,000-8,000	Allowance (design, fabrication, and installation) for Day Use Area
7. Monitor grading of new trail segments	Archeologist	\$ 400-600/day	

8. Ladder stiles	Landscape contractor, Preserve staff	\$ 200-400 each	Depending on height - for crossing fences
9. Trail segment with crushed stone tread	Landscape contractor	60,000/mile	Average 4' width

8. Establish backcountry trails

Description

Visitor access to the Western Preserve Pastures area will require the trail designation. As with the Eastern Preserve Pastures area, it is recommended that the majority of the trails in this area be established along existing two-track roads. It will likely be necessary to establish at least one new segment to create a loop route in the vicinity of Palmer Creek. Trail segments will also be necessary to provide access to one or more backcountry campsites, the location of which have yet to be determined. These new routes should be designed to have as minimal an impact on the landscape as possible: materials should be inconspicuous, such as hard-packed earth or dark-colored crushed stone, and grading should be minimal. The trailheads for Preserve backcountry trails associated with the Western Preserve Pastures will not be accessible by private vehicle; rather, visitors will hike to them, or access them from the shuttle tour route.

Considerations / Justification

The development of backcountry trails and at least one campsite will provide opportunities for serious hikers to experience the isolated and poetic qualities of the prairie landscape. The chance to immerse oneself in this setting in such a way is rare and an important feature of the Preserve. Camping on the prairie in a primitive location, surrounded by the quiet and under the vast field of stars, will also be a rare and valuable experience. Adaptive reuse of the two-track ranch roads as trails will support ongoing use and potential maintenance of these cultural features. Campgrounds will be minimal and rustic with no services. Open fires will not be permitted to avoid the possibility of campers setting fire to the prairie.

Additional Studies Recommended

Studies that are necessary to support establishment of these trails include:

- fire management plan for camp sites (permit use of containerized fuel stoves only)
- bison management plan to indicate where and when bison herd will be in various pastures, and how to mitigate problems associated with hikers traversing pastures that include the herd
- Long-range interpretive plan that indicates resources that should be accessed by visitors
- plan for trail crossings of waterways and wet areas

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Develop plan for crossing waterways and wet areas	Historical landscape architect, water resources consultant	\$ 5,000-10,000	
3. Design of trails and campsite(s)	Historical landscape architect	10% of construction cost	
4. Stepping stones in wet areas and stream crossings	Landscape contractor	\$ 10-15/sq. ft.	See Project #6, stream crossings
5. Minor regrading of two-tracks to accommodate trail use	Landscape contractor	\$ 8-12/sq. yd.	Minimal, to repair erosion/correct drainage problems
6. Monitor grading of new trail segments	Archeologist	\$ 400-600/day	
7. Construction of new segment to close Palmer Creek loop	Landscape contractor	\$ 55,000-60,000/mile	Unpaved backcountry trail
8. Monitor grading of new segment and campsite	Archeologist	400-600/day	
9. Construction of primitive walk-in campsite(s) (minimal regrading, revegetation with native plants)	Landscape contractor	\$ 2,000-3,000/site	
10. Ladder stiles	Landscape contractor, Preserve staff	\$ 200-400 each	Depending on height, for crossing fences; assumes labor and materials
11. Information, wayfinding, and regulatory signs	Sign fabricator, landscape contractor	\$ 3,000-6,000	Allowance for necessary signage on backcountry trail system (assumes design, fabrication, installation)

9. *Expand shuttle tour route*

Description

This project involves the establishment of an expanded shuttle tour loop route to provide access to more of the Preserve for visitors. Utilizing small buses or jitneys, the shuttle route will provide the primary means of vehicular visitor access to the interior of the Western Preserve Pastures, as well as simplifying visitor touring of the various interpretive and recreational sites maintained by the Preserve, particularly once a visitor contact facility is completed. The tour route will accommodate guided and unguided tours, and provide access to various trailheads.

The tour route and interpretive stops will be formalized as part of the Preserve's long-term interpretive plan, but will likely include: the Red House site; viewpoints such as locations where bison or livestock could be viewed; the current scenic overlook; Lower Fox Creek School; Z Bar/Spring Hill Ranch headquarters; trailheads along Highway 177; backcountry trailheads; the corral area trail; viewing stops for re-established bottomland prairie and historic crop fields and orchard; and the recreation opportunities located within the East Preserve Pastures.

This project involves upgrading some two-track roads, the former Highway 177 roadbed, and ongoing maintenance and repair of the existing tour road. Materials and grading should be kept as inconspicuous as possible, preserving the character of the existing roads while balancing contemporary concerns about safety and erosion.

Considerations / Justification

The Preserve's mission includes public use and visitor interpretation as well as resource protection. In order to meet both these goals, the GMP indicates that vehicular traffic will be limited by creating a primary parking area for visitors and utilizing a shuttle system. The existing tour route that leads to the Overlook and back to the Z Bar/Spring Hill Ranch headquarters is inadequate to serve this planned use. By expanding the route into a loop using existing ranch roads, most of the major sites and trailheads in the Preserve can be accessed, while keeping the presence of vehicles to a minimum. This is an important way to preserve and protect the cultural and natural resources that comprise the Preserve while allowing visitors of different ability levels to experience many facets of the landscape.

