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Draft Environmental Impact Statement

Southeast Geographic Area Rangeland Management on National Forest System lands of the Buffalo Gap National Grassland in South Dakota

Fall River Ranger District, Buffalo Gap National
Grassland, Nebraska NF
Fall River County, South Dakota



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**Southeast Geographic Area Rangeland Management on National Forest System lands on the Buffalo Gap National Grassland in South Dakota
Draft Environmental Impact Statement
Fall River County, South Dakota**

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Abstract: The Draft Environmental Impact Statement (DEIS) will describe current environmental conditions and analyze environmental consequences of action to those conditions. The proposed and preferred action is to implement best management grazing practices and activities associated with adaptive management and monitoring strategies to ensure there are no disparities between current conditions in the project area and the Nebraska Land and Resource Management Plan (NLRMP) desired conditions for the project area. Two alternatives to the proposed action are being considered: 1) No-Action, eliminate any grazing uses on the project area, and 2) No-Change, or no change from current grazing management practices and activities.

To receive full consideration, reviewers must provide the Forest Service with their comments during the review period of the draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and use the information in the preparation of the final environmental impact statement, thus avoiding undue delay in the decision-making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. City of Angoon v. Hodel (9th Circuit, 1986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

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Date Comments Must be Received: Within 45 days from EPA
publication date

SUMMARY

The Buffalo Gap National Grassland, Nebraska National Forest proposes to implement best management grazing practices and activities associated with adaptive management and monitoring strategies to strive to resolve any disparities between current conditions and the desired conditions in the Nebraska Land and Resource Management Plan (NLRMP). The area affected by the proposal includes the Fall River Southeast Geographic Area (FRSEGA) and the Fox allotment, whose boundary lies within the Fall River West Geographic Area (FRWGA) (Map 1). This action is needed to reverse any undesirable conditions identified and ensure that authorized uses and associated management activities move them towards desired NLRMP conditions.

Note: further discussions of the project area will be referenced as FRSEGA, and will include the one area associated with the FRWGA.

The project has been identified in the quarterly Schedule of Proposed Actions (SOPA) for the Nebraska National Forest since November 2001. The Notice of Intent (NOI) was published in the Federal Register on July 15, 2003. The NOI asked for public comment on the proposal within 30 days after publication in the Federal Register. In addition, as part of the public involvement process, the agency sent a scoping letter to 120 interested publics on April 30, 2003 (permittees, Federal, State, County, and Local government agencies, Tribal agencies, political figures, and other persons who have expressed an interest in natural resource management on the Buffalo Gap National Grassland). One letter was received in response to the scoping letter and one letter (e-mail) was received with comments after the NOI was published. In addition, several meetings were held in conjunction with the permittees, county commissioners, scientific review team, and South Dakota Department of Game, Fish, and Parks.

Using the comments from the public, other agencies, and permittees, the interdisciplinary team developed a list of issues. The issues led the agency to develop alternatives to the proposed action including:

- No-action alternative - eliminate grazing uses.
- No-change alternative - continues current grazing uses as prescribed in existing allotment management plans.

Based upon the effects of the alternatives, the responsible official will decide whether or not to continue permitted uses. If uses are permitted, then adaptive management strategies and monitoring will be identified to ensure compliance with desired NLRMP conditions.

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CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

Document Structure

The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This DEIS discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

- *Chapter 1. Purpose and Need for Action:* The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Chapter 2. Alternatives, including the Proposed Action:* This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Chapter 3. Affected Environment and Environmental Consequences:* This chapter describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by [insert topic (i.e., resource area, significant issues, environmental component)].
- *Chapter 4. Consultation and Coordination:* This chapter provides a list of preparers and agencies consulted during the development of the draft environmental impact statement.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the draft environmental impact statement.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Fall River Ranger District, 1801 Highway 18 Truck By-pass, PO Box 732, Hot Springs, SD 57747.

Background

There is Congressional intent to allow grazing on suitable lands when it is consistent with other multiple-use goals and objectives, (Multiple-Use Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resource Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976). It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans (Forest Service Manual 2203.1).

Management of permitted livestock grazing is spelled out in the NEPA Decision and then incorporated into an Allotment Management Plan (AMP). It is the responsibility of this NEPA analysis and decision to integrate rangeland resource uses with other resource uses of the National Forest System to achieve the statutory mandate of multiple-use, sustained-yield management of renewable resources... (FSM 2210.2) The AMP is the primary document,

which, through implementation of the Fall River Southeast Geographical Area (FRSEGA) NEPA Decision, guides implementation of forest plan direction relative to permitted livestock management on the FRSEGA (FSM 2212).

The original Nebraska National Forest Land and Resource Management Plan was approved on December 14, 1984. Subsequent site-specific NEPA documents and AMP's implementing the Land and Resource Management Plan's goals and objectives were approved: North Pioneer Allotments Management Plan, March 23, 1993; South Pioneer Allotments Management Plan, October 24, 1997; French Allotment Management Plan, October 27, 1997; Thomsen Allotment Management Plan, July 24, 1990 and amended on October 23, 1997; Tlustos Allotment Management Plan, September 28, 1990; Black Banks Allotment Management Plan, June 13, 1991; Bogner N. Allotment Management Plan, October 24, 1997; Longspur and Muhm allotments, October 27, 1997; and the Lulf allotment, April 8, 1996. Table 1 lists all allotments in the FRSEGA. See Map 3 for locations of all allotments within the project area.

Table 1: Allotments in the FRSEGA

ALLOTMENTS				
Angostura	Fench	Kneebone	Osmotherly	Stewart
Bennett	Gamet	Longspur	Park	Thomsen
Black Banks	Gann	Lulf	Pinnt	Tlustos
Bochert	Hald	Limestone Butte	Putnam	Tobin-Ormesher
Bogner J.	Harris	Littl Blacktail	Railroad	South White Ranch
Bogner N.	Hay Canyon Butte	Muhm	Sandcreek	South Blacktail
Burgess	Heiser	North Blacktail	Seger	Warner
Cathey	Hughson	Old Pioneer II	Southeast Hay Canyon	Webster
Fox	Humiston	Old Pioneer IV	Southwest Hay Canyon	

The existing allotment management plans were prepared in the early 1990's to respond to moving the "then" existing conditions towards the desired conditions in the 1984 Nebraska National Forest Land and Resource Management Plan. Many of the management actions achieved those desired conditions, but not in every case. Also, the 1984 Nebraska National Forest Land and Resource Management Plan was updated and revised on July 31, 2002 (adding or revising standards and guidelines. That document is the Nebraska Land and Resource Management Plan – 2001 revision, referred to as the NLRMP in this DEIS. Table 3 is a comparison of the current conditions to the revised NLRMP desired conditions. This table also establishes the areas where there is a need for action to make measurable progress towards desired conditions.

Land management plans and subsequent site-specific actions, such as this proposal, require significant public involvement through the NEPA process. Beyond this process, the Forest Service administers site-specific actions thru administrative documents like allotment management plans; permit issuances; annual operating instructions; bills for collections; and others. These documents do not require public involvement through the NEPA process.