Additional Studies Recommended

Long-range interpretive plan, road condition assessment.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	

2. Complete assessment of road conditions	Archeologist, Conservator, Historical landscape architect, Preserve staff	\$ 15,000-25,000	
3. Design and siting of route and stops	Historical landscape architect	10% of construction cost	
4. Regrading and resurfacing of roads comprising shuttle route, gravel	Landscape contractor	100,000-250,000/mile	Based on cost for construction of a new gravel road
5. Cattle guards that can accommodate bison	Fabricator, Landscape contractor, Preserve staff	\$ 10,000-20,000 each	May need custom fabrication to achieve desired spacing (6-7" between bars); assumes installed cost
6. Furnishings	Outdoor furnishings fabricator, Preserve staff	Rustic backless wood benches, \$ 300-600 each; rustic shade/rain structures, \$ 1,600-3,000 each	For visitor comfort at selected, more heavily used stops
7. Signage, both orienting and interpretive, at shuttle stops	Landscape contractor	\$ 2,000 per stop	Allowance (some stops will require more signage than others); assumes design, fabrication, and installation

10. Improve drainage in Spring Hill house precinct and rehabilitate terraces

Description

In order to improve the current drainage around the Spring Hill main house and alleviate erosion and damage to terrace walls and foundations, a grading plan should be prepared that established positive drainage around the building and terraces and associated areas. Regrading should be minimally visually obtrusive. The plan should be evaluated and grading work monitored by an archeologist. Grading should be supplemented by repair of existing weepholes associated with terrace retaining walls. If this is not possible, establishment of a trench drain of dry well rock and piping, behind each retaining wall, emptying collected water into a larger dry well to either side of the terrace systems is recommended. Rehabilitation of the entire terrace wall system is also a possibility that may need to be investigated. This list of recommendations indicates that it is possible to explore a series of investigations from the least invasive to the most invasive approach.

Justification

Current drainage problems within the terrace system are causing siltation of pedestrian walks, and associated slip hazards, deterioration of stone work, and listing of the wall system. Ultimately, unresolved drainage problems may lead to wholesale failure of the terrace walls. Careful re-grading, or grading in conjunction with materials conservation of the terraces is an important priority for the Z Bar/Spring Hill Ranch headquarters due to the significance of the complex and the integrity of these features.

Additional Studies Recommended

- physical investigation of existing weepholes
- determination of original grades at or around existing structures

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Complete physical investigation of weepholes	Civil engineer	\$ 10,000-15,000	
2. Determine original grades	Archeologist, Historical landscape architect	\$ 20,000-25,000	
3. Design	Historical landscape architect, Civil engineer	10% of construction cost	
4. Rehabilitation and stabilization of retaining walls and associated steps and fence	Landscape contractor	\$ 313,000	Includes removal of damaged wall, fence, steps; excavation and reconstruction including base course and drainage; reconstruction of all removed elements; revegetation of disturbed lawn areas; and necessary monitoring, management, and documentation (based on PMIS Project #51990)

11. Mitigate effects of visitation on Day Use Area resources

Description

This project involves the assessment, and evaluation of proposed uses within the Eastern Preserve Pastures to accommodate visitor recreation. Proposals will likely include fishing, currently proposed within Pond #1, horseback riding, and pedestrian trails traversing the pastures and potentially including interpretation of former uses and remnant cultural features. Each proposed use and the developments associated with its implementation requires assessment and evaluation.

Justification

The anticipated moderate-to-heavy recreational use of the Eastern Preserve Pastures presents a new set of issues at the Preserve as visitor access is expanded within this area. Maintenance, over-use, resource protection, and visitor safety considerations require changes to limit visitor access to certain resources. However, any modifications must be done in a minimal and unobtrusive manner to retain the integrity of the cultural and natural landscape character in this area.

Additional studies recommended

Consider whether to allow horseback riding. Consider fishing use of Pond #1. This project is dependent upon the completion of a Preserve-wide long range interpretive plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Additional studies: determine potential effects and appropriateness, and establish plans for implementing horseback riding, fishing uses	Preserve staff	\$ 10,000-20,000	In conjunction with Project #7, establish Day Use Area trails
3. Add fencing to prevent trampling and unauthorized access to identified resources	Landscape contractor, Preserve staff	\$ 5-6/linear foot	Fence type suitable for bison retention (5-strand, 6' tall barbed wire fence on stout wooden posts)

12. Re-establish the cow meadow pasture and provide interpretation**Description**

This project involves the restoration of a small pasture located to the north of the County Road to its historic use as a cow meadow, and its interpretation.

Justification

In the late 19th and early 20th century, the cow meadow was a small pasture designated for dairy cows. Recalled by Fred Howard, Jr. in interviews, as follows:

We had what we called a cow meadow. It was down that lane, where Highway 50 goes across. You go down that then right at the end of the lane, there was a cow pasture, what we called a cow pasture. And that's where the milk cows were all kept. I suppose it was maybe 80 acres.