Purpose and Need for Action

Table 2 illustrates the NLRMP desired condition for each general resource found within the FRSEGA.

Table 2 - NLRMP Desired Condition for Resources in the FRSEGA.

Resource	Desired Condition (NLRMP pg 2-26)
Plant Species Composition	The objective across the geographic area is: 20-30% late seral, 40-60% late intermediate seral, 15-25% early intermediate seral, and 1-10% early seral..
Vegetation Structure	The objective across the geographic area is: 15-35% high, 40-60% moderate, and 15 to 35% low.
Wetlands	Provide for well-developed emergent vegetation through the growing season on 30-50% of the wetlands (natural and constructed), distributed across the geographical area.
Hardwood Draw	Move at least 80 percent toward self-perpetuating tree and shrub regeneration within site capability.
Prairie Dog (Black-footed ferret re-introduction - MA 3.63)	Promote prairie dog expansion and develop a prairie dog colony complex (at least 10 dog colonies with a total acreage of at least 1,000 acres) in MA 3.63.
T&E, Sensitive, MIS, Plant Species of Concern	Demonstrate positive trends in population viability, habitat availability, habitat quality, and population distribution, within 15 years.
Rare Plant Community	Demonstrate positive trends in availability and quality, within 15 years.

For the last 20 years, the Fall River Ranger District has conducted vegetation inventory surveys utilizing the Natural Resource Conservation Service (formerly Soil Conservation Service) Doubling Sampling methodology (NRH-1, July 13, 1976). The NRCS methodology summarizes the raw transect data and determines a final range condition class by comparing the present plant community with that of the climax plant community. The four range condition classes are 'Poor' (0-25% of climax), 'Fair' (26-50% of climax), 'Good' (51-75% of climax) and 'Excellent' (76-100% of climax). The Fall River District has good baseline information with subsequent follow-up data and can use the range condition methodology as a reliable means to determine trends in rangeland health.

In 1995, The Fall River District began sampling sites for canopy cover and frequency of occurrence by plant species, utilizing Daubenmire's canopy-coverage method of vegetation analysis (Daubenmire, R. 1959). This effort was to coincide with the NLRMP, which would describe vegetation in ecological seral classifications, rather than range condition. However, due to a lack of funding, none of the original sampling sites have been re-sampled. The data only establishes a set of baseline information.

The range condition analysis gives a clearer trend picture at this time and makes effects predictions more reliable. Range condition, as a desired condition, will be used as a measure in this DEIS.

Table 3 identifies the desired condition, existing condition, and the need for action.

Table 3 - Comparison of Conditions Establishing the Need for the Project.

Allotment	Desired Condition	Existing Condition	Need for Action
Southeast Geographic Area	*Plant Species Composition \$Vegetation Structure	*E=42%, G=54%, F=<1%, P=<1% \$11% high, 59% moderate, 30% low	*Move range condition to lower seral stages across the geographic area. For specifics, see each allotment. \$Encourage higher structural stages across the geographic area. For specifics, see each allotment.
Angostura	*Plant Species Composition \$Vegetation Structure	*E=28%, G=2%, F=69%, P=0% \$See objective for Geographic Area	*Combine the Hughson, Angostura, and Harris Allotments to form the Slim Butte Allotment for better management \$Change management to achieve higher vegetation structure
Bennett	*Plant Species Composition !Plant Species of Concern	* E=0%, G=87%, F=0%, P=8% !Stable	!Maintain and monitor population stability
Black Banks	*Plant Species Composition	* E=0%, G=99%, F=0%, P=0%	No need for action
Bochert	*Plant Species Composition \$Vegetation Structure +Hardwood Draw ^Rare Plant Community !Plant Species of Concern #BFF Re-introduction	E=62%, G=38%, F=0%, P=0% \$See objective for Geographic Area +Seral Stage is high w/ regeneration ^Stable !Stable # 173 acres of prairie dogs	\$Change management to achieve higher vegetation structure #Expand prairie dog acres to minimum of 1000 acres including the Gamet allotment ^!Maintain and monitor population stability
Bogner J.	*Plant Species Composition	* E=0%, G=100%, F=0%, P=0%	Combine with the Gann allotment to implement multiple pasture rotations
Bogner N.	*Plant Species Composition	* E=0%, G=99%, F=0%, P=0%	No need for action
Burgess	*Plant Species Composition \$Vegetation Structure +Hardwood Draw ^Rare Plant Community !Plant Species of Concern {Sensitive Plant Species	E=5%, G=90%, F=4%, P=0% \$See objective for Geographic Area +No regeneration occurring ^Stable !Good condition {Presence/absence monitoring	*Manage 2 pastures for low seral \$Change management to achieve higher vegetation structure +Provide disturbances to start regeneration {^!Maintain and monitor population stability
Cathey	*Plant Species Composition	* E=0%, G=66%, F=34%, P=0%	No need for action
Fox	*Plant Species Composition !Plant Species of Concern %Sensitive species	* E=0%, G=89%, F=10%, P=0% !Stable %Swift Fox declining	%Manage for low veg structure %!Maintain and monitor population stability
Fench	*Plant Species Composition	* E=0%, G=57%, F=43%, P=0%	No need for action

Allotment	Desired Condition	Existing Condition	Need for Action
Gamet	*Plant Species Composition \$Vegetation Structure +Hardwood Draw ^Rare Plant Community !Plant Species of Concern #BFF Re-introduction	* E=55%, G=43%, F=1%, P=0% \$See objective for Geographic Area +Floristic quality low, and invasives and non-natives present ^One community identified as 'at risk' !Stable #567 acres of prairie dogs	\$Change management to achieve higher vegetation structure ^Enhance 'at risk' rare plant community #Expand prairie dog acres to minimum of 1000 acres including the Bochert allotment +Protect hardwood draw by fencing !Maintain and monitor population stability
Gann	*Plant Species Composition ^Rare Plant Community !Plant Species of Concern	* E=0%, G=93%, F=7%, P=0% ^Identified as 'at risk' !Stable	*Combine the Bogner J. and Gann allotment to implement multiple pasture rotation ^Enhance 'at risk' rare plant community !Maintain and monitor population stability
Hald	*Plant Species Composition \$Vegetation Structure	* E=13%, G=85%, F=1%, P=0% \$See objective for Geographic Area	\$Change management to achieve higher vegetation structure
Harris	*Plant Species Composition \$Vegetation Structure +Hardwood Draw	* E=82%, G=8%, F=8%, P=0% \$See objective for Geographic Area +No regeneration occurring	*Combine the Hughson, Angostura, and Harris Allotments to form the Slim Butte Allotment for better management \$Change management to achieve higher vegetation structure +Provide disturbances to start regeneration
Hay Canyon Butte	*Plant Species Composition \$Vegetation Structure ^Rare Plant Community !Plant Species of Concern	E=60%, G=39%, F=0%, P=0% \$See objective for Geographic Area ^Identified as 'at risk' !Stable	^Enhance 'at risk' rare plant community \$Change management to achieve higher vegetation structure !Maintain and monitor population stability
Heiser	*Plant Species Composition	* E=58%, G=42%, F=0%, P=0%	No need for action
Hughson	*Plant Species Composition \$Vegetation Structure !Plant Species of Concern ^Rare Plant Community	* E=38%, G=56%, F=6%, P=0% \$See objective for Geographic Area !Stable ^Stable	*Combine the Hughson, Angostura, and Harris Allotments to form the Slim Butte Allotment for better management \$Change management to achieve higher vegetation structure ^!Maintain and monitor population stability
Humiston	*Plant Species Composition	* E=0%, G=71%, F=28%, P=0%	No need for action
Kneebone	*Plant Species Composition ^Rare Plant Community !Plant Species of Concern	* E=69%, G=21%, F=10%, P=0% ^Identified as 'at risk' !Stable	^Enhance 'at risk' rare plant community !Maintain and monitor population stability
Longspur	*Plant Species Composition	* E=0%, G=99%, F=0%, P=0%	No need for action
Lulf	*Plant Species Composition	* E=0%, G=89%, F=11%, P=0%	No need for action
Limestone Butte	*Plant Species Composition !Plant Species of Concern }Wetland Habitat {Sensitive Plant Species	* E=0%, G=90%, F=0%, P=1% !Stable }Limestone Butte Dam Stable {Presence/absence monitoring	{Monitor trend and population stability ^!Maintain and monitor population stability
Little Blacktail	*Plant Species Composition	* E=0%, G=89%, F=11%, P=0%	No need for action
Muhm	*Plant Species Composition	* E=0%, G=89%, F=11%, P=0%	No need for action