On the 1895 Lantry map, the same area is referred to as a "meadow," and was likely the location where milk cows supporting Deer Park Place were pastured. Today, much of the infrastructure of the cow meadow—walls, fencing, and a road—still exists in its historic location adjacent to the County Road in the Eastern Preserve Pastures Area. Rehabilitation of this pasture as an interpretive, grazed area would illustrate the diverse livestock-related land uses of the ranching period, and create an opportunity for visitors to learn about the Lantry family and Deer Park Place.

Additional Studies Recommended

Grazing study; Preserve-wide vegetation management plan; research history of cow meadow site; long-range interpretive plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner, Archeologist, Botanist/Ecologist,	Long-Range Interpretive Plan, \$ 20,000-30,000; Grazing study \$ 15,000- 25,000; Vegetation management plan \$ 25,000-30,000	
2. Additional historical research and investigation	Historical landscape architect, Historian	\$ 8,000-12,000	To determine location of extant and missing features and develop interpretive material
3. Design	Historical landscape architect	10% of construction cost	

4. Interpretive waysides	Sign fabricator, interpretive planner, landscape contractor	\$ 12,000-18,000	Assumes design, fabrication and installation of 3 wayside signs
5. Cattle guards	Fabricator, landscape contractor, Preserve staff	\$ 10,000-15,000 each	One at each gate (total of 2) entering and exiting meadow; assumes fabrication and installation
6. Assess and rehabilitate stone fences	See Project #1		

13. *Mitigate effects of bison on cultural resources*

Description

This project involves careful consideration of the issues surrounding introduction of bison to the Western Preserve Pastures, including the visual effects of new bison-related infrastructure such as fencing and handling facilities; the mitigation measures required to protect cultural resources from bison; the mitigation measures needed to protect resources that are to be used by bison, such as watering facilities or stock ponds; and interpretive issues associated with the introduction of bison within a historic and contemporary livestock ranching landscape.

Considerations / Justification

The re-introduction of bison presents many complex issues relating to the Preserve's cultural landscape. Because the existing landscape has been adapted to the needs of livestock ranching over the course of many years, significant alterations will be required to establish an appropriate setting, and method of containment, for bison. For example, it will be necessary to construct new features such as fencing that is taller and stronger than current livestock fencing, a new handling facility, and a road to access the facility. At the same time, existing cultural resources such as archeological sites and stone fences will need to be protected from degradation by these large ungulates. The impacts of the introduction of new support features on views should also be made a priority. The introduction of bison must be carried out in a careful and thoughtful way to ensure that major changes to the landscape do not have a negative effect on the cultural and natural resources of the Preserve.

Additional studies recommended

Bison management plan, Preserve-wide vegetation management plan, grazing plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies		Bison management plan — \$ 15,000-25,000; Grazing study — \$ 15,000-25,000; Vegetation management plan —\$ 25,000-30,000	For multiple projects
2. Resource assessment	Archeologist, Historical landscape architect	\$ 5,000-10,000	
3. Add fencing (5-strand, 6' tall barbed wire fence on stout wooden posts) to prevent trampling and unauthorized access to identified resources	Landscape contractor, Preserve staff	\$ 5-6/linear foot	Fence type suitable for bison retention
4. Cattle guards that can accommodate bison	Fabricator, Landscape contractor, Preserve staff	\$ 10,000-20,000 each	May need custom fabrication to achieve desired spacing (6-7" between bars); assumes installed cost

14. *Establish long-term coordination with Kansas Department of Transportation and National Scenic Byway Program to preserve and enhance the tallgrass prairie right-of-way along Highway 177, reinforcing the visitor experience of native prairie plants and historic scene*

Description

Recommendations will be made to KDOT to ensure that their native species planting program is carried out in an appropriate way along Highway 177 as it passes through the Preserve. The NPS will collaborate with KDOT to enhance the biodiversity and visual character of the road corridor.

Justification

While most of the Preserve landscape is under the jurisdiction of the NPS/NPT, the most traveled area of the Preserve is Highway 177. Visitors and those passing through therefore gain their impressions and views of the Preserve and of tallgrass prairie from what they experience along this road corridor. Plantings should highlight the beauty and ecological diversity of the tallgrass prairie, without impeding views of the Preserve, or forcing mowing regimes that interrupt flowering. Species should be selected that enhance the corridor, but that are low-growing. Collaboration will include input into seed mixtures for any future plantings and mowing regimes.

Additional Studies Recommended

Species selection based on appropriate criteria.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Species selection study	Historical landscape architect, Botanist/ecologist, Preserve staff	\$ 10,000-15,000	Meetings, research and production of a document with species list, planting plan

15. Protect cultural concentrations and features from prescribed burning

Description

Protective measures will be taken to safeguard the cultural concentrations at the Preserve, including but not limited to the Z Bar/Spring Hill Ranch headquarters, Lower Fox Creek Schoolhouse site, Red House ruins and site, and the waysides associated with trails during prescribed burns and in case of accidental wildfires. Care will be taken to avoid removing the very features that require protection; assessment of the contributing nature of vegetation and historic trees in particular will occur prior to any removal intended to support protective measures. The means for protecting cultural resources will include the creation of firebreaks by burning blacklines and setting backfires; removing leaves and debris from roofs and gutters regularly to decrease chances of a burning ember setting fire to a roof; storing firewood and lumber a minimum of thirty feet from structures; pruning trees within thirty feet of a structure up twenty feet from the ground to remove ladder fuels; establishing a buffer zone around building clusters which is maintained in low, green, mown grass, or cultivated; maintaining firebreaks and windbreaks around the perimeter of building clusters to slow or stop fires; and remove creeping and climbing vegetation from paths, stone walls, and fences. The physical construction of fire lines and the excessive use of motorized vehicles in establishing and maintaining these protective systems will be avoided due to the fact that they would be damaging to cultural and natural resources.