Allotment	Desired Condition	Existing Condition	Need for Action
North Blacktail	*Plant Species Composition +Hardwood Draw !Plant Species of Concern	* E=0%, G=84%, F=16%, P=0% +No regeneration occurring !Stable	+Provide disturbances to start regeneration !Maintain and monitor population stability
Old Pioneer II	*Plant Species Composition ^Rare Plant Community !Plant Species of Concern	E=46%, G=54%, F=0%, P=0% ^Identified as 'at risk' !Stable	^Enhance 'at risk' rare plant community !Maintain and monitor population stability
Old Pioneer IV	*Plant Species Composition	* E=1%, G=91%, F=7%, P=0%	No need for action
Osmotherly	*Plant Species Composition +Hardwood Draw ^Rare Plant Community !Plant Species of Concern	* E=0%, G=100%, F=0%, P=0% +No site potential ^Identified as 'at risk' !Stable	+Discontinue hardwood draw management ^Enhance 'at risk' rare plant community !Maintain and monitor population stability
Park	*Plant Species Composition	* E=7%, G=76%, F=17%, P=0%	No need for action
Pinnt	*Plant Species Composition	* E=0%, G=100%, F=0%, P=0%	No need for action
Putnam	*Plant Species Composition !Plant Species of Concern	E=8%, G=34%, F=57%, P=0% !Stable	*Manage for low seral stages due to poor site potentials !Maintain and monitor population stability
Railroad	*Plant Species Composition +Hardwood Draw ^Rare Plant Community !Plant Species of Concern	* E=0%, G=100%, F=0%, P=0% +Extremely low site potential ^Identified as 'at risk' !Stable	+Discontinue hardwood draw management ^Enhance 'at risk' rare plant community !Maintain and monitor population stability
Sandcreek	*Plant Species Composition }Wetland Habitat	* E=72%, G=18%, F=10%, P=0% }Ducks Unlimited Dams	}Minimize grazing duration and fence
Segeer	*Plant Species Composition \$Vegetation Structure	* E=54%, G=21%, F=24%, P=0% \$\$See objective for Geographic Area	*Manage west pasture to improve condition \$Change management to achieve higher vegetation structure
Southeast Hay Canyon	*Plant Species Composition \$Vegetation Structure }Wetland Habitat	E=24%, G=76%, F=0%, P=0% \$\$See objective for Geographic Area }Ducks Unlimited Dams Exlcosed	\$Change management to achieve higher vegetation structure
Southwest Hay Canyon	*Plant Species Composition \$Vegetation Structure	* E=74%, G=5%, F=20%, P=0% \$\$See objective for Geographic Area	\$Change management to achieve higher vegetation structure
Stewart	*Plant Species Composition	* E=63%, G=36%, F=0%, P=0%	No need for action
Thomsen	*Plant Species Composition +Hardwood Draw	* E=0%, G=56%, F=44%, P=0% +No site potential	+Discontinue hardwood draw management
Tlustos	*Plant Species Composition	* E=29%, G=65%, F=6%, P=0%	No need for action
Tobin-Ormesher	*Plant Species Composition \$Vegetation Structure +Hardwood Draw	E=0%, G=96%, F=4%, P=0% \$\$See objective for Geographic Area +No site potential	\$Change management to achieve higher vegetation structure +Discontinue hardwood draw management
South White Ranch	*Plant Species Composition !Plant Species of Concern ^Rare Plant Community	* E=60%, G=40%, F=0%, P=0% !^Stable	^!Maintain and monitor population stability
South Blacktail	*Plant Species Composition +Hardwood Draw ^Rare Plant Community	* E=11%, G=74%, F=0%, P=0% +No site potential ^Stable	*Combine with the Burgess allotment for more efficient management +Discontinue hardwood draw management !Maintain and monitor population stability

Allotment	Desired Condition	Existing Condition	Need for Action
Warner	*Plant Species Composition +Hardwood Draw ^Rare Plant Community !Plant Species of Concern	* E=19%, G=62%, F=19%, P=0% + Regeneration occurring ^Stable !Stable	^!Maintain and monitor population stability
Webster	*Plant Species Composition	* E=0%, G=0%, F=99%, P=0%	No need for action

E = excellent rangeland condition, G = good rangeland condition, F = fair rangeland condition, P = poor rangeland condition

The purpose and need for this analysis are based on the Fall River Ranger District proposing to continue to permit livestock grazing on all or part of the FRSEGA project area, and doing so in a manner that makes measurable progress towards desired conditions by following an adaptive management process. See pages 1-1 to 1-29, 2-26 to 2-32, 3-24 to 3-27, and 3-32 to 3-33 of the Nebraska National Forest Land and Resource Management Plan for goals, objectives, standards and guidelines. (Note: not all forest-wide goals, objectives, standards and guidelines are applicable to the geographic area).

Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to implement best management grazing practices and associated activities with adaptive management and monitoring strategies to work to resolve any disparities between current conditions and the FRSEGA site-specific desired conditions as derived from the NLRMP.

Adaptive management is defined as a type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management involves planning, implementing, monitoring, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods.

The proposed action is a detailed, outcome based focus of selected practices that can be implemented on a site-specific basis in response to information from monitoring, indicating a need or opportunity to change management. The biological evaluations and biological assessments BABE will evaluate effects of management options implemented in the first step of the adaptive management process on threatened and endangered animal species, management indicator animal species, sensitive animal and plant species, rare plant communities, plant species of concern and plant communities of concern. Monitoring will be done to see if the management practices are accomplishing the site-specific objectives set forth in the DEIS. When monitoring indicates select management practices are not allowing for adequate movement toward meeting the desired conditions, adaptive changes in management tools will be made based on the alternate tools listed in the proposed actions, Appendix B.

All existing rangeland structural improvements will remain in place and will be maintained (1429 miles of fence, 121 miles of pipeline, and 290 stock dams/dugouts). Proposed rangeland structural improvements include: 33.75 miles of water pipelines, 33 stock tanks, 1 cattle guard, 6 stock dams, 4 miles of cross fence and 13.5 miles of enclosure fence for plant enhancement. In addition, approximately 8,500 acres of prescribed fire will occur across the geographic area to assist with fuels removal, non-native species removal, natural fire

occurrence simulation, hardwood draw regeneration, and prairie dog expansion for Black-footed ferret re-introduction sites.

Scope of the Analysis

Geographic Scope

The Fall River Range District has prepared this DEIS to document the analysis and disclose the environmental effects of alternative grazing management actions in the project area (Map 1). The project area includes about 114,490 acres of lands managed by the Nebraska National Forest, Buffalo Gap National Grassland. (NLRMP, pg 2-27, plus 2,880 acres in the Fall River West Geographical Area (FRWGA)).

Temporal Scope

Implementation of the selected alternatives would begin with livestock “turn-on” for the 2005-grazing season. Appropriate standards, terms, conditions, and management practices including those for upland, riparian, woodlands, and Management Indicator Species (MIS) will be taken from the NEPA decision and incorporated into new AMP’s. As such, they will become requirements of the grazing permits. The project level decision and the resultant AMP’s will guide livestock management and associated activities within the project area until such time as changed conditions result in the need for a re-analysis. Periodic reviews will be conducted of the analysis and decision as per MEPA handbook directions to determine if the analysis and decision remain viable. AMP development and issuance of grazing permits to reflect the selected alternative will not be subject to further NEPA documentation.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action, the other alternatives, and the environmental consequences of each in order to make the following decisions:

- Whether livestock grazing should be authorized on all, part, or none of the project area.
- If the decision is to authorize some level of livestock grazing, then what management prescriptions will be applied (including standards, guidelines, grazing management, and monitoring) to ensure that desired condition objectives are met or that movement occurs toward those objectives in an acceptable timeframe.

These decisions will then be incorporated into individual AMPs. AMP’s become requirements of the grazing permits. The new AMP’s will guide grazing management and associated activities within the project area until NEPA is completed again.

AMP development and approval, and issuance of grazing permits to reflect the selected alternative will not be subject to further NEPA documentation.

Public Involvement

The project has been identified in the quarterly Schedule of Proposed Actions (SOPA) for the Nebraska National Forest since November 2001. The Notice of Intent (NOI) was published in the Federal Register on July 15, 2003. The NOI asked for public comment on the proposal within 30 days after publication in the Federal Register. In addition, as part of the public involvement process, the agency sent a scoping letter to 120 interested publics on April 30, 2003 (permittees, Federal, State, County, and Local government agencies, Tribal agencies, political figures, and other persons who have expressed an interest in natural resource management on the Buffalo Gap National Grassland). One letter was received in response to the scoping letter and one letter (e-mail) was received with comments after the NOI was published. In addition, several meetings were held in conjunction with the permittees, county commissioners, scientific review team, and South Dakota Department of Game, Fish, and Parks.

Using the comments from the public, other agencies, and permittees, the interdisciplinary team developed a list of issues to address.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly related to the implementation of the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." A list of non-significant issues and reasons regarding their categorization as non-significant may be found at the Fall River Ranger District in the record.

As for significant issues, the Forest Service identified the following issues during scoping:

- **Past livestock grazing management has influenced plant species composition, resulting in more acres of higher seral stages than is prescribed by the NLRMP goals for the geographical area.**
- **Past livestock grazing management has influenced vegetation structure, resulting in more acres of lower vegetation structure stages than is prescribed by the NLRMP goals for the geographical area.**
- **The current exclusive management prescription to not graze hardwood draws between June 1 and November 1 in the Burgess, Harris, and North Blacktail allotments has resulted in a lack of tree and shrub regeneration.**
- **Livestock grazing during the summer on the hardwood area of the Gamet allotment has resulted in poor floristic quality and a lack of tree and shrub regeneration.**
- **Past livestock grazing management influenced rare plant communities and plant species of concern, resulting in poor floristic qualities, and even 'at risk' plant communities in the Gamet, Gann, Hay Canyon Butte, Kneebone, Old Pioneer 2, Osmotherly, and Railroad allotments.**

- **A reduction in permitted animal unit months of grazing in the FRSEGA would result in negative impacts to current livestock permittees, rural, city, and county economies and life styles in Fall River County.**

Issue Measures

The following measures were selected to evaluate issue resolution, attainment of objectives, and describe environmental impacts. In some cases, the measures are quantified. When measures cannot be quantified, a narrative discussion will be included.

Range Analysis methods specified by the Rocky Mountain Forest Service Range Analysis and Management Training Guide, May 1994.

Acres of rare plant communities, plant species of concern, and riparian areas disturbed by grazing, and floristic quality index changes developed from ocular plot data specified by the Rocky Mountain Forest Service Range Analysis and Management Training Guide, May 1994.

Tabular and descriptive displays of effects, by alternatives, based on Visual Obstruction Readings (VOR's) as specified in the Forest Plan.

Narrative descriptions of effects on heritage and paleontological resources, by alternative, based on specialist input.

Economic efficiency and impact analysis, using Present Net Value, jobs, and government receipts, by alternative.

Narrative analysis of ranch economics by alternative.

Other Related Efforts

The Fall River Water District is nearing the end of a lengthy process to bring potable water to users in the southeast part of Fall River County. Plans for additional water distribution pipelines and stock tanks will be considered when analyzing cumulative effects. The Decision Notice to approve multiple water meters and pipeline segments on multiple areas of the National Grassland was signed by Mary Peterson, Forest Supervisor November 9, 2004.

The Fall River Ranger District signed a Noxious Weed Control Decision Notice on June 28, 1999. Noxious weeds will continue to be controlled under that Decision Notice, no matter which alternative is selected from this Draft Environmental Impact Statement by the Deciding Official.

The Forest Service and a permittee of the Pioneer Grazing Association are negotiating a land exchange of 640 private acres for 658 National Forest System (NFS) acres. The area affected would increase NFS acres in the Bochert allotment and decrease acres in the Southeast Hay Canyon allotment. The agreement to initiate has been signed.

The Forest Service and a permittee of the Pioneer Grazing Association are negotiating a land exchange of 1720 to 1840 private acres for 1775 NFS acres. The area affected would increase NFS acres in the Tobin-Ormesher and Bennet allotments and decrease acres in the South White Ranch allotment.