Justification

The burning of the prairie grasses is both a cultural tradition and a natural phenomenon. Since prehistory, humans have periodically burned the prairie to enhance growth of the grasslands, and suppress woody vegetation. During early settlement, local residents developed measures to protect their homes and other flammable farm features from the fire that renews and regenerates the prairie grasses. Existing cultural concentrations in the Preserve must be similarly protected today, in a way that does not cause harm physically or visually to the Preserve landscape. Implementation of new burn regimes to enhance ecological diversity may affect the methods for

protection; less frequent burns may generate higher temperatures, which in turn may potentially cause more damage to cultural features than previous burn regimes. Avoiding the use of physically constructed fire lines and of motorized vehicles will help to prevent inadvertent damage to resources. Additionally, it will be important to ensure the protection of contributing vegetation from fire, particularly the cedar windbreak at the Z Bar/Spring Hill Ranch headquarters.

Additional studies recommended

Prescribed burn plan, Preserve-wide vegetation management plan.

Project implementation process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Preserve staff, Ecologist, Historical landscape architect	Prescribed burn plan \$ 15,000-20,000; Vegetation management plan \$ 25,000-30,000	
2. Removal of brush and flammable materials from roof, gutters, areas around building, structure, or feature	Preserve staff	\$ 5,000-10,000	Seasonal
3. Limbing up of nearby trees	Arborist	\$ 3,000-8,000	Annual
4. Mowing of vegetation within 30 feet of building, structure, or feature	Preserve staff	\$ 4,000-6,000	Seasonal
5. Evaluate fire prevention plan	Local fire inspector or fire department		Likely no associated cost

16. Inventory, identify, control, and remove exotic invasive plants

Description

This project involves development of methods for the removal of exotic invasive plants based on knowledge of each species and similar local or regional efforts to contain them; development of an ongoing control and maintenance process; and the development of revegetation plans for areas where communities of invasive alien plants have been removed.

Justification

To retain and enhance the health of the prairie ecosystem and the appearance of the landscape, exotic invasive plants should be eradicated. The Preserve should establish and implement annual inventory, monitoring, and treatment protocols for controlling and removing invasive plant species as the next step in the process of implementing this project. Areas where populations of invasive species have been removed should be revegetated and maintained in native vegetation.

Additional Studies Recommended

Preserve-wide vegetation management plan, invasive plant management plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Additional studies	Botanist/ecologist, Wildlife biologist, Historical landscape architect, Archeologist	Vegetation management plan \$ 25,000-30,000; Exotic and noxious plant survey \$ 58,000	Exotic and noxious plant survey: see PMIS Project #36029
2. Eradication through chemical and mechanical means	Landscape contractor or certified herbicide applicator	\$ 2,000-3,000/acre	
3. Disturbed land reclamation with native plants	Landscape architect, Landscape contractor	\$ 8,000-10,000/acre	
4. Monitor removal and maintain revegetated areas	Historical landscape architect, Archeologist	\$ 400-600/day/person	

17. Establish vegetation on eroded drainageway banks

Description

Eroded, and potentially erosive, areas along Preserve drainageways and waterways will be identified and replanted in appropriate native prairie species with the primary purpose of holding and retaining the soil and preventing future erosion. Prescribed burning will be conducted within the vicinity of drainageways, creeks, and streams to maintain the health of the grasses that are essential for soil retention.

Justification

Some of the stream and pond banks in the Preserve's sensitive drainageways and riparian areas are eroded, currently over-shaded by woody growth, or have disturbed soil that has the potential

for erosion. The lack of plant material with fibrous root systems along these banks allows the highly erosive soil on these slopes to be worn away quickly, contributing to downstream sedimentation. By establishing native plantings, including a combination of woody plants and grasses, along steep banks and eroded areas, the soil will be better retained, contributing to healthier waterways, retaining historic appearance of the landform and vegetation, and promoting more plant diversity in the native prairie ecosystem.

Additional Studies Recommended

Preserve-wide vegetation management plan; identification and assessment of eroded areas needing replanting.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Historical Landscape Architect, Botanist/ Ecologist, Preserve staff	Vegetation management plan, \$ 25,000-30,000; Prescribed burn plan, \$20,000-30,000	
2. Identify and assess eroded areas and create replanting program	Ecologist, Preserve staff	\$ 15,000-25,000	
3. Limited minor grading and erosion control, soil preparation	Landscape contractor	\$ 1,000-2,000/acre	
4. Erosion control matting	Landscape contractor	\$ 3-5/sq. yd.	
5. Disturbed land reclamation with native plants	Landscape contractor	\$ 8,000-12,000/acre	

18. Assess and develop treatment and interpretive plans for mineral extraction sites

Description

Stone quarries and natural gas collection lines are an integral part of the history of the Preserve. These features are scattered throughout the Western Preserve Pastures, and should be included in interpretation of the Preserve's cultural landscape history. Interpretation of these features should be integrated into the proposed trail and trailhead systems. Visitor safety should be considered in conjunction with the interpretive opportunities. Visitors should be protected from holes or pits associated with excavated quarry sites, and from contaminated soils and other features associated with natural gas collection.

Justification

The cultural history of Tallgrass Prairie National Preserve is tied to a range of natural resources and their use by area residents to augment and supplement agricultural activities. Protection and interpretation of features associated with cultural adaptations of natural resources will enhance the visitor experience at the Preserve.

Additional Studies Recommended

Evaluation of health risks associated with gas collection sites, investigation of landform in vicinity of interpreted stone quarries, long-range interpretive plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Investigation of quarry sites	Archeologist, Historical landscape architect	\$ 10,000-20,000	
3. Hazardous materials assessment and evaluation of health risks		\$ 30,000-40,000	Determine presence, danger level of mercury or other materials in gas related structures; assistance may be available through state programs
4. Hazardous materials abatement		\$ 30-50/square foot of material	May vary based on substance, disposal costs, availability of additional assistance through state programs
5. Interpretive waysides	Sign fabricator, interpretive planner, Landscape contractor	\$ 12,000-18,000	Assumes design, fabrication and installation of 3 wayside signs
6. Mitigation of threats to visitor safety - fencing	Landscape contractor or Preserve staff	\$ 5-6/lin. ft.	Assumes 5-strand, 6 foot high fencing that will also be able to retain bison

19. Establish circulation plan, including ADA access, between buildings at Z Bar/Spring Hill Ranch headquarters

Description

This project calls for improved visitor access between the Z Bar/Spring Hill residence, barn, and other interpreted outbuildings. The features of primary interest to visitors as part of the interpretive program will be determined as part of the long-range interpretive plan for the Preserve. These will be the highest priority for ensuring universal accessibility is achieved. Universal accessibility will include the provision of stabilized surfaces on some currently unpaved surfaces, adding ramps, walks, handrails, and possibly lifts. Within the barn, an elevator will be added to provide access between the lower level visitor parking area, and the precinct of the headquarters main house, which is set more than a full floor height above the parking area. The inclusion of the elevator will allow for the least possible impact to the landscape in accommodating an accessible route to the primary entrance to the main house. It has also been determined that universal accessibility will not be provided to the lower level entrance of the main house, thereby also avoiding extensive landscape changes to provide an accessible route to this lower area.

Justification

Currently it is difficult for mobility-impaired visitors to access the interpreted areas of the Z Bar/Spring Hill residence, barn , and other outbuildings. The incorporation of standard contemporary ramps, accessible paved surfaces, and other features, however, would diminish the historic character of the site. Consideration must be paid to creating minimal, unobtrusive, yet convenient and accessible routes into and between these buildings. See the HSR for more detailed information.

Additional studies recommended

Accessible circulation plan, long range interpretive plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Accessible circulation plan	Historical architect, Historical landscape architect, Archeologist	\$ 15,000-25,000	
3. Design	Historical architect, Historical landscape architect	10% of construction costs	

4. Demolition of old paving as necessary	Landscape contractor	\$ 15-20/sq. yd.	Assumes hauling and disposal, 20 mile round trip
5. Site preparation, minor grading and erosion control	Landscape contractor	\$ 2,000-4,000/acre	
6. Construct paths with stabilized surface	Landscape contractor	\$ 30-40/sq. yd.	
7. Metal hand rails	Landscape contractor	\$ 40/lin.ft.	Along steps, other locations to be determined
8. Benches	Landscape contractor	\$ 1,500 each	6 to 8 foot bench (typ).
9. Bollard lights	Landscape contractor	\$ 1000 each	At parking area and along walks; dark sky lighting

20. Establish long-term plan for parking

Description

When a visitor contact facility is constructed, visitor parking will be relocated to that site and removed from the historic Z Bar/Spring Hill Ranch headquarters. Visitors will travel through the Preserve using a shuttle system, rather than parking private vehicles at the headquarters and other sites. While historic circulation features should be preserved, emergency, maintenance/operations, handicapped, limited staff parking, and delivery access must continue to be accommodated. Staff parking will eventually be removed from the hillside above the residence. The long term plan must propose a location and route for shuttles to drop off and pick up visitors at the headquarters.

In the interim, changes to the current parking lot area should consider its temporary nature and should not impact the character of adjacent historic features. Grading should be minimal and materials should be harmonious with the historic character of the site. In addition, the current parking area should not be expanded; reduction of the amount of parking at headquarters will occur over time, possibly resulting in only five spaces in the future. The location and siting of this reduced parking and a plan for reclaiming the former parking area should be addressed. The entrance into the Z Bar/Spring Hill Ranch headquarters, including the visitor parking area must be relocated for safety to a point with sufficient site distance for the design speed of the highway. The proposed location is just south of the existing parking area edge.