The Forest Service manages for multiple uses including recreational activities. Some recreational use has detrimental impacts to the rangeland resources such as off road vehicle use. An environmental impact statement will be completed in the near future on the Buffalo Gap and Fort Pierre National Grasslands to analyze issues and their impacts as they relate to travel management. These types of issues and impacts are not discussed in this document.

CHAPTER 2. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Introduction ---

This chapter describes and compares the alternatives considered for the Southeast Geographic Area on National Forest System lands of the Buffalo Gap National Grassland in South Dakota.

This section also presents the alternatives in comparative form (Table 5), sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

Alternatives Considered in Detail ---

The Forest Service developed three alternatives, including the No-change, No-action (No livestock grazing), and Proposed, in response to issues raised by the public.

Alternative 1 – No Action – No livestock grazing.

Under this alternative, domestic livestock grazing on all National Grasslands within allotments will be discontinued. No adaptive management practices will be used. As provided in FSH 2209.13 Section 16.13, all term grazing permits and grazing agreements will be terminated two grazing seasons after the Record of Decision is signed and no livestock grazing will be authorized after that date. Private lands included in these allotments could continue to be grazed at the landowner's discretion; however, the landowner will be required to keep the livestock off the National Grassland.

All existing rangeland structural improvements will remain in place but will not regularly be maintained. Periodic monitoring of improvements (at least once every 5 years) will be used to determine whether removal or maintenance is needed. Removal would be authorized by a separate decision.

Noxious Weed control will continue under the 1999 Decision Notice. Prairie dogs will be managed consistent with the direction outline in the NLRMP.

Alternative 2 – No Change – No change would occur from the current grazing management.

Under this alternative, permitted livestock grazing will continue on all allotments as is currently prescribed in existing allotment management plans. No adaptive management practices will be used.

All existing rangeland structural improvements will remain in place and will be maintained (1429 miles of fence, 121 miles of pipeline, and 290 stock dams/dugouts). Structural improvements approved in the existing allotment management plans will continue to be built. They include: 2.5 miles of fence to cross fence Hay Canyon Butte allotment, 4 miles of pipeline extensions in the Hughson and Harris allotments, 1 dugout construction each in the

South Blacktail and Harris allotments, 1 dam construction each in the Hughson, Harris and Bogner J. allotments, and 1 dam spillway repair in the Seger allotment.

Noxious weed control will continue under the 1999 Decision Notice. Prairie dogs will be managed consistent with the direction outline in the NLRMP.

Summarized data about each allotment's current conditions and past management activities for the previous 10-15 years can be found in Appendix A. Additional detailed information can be found in the project record, and may be viewed at the Fall River Ranger District office in Hot Springs, SD.

During the 1990's, the AMP's were written to be consistent with the 1984 Forest Plan. The reader should note analysis of these AMP's, in this DEIS, is made in the context of the NLRMP – 2002 revision, and not the 1984 Forest Plan.

Alternative 3 – Proposed Action - Grazing with adaptive management grazing practices and associated activities

Under the proposed action, the Fall River Ranger District will implement best management grazing practices and activities associated with adaptive management and monitoring strategies to work to resolve any disparities between current conditions and the FRSEGA site-specific desired conditions as derived from the NLRMP.

Adaptive management is defined as a type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management involves planning, implementing, monitoring, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods.

The proposed action is a detailed, outcome based focus of selected practices that can be implemented on a site-specific basis in response to information from monitoring, indicating a need or opportunity to change management. Monitoring will be done to see if the management practices are accomplishing the site-specific objectives set forth in the DEIS. When monitoring indicates select management practices are not allowing for adequate movement toward meeting the desired conditions, adaptive changes in management tools will be made based on the alternate tools listed in the proposed actions, Appendix B. The biological evaluations and biological assessments will evaluate effects of management options implemented in the first step of the adaptive management process on threatened and endangered animal species, management indicator animal species, and sensitive animal and plant species,

All existing rangeland structural improvements will remain in place and will be maintained (1429 miles of fence, 121 miles of pipeline, and 290 stock dams/dugouts). Proposed rangeland structural improvements include: 33.75 miles of water pipelines, 33 stock tanks, 1 cattle guard, 6 stock dams, 4 miles of cross fence and 13.5 miles of enclosure fence for plant enhancement. In addition, approximately 8,500 acres of prescribed fire will occur across the geographic area to assist with fuels removal, non-native species removal, natural fire occurrence simulation, hardwood draw regeneration, and prairie dog expansion for Black-footed ferret re-introduction sites. Maps of the allotments, including existing and proposed improvements, can be found in Appendix C.

Noxious weed control will continue under the 1999 Decision Notice. Prairie dogs will be managed consistent with the direction outline in the NLRMP.

The following table summarizes the proposed actions to be taken on each allotment. Full descriptions of proposed practices and activities can be found in Appendix B.

Table 4: Summary of Proposed Activities

Allotments	Practices and Activity Changes from Current Conditions
Angostura	Combine Angostura, Hughson and Harris allotments. See Slim Butte allotment for details.
Bennett	Maintain and monitor population stability for plant species of concern.
Black Banks	No change.
Bochert	Expand prairie dogs for Black-footed ferret re-introduction. Manage 1of 4 pastures for high vegetation structure. Manage hardwood draw for high vegetation structure. Maintain and monitor population stability for plant species of concern.
Bogner J	Combine with the Gann Allotment.
Bogner N	No Change.
Burgess	Combine South Blacktail allotment with this allotment. Manage 1-2 pastures for high vegetation structure. 2 pastures managed to meet NLRMP low seral standard. Rx fire to remove fuels and non-native species and stimulate hardwood draw regeneration (1260 acres). Maintain and monitor population stability for plant species of concern.
Cathey	No change.
Fox	Manage for low vegetation structure. Maintain and monitor swift fox population stability.
French	No change.
Gamet	Expand prairie dogs for Black-footed ferret re-introduction. Permanently fence the Black Canyon Riparian and "At Risk" rare plant community area. Be aggressive with Salt Cedar and Siberian Elm eradication. Rx fire in exclosures and to expand prairie dogs (4034 acres). Maintain and monitor population stability for plant species of concern.
Gann	Combine the Bogner J allotment with this allotment. Permanently fence an "At Risk" rare plant community. Maintain and monitor population stability for plant species of concern.
Hald	No change.
Harris	Combine Angostura, Hughson and Harris allotments. See Slim Butte allotment for details
Hay Canyon Butte	Manage 1 pasture for high vegetation structure. Permanently fence an 'At Risk" rare plant community. Cross fence OP 1 pasture. Maintain and monitor population stability for plant species of concern.
Heiser	No change.
Hughson	Combine the Angostura, Hughson and Harris allotments to form the Slim Butte Allotment. See Slim Butte allotment for details
Humiston	No change.
Kneebone	Permanently fence an "At Risk" rare plant community either in this allotment. Maintain and monitor population stability for plant species of concern.
Limestone Butte	Rx fire in exclosures. Maintain and monitor population stability for plant species of concern.
Little Blktail	No change.
Longspur	No change.
Lulf	No change.
Muhm	No change.
North Blacktail	Provide disturbances to re-generate hardwood draws. Maintain and monitor population stability for plant species of concern.
Old Pioneer 2	Permanently fence an "At Risk" rare plant community either in this allotment. Maintain and monitor population stability for plant species of concern
Old Pioneer 4	No change.
Osmotherly	Maintain and monitor population stability for plant species of concern
Park	Rx fire in Pioneer rest stop.
Pinnt	No change.
Putnam	No change.
Railroad	Maintain and monitor population stability for plant species of concern.
Sand Crk	Cross fence and add wetland habitat pasture. Rx fire in exclosures
Seger	Manage for high vegetation structure in 1 pasture per year. Reduced stocking in Swede pasture.
Slim Butte	Manage 2 of 11 pastures for high vegetation structure. Rx fire to stimulate woody species (2300 acres). Maintain and monitor population stability for plant species of concern and rare plant comm.
South Blktail	Combine this allotment with the Burgess allotment. See Burgees Allotment for details
S White Rnch	Maintain and monitor population stability for plant species of concern
SE Hay Canyon	Manage for high vegetation structure in 1 pasture per year. Rx fire in exclosures.
SW Hay Canyon	Manage for high vegetation structure in 1 pasture per year. Rx fire in exclosures.