Justification

It is stipulated within the Preserve's GMP that visitor vehicular traffic within the Preserve shall be reduced through implementation of a central parking area at a visitor center facility and a new

shuttle bus system. As part of this initiative, visitor and staff parking will be removed from the historic core of the Z Bar/Spring Hill Ranch headquarters, helping to preserve the site's historic character.

Additional Studies Recommended

Entrance corridor permit, parking needs assessment.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Assess parking needs, generate long-term parking plan, obtain entrance corridor permit	Historical landscape architect, Traffic engineer, Preserve staff	\$ 30,000-40,000	
2. Design	Historical landscape architect, Civil engineer	10% of construction cost	
3. Construction, new entrance with enhanced sight distance	Landscape contractor, KDOT		
4. Site preparation including minor grading and erosion control	Landscape contractor	\$ 1,000-2,000/acre	
5. Modify parking over time to accommodate minimal staff and visitor parking	Historical landscape architect, Preserve staff	To be determined	

21. Rehabilitate groves and plantings of trees at Z Bar/Spring Hill headquarters

Description

This project involves the evaluation, and subsequent treatment of over-mature and hazardous historic trees within the Z Bar/Spring Hill headquarters area. Trees that are hazardous or no longer retain integrity should be replanted in kind.

Justification

The historic groves of trees, including walnut, juniper, and redbud, around the residence and as part of a windbreak on the hill to the north that are contributing elements of the NHL period of significance are an integral part of the character of the headquarters site. However, many of the existing trees are aged, and near or in decline. Removing hazard trees or limbs is necessary to visitor safety. However, once too many limbs have been removed, the trees begin to lose their

historic character and viability, and should be replaced. Trees in poor condition should be replaced in kind.

Additional Studies Recommended

Evaluation of health of individual specimens, vegetation management and preservation maintenance plan.

Project Implementation Process

Task	Expertise Needed	Estimated Cost	Notes
1. Preserve-wide studies	Historical Landscape Architect, Botanist/Ecologist, Preserve staff	Vegetation management plan, \$ 25,000-30,000	
2. Evaluation of health of individual specimens	Arborist	\$ 400-600/day	
3. Tree preservation plan	Arborist, Historical landscape architect	\$ 10,000-15,000	
4. Remove hazardous limbs, trees that have lost integrity	Arborist, Historical landscape architect, Archeologist	\$ 10,000	See PMIS Project #25463, Trim and prune hazardous trees, Ranch Headquarters Area, Phase II
5. Replace removed trees that contribute to historic significance in kind	Arborist, Historical landscape architect	\$ 500-700/tree	Includes 2- to 3-inch caliper trees obtained from nursery and installed

22. Investigate and rehabilitate Lower Fox Creek School and schoolyard

Description

The Lower Fox Creek School is a rare local surviving example of a 19th-century historic one-room rural schoolhouse. The school and its schoolyard environs present an interesting interpretive opportunity for visitors, yet little is currently known about their original configuration.

Considerations / Justification

An important first step in incorporating the school into the Preserve interpretive program will be to conduct archeological investigations in conjunction with documentary and oral history research. The goal of these investigations would be to better determine the character of the school property during the NHL and later periods of significance. Any information gleaned will be used for interpretive purposes and for rehabilitation of the site based on the appearance of the school and schoolyard during its period of active use.

Additional Studies Recommended

Additional research, including archeological investigation and documentary and oral history research should be undertaken prior to any rehabilitation efforts.

Project Implementation Process

Task	Expertise needed	Estimated Cost	Notes
1. Preserve-wide studies	Interpretive planner	Long-Range Interpretive Plan, \$ 20,000-30,000	
2. Additional research including archeology and oral history	Historical landscape architect, Archeologist, Historian, Preserve staff	\$ 25,000-35,000	
3. Interpretive waysides	Sign fabricator, Interpretive planner, Landscape contractor	\$ 3,000-6,000	Assumes design, fabrication and installation of 1 wayside sign

Phasing Chart of Projects

<u>Project</u>	<u>0-5 years</u>	<u>5-10 years</u>	<u>10-15 years</u>
1. Stabilize and rehabilitate stone walls and fences			
Additional studies	•		
Design process	•		
Project installation	•	•	•
Project evaluation/maintenance	•	•	•
2. Rehabilitate historic crop fields and orchard			
Additional studies	•		
Design process	•		
Project installation	•		
Project evaluation/maintenance	•	•	•
3. Mitigate effects of livestock on riparian systems and stock ponds			
Additional studies	•		
Design process	•		
Project installation	•	•	
Project evaluation/maintenance	•	•	•
4. Mitigate threats to spring boxes and springhouses, including Red House site			
Additional studies	•		
Design process	•		
Project installation	•		
Project evaluation/maintenance	•	•	•

5. Re-establish bottomland prairie
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance • • •
6. Establish stream crossings to accommodate proposed pedestrian and vehicular circulation systems
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •
7. Establish Day Use Area trails (Two Section trails, Cairn Overlook trail)
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •
8. Establish backcountry trails (Ridge and Palmer Creek trails)
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •

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- 9. Expand shuttle tour route
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance • • •
 - 10. Improve drainage in Z Bar/Spring Hill house precinct and rehabilitate terraces
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •
 - 11. Mitigate effects of visitation on Day Use Area resources
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance • • •
 - 12. Rehabilitate Cow Meadow pasture, and provide interpretation
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • •

13. Mitigate effects of bison on cultural resources
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •
14. Establish long-term coordination with Kansas Department of Transportation and National Scenic Byway Program to preserve and enhance the tallgrass prairie right-of-way along Highway 177, reinforcing the visitor experience of native prairie plants and historic scene
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance • • •
15. Protect cultural concentrations and features from prescribed burning
 - Additional studies •
 - Design process •
 - Project installation • •
 - Project evaluation/maintenance • • •
16. Inventory, identify, control, and remove exotic invasive plants
 - Additional studies •
 - Design process •
 - Project installation • • •
 - Project evaluation/maintenance • • •

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17. Establish vegetation on eroded drainageway banks
- | | |
|--------------------------------|---|
| Additional studies | • |
| Design process | • |
| Project installation | • |
| Project evaluation/maintenance | • |
18. Assess and develop treatment and interpretive plans for mineral extraction sites
- | | |
|--------------------------------|---|
| Additional studies | • |
| Design process | • |
| Project installation | • |
| Project evaluation/maintenance | • |
19. Establish circulation plan, including ADA access, between buildings within Z Bar/Spring Hill Ranch headquarters
- | | |
|--------------------------------|---|
| Additional studies | • |
| Design process | • |
| Project installation | • |
| Project evaluation/maintenance | • |
20. Establish long-term plan for parking
- | | |
|--------------------------------|---|
| Additional studies | • |
| Design process | • |
| Project installation | • |
| Project evaluation/maintenance | • |

21. Rehabilitate groves and plantings of trees at Z Bar / Spring Hill Ranch headquarters
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance • • •
22. Investigate and rehabilitate Lower Fox Creek School and schoolyard
 - Additional studies •
 - Design process •
 - Project installation •
 - Project evaluation/maintenance •