Allotments	Practices and Activity Changes from Current Conditions
Stewart	No change.
Thomsen	Remove small pasture along Horsehead creek and manage with larger unit.
Tlustos	No change.
Tobin-Orhemsher	Manage 2 pastures for high vegetation structure. Rx fire in enclosures.
Warner	Rx fire to help treat non-native species (400 acres). Maintain and monitor population stability.
Webster	No change.
SE Geographpic Area	Prescribe fire use across the entire geographic area. Increase range of high structure vegetation while reducing moderate structure vegetation. Rest 1-10% of the pastures every year. Increase acres of lower seral stages.

Actions and Design Criteria Common to Action Alternatives

The Forest Service developed the following design criteria to be used as part of all of the action alternatives:

- Prior to ground disturbing activities, conduct heritage surveys and mitigate any heritage resources that will be impacted.
- Prior to ground disturbing activities, conduct paleontological surveys and mitigate any paleontological resources that will be impacted.
- During ground disturbing activities, such as installing water pipelines, a qualified paleontologist or qualified para-paleontologist is required to be on site during the activity and monitor for any impacts.
- During ground disturbing activities that penetrate bedrock, construction personnel are to be aware of any paleontological resources and stop construction when vertebrate fossils are impacted and notify a qualified paleontologist.
- Prior to ground disturbing activities, conduct wildlife surveys and mitigate any impacts.
- All new or reconstructed water developments will include wildlife access and escape ramps.
- All new fencing will be built to Forest Plan standards (NLRMP-Appendix B) that provide for wildlife passage through or under the fence.
- Areas disturbed by rangeland improvements will be seeded utilizing weed free seed mixtures that provide forage or cover for wildlife and reduce soil erosion. Seed mixes will include only native forbs, shrubs, and /or grasses.
- Develop Allotment Management Plans (AMPs) containing pertinent livestock management direction, concurrently with the completion of the project-level decision (FSH 2209.13, Chapter 90, Section 94.1).
- In a timely manner, modify existing permits to conform to the project-level decision (FSH 2209.13, Chapter 90, Section 94.2).
- Prepare annual operating instructions (AOI) in cooperation with permittees to implement the project-level decision (FSH 2209.13, Chapter 90, Section 94.3).
- Implement drought management processes described in ‘Drought Management on Range and Pastureland – A Handbook for Nebraska and South Dakota’ (Nebraska Cooperative Extension EC 91-123).
- Burn plans will be developed and approved for all prescribed fires prior to implementing on-the-ground actions.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided no suggestions for alternative methods for achieving the purpose and need. Therefore, no other alternatives were considered, nor were any dismissed from detailed consideration.

Monitoring

This section explains monitoring as it relates to implementation of any of the action alternatives. Although monitoring is usually included in the Record of Decision, we feel it is worthwhile for the reader to have an understanding that once the FEIS is completed, the on-the-ground job really begins. A detailed monitoring plan is included with each allotment in Appendix B.

Monitoring can determine whether the project-level decision is being implemented as planned (implementation monitoring) and, if so, whether the objectives identified in the NLRMP and AMP are being achieved in a timely manner (effectiveness monitoring). Allotment monitoring should be an open, cooperative, and inclusive process. If monitoring indicates that desired conditions are not being met, other pre-determined management options (such as adaptive management) included in the project decision may be selected for implementation. If monitoring indicates that management is meeting standards, or is making measurable progress towards the desired conditions in an acceptable timeframe, the initial management options may continue (FSH 2209.13, Section 95). The Forest Service invites participation from rangeland users and other interested parties where feasible. Implementation and focused effectiveness monitoring are critical to determine when or if adaptive management changes should be made and to guide the direction that those changes take.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 5 is focused on activities and effects from Chapter 3 where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 5: Alternative Effects Summary

	Alternative 1 No Use/No Graze	Alternative 2 No Action/Current Use	Alternative 3 Proposed Action
Grassland Structure			
High Structure	*102,920 acres	*13,088 acres	25,104 acres
Moderate Structure	0 acres	67,895 acres	55,879 acres
Low Structure – Short Term	0 acres	19,337 acres	19,337 acres
Low Structure – Long Term	11,580 acres	14,180 acres	14,180 acres
Wetlands			
Stockdams	Fast improvement of emergent vegetation on stock dams.	No change.	Slow improvement on rotational pastures. Fast improvement in Sand Creek. No change for other areas.
Woodlands			
Shrub Habitat	Rapid improvement 19.5 acres in Osmotherly allotment. Others maintained .	No improvement on 19.5 acres in Osmotherly allotment. Others maintained	Moderate rate of improvement 19.5 acres in Osmotherly allotment. Others maintained.
Hardwood Draws	Rapid rate of improvement on 16.1 acres in Gamet allotment. 184.7 acres maintained	No improvement in Gamet allotment. 184.7 acres maintained	Rapid rate of improvement on 16.1 acres in Gamet allotment. 184.7 acres maintained
Vegetation			
Riparian Rare Plant Communities	Fast rate of improvement on 57.8 acres. 102.4 acres maintained.	Decline in condition on 57.8 acres. 102.4 acres maintained.	Fast rate of improvement on 57.8 acres. 102.4 acres maintained.
Rare Plant Communities/Closed Depression	Fast rate of improvement on 32.2 acres	Decline in condition on 32.2 acres	Fast rate of improvement on 32.2 acres
Upland Plant Communities	Large increase to excellent conditions creating undesirable mix of communities	No measurable change	Creates a desirable mix of upland communities

*Grazed at light intensity per NLRMP-Appendix I

Table 5: Alternative effects Summary (cont)

	Alternative 1 No Use/No Graze	Alternative 2 No Action/Current Use	Alternative 3 Proposed Action
Other			
Prairie Dog Colonies	Manage consistent with revised NLRMP. Slower rate of expansion	Manage consistent with revised NLRMP.	Manage consistent with revised NLRMP.
Black-footed Ferret Reintroduction Site	Manage consistent with revised NLRMP for prairie dogs. Slower rate of expansion	Manage consistent with revise NLRMP	Increase prairie dog acreage to 3000 acres. Burning to accelerate prairie dog expansion in the ferret area.
Water Uses	Rights and uses lost	No rights and uses lost	No rights and uses lost
Water Quality	Improved	Maintained	Maintained
Paleontological Resources	Least ground disturbance	Potential to adversely affect	Potential to adversely affect
Heritage	Least ground disturbance	Potential to adversely affect	Potential to adversely affect
Population & Employment	Negative impact to local communities	No impact to Fall River County	No impact to Fall River County
Rest	All acres rested	472 acres rested	2038 acres rested

*Grazed at light intensity per NLRMP-Appendix I

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This Chapter summarizes the physical, biological, social, and economic environments of the project area and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives chapter.

Physical Conditions

Land Status.

Desired Conditions

The goal of the Forest Service is to provide access to NFS lands and USDA Forest Service programs (NLRMP, pg 1-8). To do this, the Forest Service will develop and implement land ownership adjustment plans and Rights-of-Way acquisition programs within 3 years. These plans are necessary to respond to resource management and public needs. The Buffalo Gap and Fort Pierre National Grasslands will undergo a public involvement process during the next year to implement a travel management plan. Although all these plans will further define desired conditions, they will be separate actions and decisions.

Affected Environment

Land ownership patterns are important to the effective implementation of decisions made as a result of this DEIS. The Forest Service manages the federal surface ownership resources in all allotments in the geographical area. In some cases, private lands are intermingled with the Forest Service lands, and subsequently managed in conjunction with the Forest Service lands, although the Forest Service assumes no rights or responsibilities to those lands. When this happens, the landowner can choose to waive the grazing use of their lands to the Forest Service, or choose to run the private land in conjunction with the way the Forest Service manages its lands.

The Forest Service manages 114,490 acres in the FRSEGA (111,621 acres in NLRMP, pg 2-26 plus 2,880 acres in the Fox allotment). There are 15,543 private acres intermingled with the Forest Service land. See Map 1 for locations of all the lands in the geographical area. (*Note: although the project records indicate there are 114,490 acres, the gis project and management area maps calculate the acres at 114,565. Disclaimer: Although these data are being used for many purposes within the USDA Forest Service, the data has come from a variety of sources with varying degrees of accuracy and precision. No warranty is expressed or implied by the USDA Forest Service as to the accuracy and function of the data and related material, nor shall the fact of distribution constitute any such warranty, and no responsibility is assumed by the USDA Forest Service in connection therewith.*)

Small, isolated tracts exist in the southwest part of the FRSEGA. Although the Forest Service has no easement access across private lands to these isolated tracts, local ranchers

have been gracious in allowing Forest Service employees access across private lands to these tracts to administer the Fall River District's programs. These tracts can also be accessed across section-line rights-of-way granted under South Dakota Codified Law (SDCL) 31-18-1, and the continued access is assured under SDCL 31-18-3.

The rest of the FRSEGA is mostly larger, contiguous areas of NFS lands with no limiting access.

Effects Analysis

The existing status of National Forest System lands is a function of historical land acquisition, land disposal, and current day land exchanges. None of the proposed activities in the alternatives will affect the current land status. The small tracts with limited access do not prevent the Forest Service from carrying out its programs. Local ranchers could limit access across private lands in the future, but the Forest Service could still access NFS lands under SDCL 31-18-1 to administer grazing and other programs.

Unique Resources

Desired Conditions

The desired condition is to improve the capability of wilderness and protected areas to sustain a desired range of benefits and values (NLRMP, pg 1-5).

Affected Environment

Classified lands such as Wild and Scenic River, Wilderness, Special Interest Areas, National Recreation Areas, National Historic Sites, Natural Areas and other special areas do not exist in the geographical area.

The Jim Wilson and First Black Canyon areas at the north end of the geographical area were identified as roadless areas during the mid 1980's. They encompass approximately 10,980 acres. Existing 2-track trails are scattered through out the Jim Wilson and First Black Canyon area, as well as the rest of the geographical area. A roadless area analysis was completed during the Forest Plan Revision effort, and the Record of Decision established those areas as Management Area 3.63, and the roadless area status was dissolved. .

Effects Analysis

Under all alternatives, the general public will not be excluded from these areas and can continue to access National Forest System lands for hunting, recreational pleasure, sight seeing and rock hunting. Under alternatives 2 and 3, Forest Service personnel will continue to use existing trails on all NFS lands to administer the grazing program, other uses, and perform inventory and monitoring studies. Permittees will continue to use existing trails on all NFS lands to perform management needs as prescribed in the Grazing Agreement or Term Grazing Permits. Under alternative 1, Forest Service personnel will continue to use existing trails to ensure there is no livestock trespass, administer other uses, and perform inventory and monitoring studies. Less use by permittees would occur under alternative 1, since all grazing use would cease.

Heritage

Affected Environment

A Forest Service archaeologist completed a records review of all previous surveys and sites recorded within the project area and a one-mile radius on November 4, 2003. Nebraska National Forest Heritage Program Files maintained at the Supervisor's Office in Chadron, Nebraska and the online Archaeological Resources Management System (ARMS) for the South Dakota State Historical Society Archaeological Research Center (SARC) were examined. A total of 159 heritage resource inventories have been conducted within the project area. During these investigations, 6031 acres, approximately 5 percent of the total project area, were intensively surveyed. As a result, 72 heritage resources were identified and recorded.

Evidence for human activity within the analysis area spans the entire chronological sequence of the Great Plains culture area (Hannus and Winham 1999, Prentiss and Rosenberg 1996). Paleoindians are typically characterized as big game hunters who occupied large territories, tracking herds and utilizing a communal hunting strategy. Site types are generally kill and butchery localities. In response to significant climatic changes, Plains groups appear to have adapted their subsistence strategies accordingly during the Archaic period. However, evidence for increased utilization of plant and small game resources may be as much a product of differential preservation. Temporally diagnostic projectile point styles change from lanceolate to large side notched types. Site types are generally scatters of worked stone representing quarry sites or short-term occupation. Hearth features may be present. The Late Prehistoric period is recognized typologically by a technological shift from the atlatl and dart to the bow and arrow; projectile points change from large to small side notched types. Site types are similar to the Archaic period. "Direct or indirect contact with European groups ushered in the Protohistoric period...(with)...the introduction of the horse and the gun" (Hannus and Winham 1999:37). Euro-American settlement in the project area occurred mainly during the homesteading era between the 1880s and 1930s. Site features generally include depressions, foundations and concentrations of historic artifacts.