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Maps and Photographs

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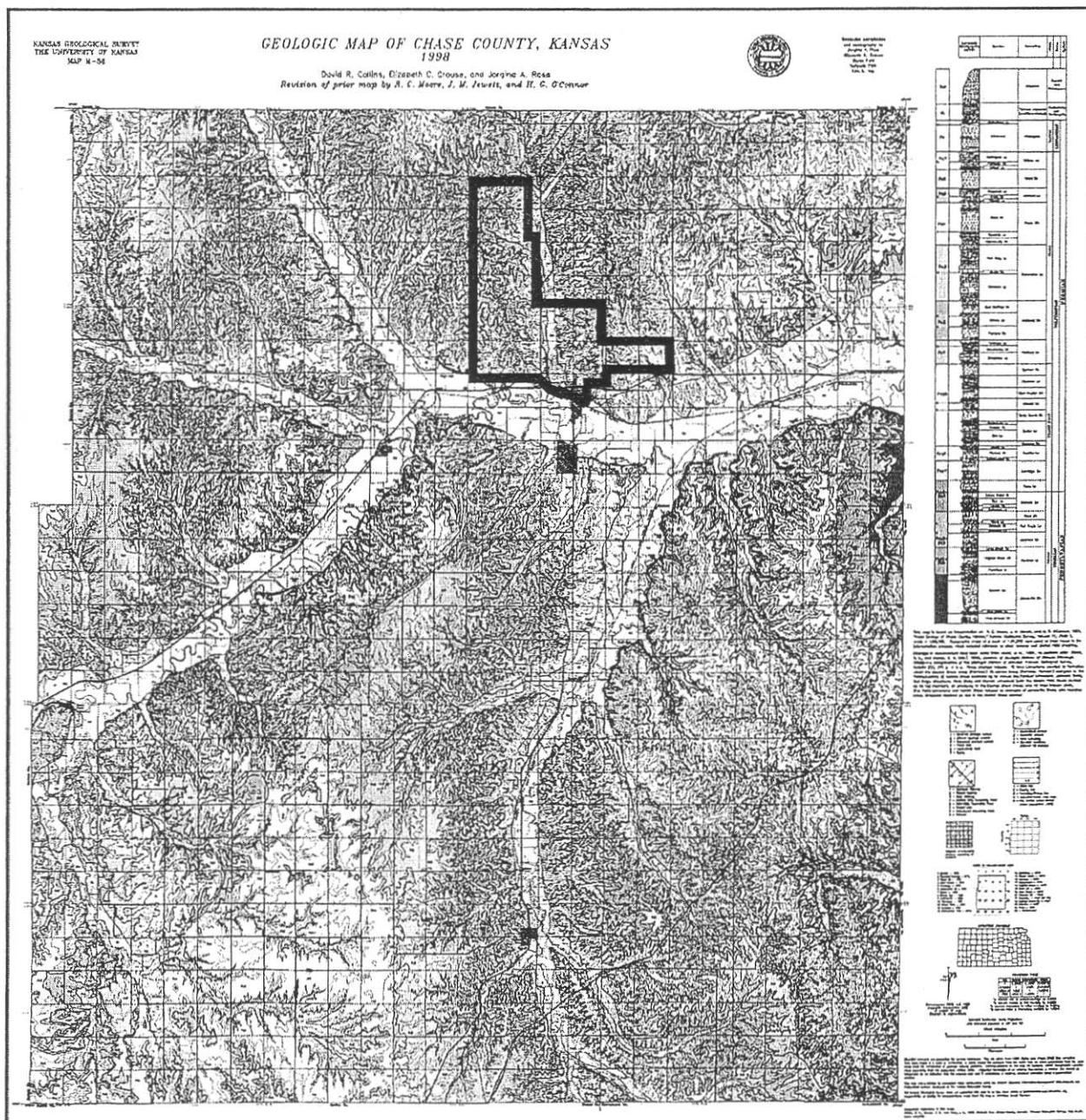
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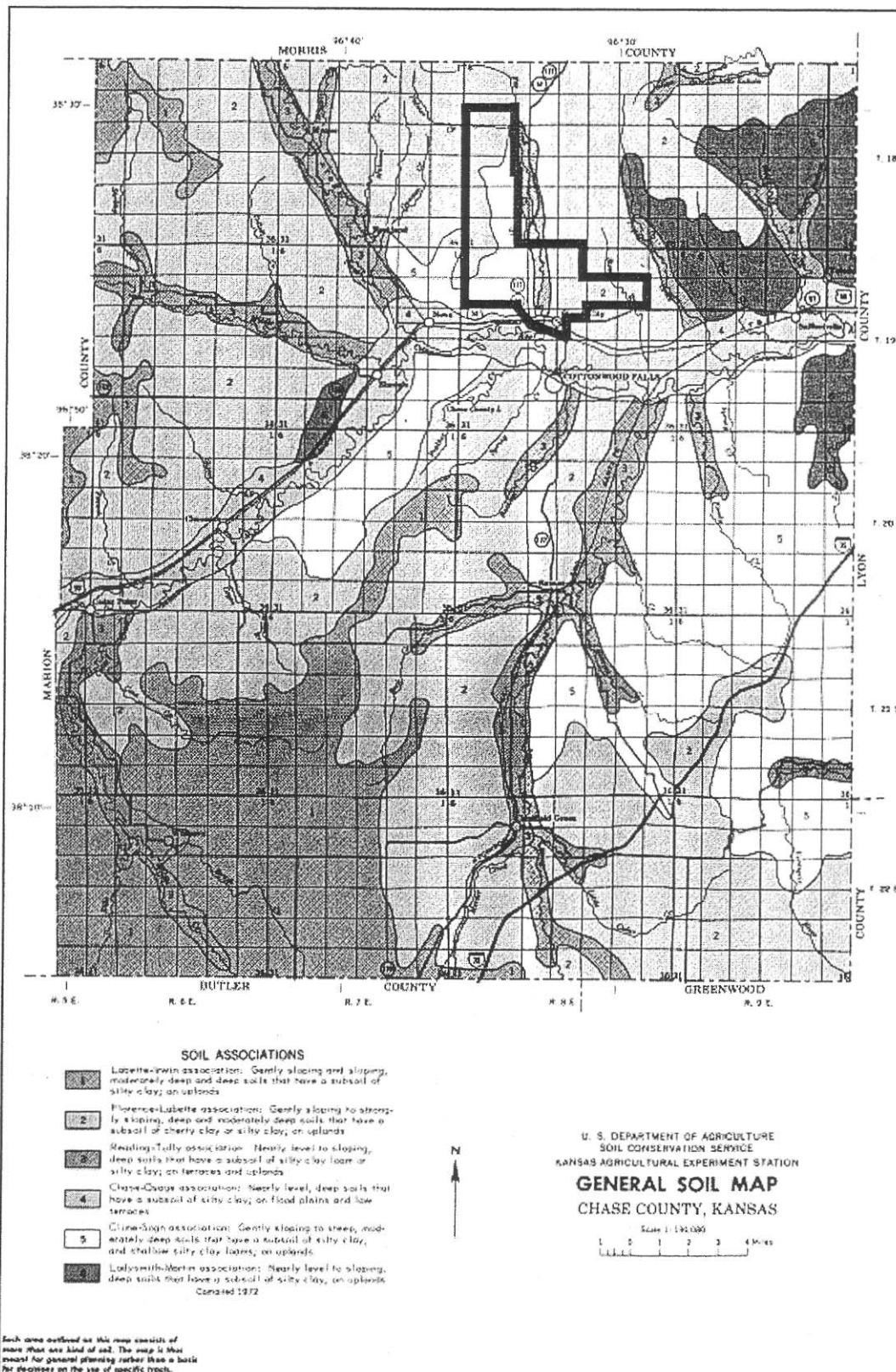
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Appendices





Appendix A. Geological Map of Chase County Kansas, 1998 [Kansas Geological Survey, currently in press]



Appendix B. General Soil Map, Chase County Kansas, 1974 [U.S.D.A. Soil Conservation Service and Kansas Agricultural Experiment Station]