No sites listed on the National Register of Historic Places (NRHP) are present within the project area. 5 sites have been evaluated as eligible to the NRHP. 36 sites have been determined not eligible to the NRHP and the eligibility status of 31 sites is either unknown or unevaluated. According to the Range Memorandum of Understanding (MOU), the unknown or unevaluated sites must be evaluated if they are located in areas where the Range staff indicates grazing impacts will most likely be severe.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

Direct Effects

Under this alternative there will be no livestock in the project area. This alternative would result in the least amount of ground disturbance, and should not result in any direct effects to significant heritage resources.

Indirect Effects

If livestock were removed, there would be no incentive to construct new range improvements (requiring new survey) or to meet the 6400-acre annual target of the Range MOU. The indirect effect would be that few new sites would be discovered and our knowledge of heritage resources in the project area would become stagnant.

Cumulative Effects

This alternative would have the least amount of cumulative effects on cultural resources since there would be no livestock in the project area.

Alternative 2 – No Change – No change would occur from the current grazing management.

Direct Effects

Livestock grazing has the potential to adversely impact significant heritage resources through trampling, obliteration or displacement. Sites located within the vicinity of livestock congregation areas, such as near water tanks, salt licks, gates or along fence lines or other livestock trails, suffer the most damage. The severity of grazing impacts to heritage resources increases proportionately with the number and duration of livestock congregation.

Indirect Effects

Livestock grazing requires the construction and maintenance of range improvements including water tanks, pipelines, fences, and access roads. The installation and maintenance of range improvements typically requires new ground disturbance. Projects requiring new ground disturbance, by definition, have the potential to adversely effect significant heritage resources. Additional indirect effects of livestock grazing include increased visibility of heritage resources caused by erosion and exposure, which can, in turn, lead to increased vandalism of sites by the public.

Cumulative Effects

Cumulative effects discussed in the section titled “Cumulative Effects Common to All Alternatives” would result under this alternative.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct Effects

Same as Alternative 2.

Indirect Effects

Same as Alternative 2.

Cumulative Effects

Same as Alternative 2.

Cumulative Effects Common to All Alternatives

Cumulative effects to cultural resources relates directly to the level of potential range developments (i.e. water tanks, wells, etc.), number of livestock, and other ground disturbing activities existing and proposed within the project area. Due to Section 106 requirements, the development of range structures and the proposal of other ground disturbing activities within the project area have the potential to proportionately increase the number of cultural resources that are found and may subsequently necessitate site mitigation and/or protection measures. Thus, these projects have the potential to be beneficial because they can add to the cumulative record of identified cultural resources on the Nebraska National Forest and provide opportunities to scientifically evaluate and study cultural resources.

Conversely, if numerous projects are located within or near cultural resources, they could ultimately contribute to a decrease in the integrity of the cultural resources base. For example, range improvements (and access to them) could increase public knowledge of their locations and increase casual vandalism (i.e. projectile point collection) and looting. Repeated improvements and maintenance of a range development, could, over time, slowly add to the attrition and deterioration of known (but “avoided”) cultural resources.

The number of livestock on a given allotment, and within the project area as a whole, could also add to the cumulative deterioration of the cultural resources base. There is no common agreement among heritage specialists as to how extensive the effects of livestock grazing are. There is no disagreement that livestock do trample cultural resources. This does not occur within the span of a single season or a year because adverse effects are cumulative and result from continued, long-term grazing operations on the natural landscape. At present, there are no known cases in the project area of specific livestock damage to cultural resources.

Paleontology

Affected Environment

The sequence of rock stratum found on the Buffalo Gap National Grassland contains one of the best and most continuous records of Late Cretaceous marine life in the world. The locations of many paleontologic resources within the eastern portion of Fall River Ranger District are generally known, however, few sites are documented. Chapter 1 of the NLRMP states “Prior to ground-disturbing activities, conduct paleontologic surveys in any area where there is a high potential to encounter these resources”. High potential refers to fossiliferous geologic units that regularly and predictably produce vertebrate fossils and/or scientifically significant nonvertebrate (plant and invertebrate) fossils, and that are at risk of natural degradation and/or human-caused adverse impacts. These high potential fossil producing areas are referred to as Fossil Yield Potential (FYP) Class 5.

All the geologic formations encountered in the project area are FYP Class 5. They are known as the White River Group, Brule Formation, Chadron Formation, and the Pierre

Shale. See the specialist report, (Beasley, B.A. 2004) on file at the Fall River Ranger District, for detailed information about each of the geologic formations.

Effects Analysis

Alternative 1 – No Action – No livestock grazing

Direct Effects

Under this alternative there will be no livestock in the project area. This alternative would result in the least amount of ground disturbance, and should not result in any direct effects to significant paleo resources.

Indirect Effects

If livestock were removed, there would be no incentive to construct new range improvements, requiring new surveys. The indirect effect would be that few new sites would be discovered and our knowledge of paleo resources in the project area would become stagnant.

Cumulative Effects

This alternative would have the least amount of cumulative effects on paleo resources since there would be no livestock in the project area.

Alternative 2 – No Change – No change would occur from the current grazing management.

Direct Effects

Livestock grazing has the potential to adversely impact paleo resources through trampling, obliteration or displacement. Sites located within the vicinity of livestock congregation areas, such as near water tanks, salt licks, gates or along fence lines or other livestock trails, suffer the most damage. The severity of grazing impacts to paleo resources increases proportionately with the number and duration of livestock congregation.

Indirect Effects

Livestock grazing requires the construction and maintenance of range improvements including water tanks, pipelines, fences, and access roads. The installation and maintenance of range improvements typically requires new ground disturbance. Projects requiring new ground disturbance, by definition, have the potential to adversely effect paleo resources. Additional indirect effects of livestock grazing include increased visibility of paleo resources caused by erosion and exposure, which can in turn lead to increased vandalism of sites by the public.

Cumulative Effects

Cumulative effects discussed in the section titled “Cumulative Effects Common to All Alternatives” above would result under this alternative.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct Effects

Same as Alternative 2.

Indirect Effects

Same as Alternative 2.

Cumulative Effects

Same as Alternative 2.

Summary of Effects

Impacts to paleontological resources result directly from surface disturbing activities such as: Vehicle and human use either recreational or administrative; vegetation management and restoration activities; construction of livestock corrals and watering developments; and compaction of soils in livestock corrals, watering, and feeding areas. Indirect impacts also result from these activities mentioned by causing erosion and allowing access for unauthorized collecting. Trails created by livestock and human-use are subsequently traveled over time may erode to expose a previously unexposed fossiliferous bedrock unit. As the trails deepen, runoff of precipitation may be concentrated in these trails, adding to the rate of erosion and increased downcutting. The fossil resources within eastern Fall River County typically crop out within areas easily accessible to vehicles and livestock. Due to the geologic nature, fossils from the Late Cretaceous Pierre Shale are very fragile and are not resistant to trampling. Fossils from the Tertiary White River Group are much more resistant to trampling, however, livestock scatter fossils from original location.

There is a potential for cumulative surface disturbance from reasonably foreseeable activities such as recreation, rights-of-way, and the Fall River County-wide water pipeline construction project. Much of the surface disturbance associated with recreation would occur in areas already disturbed by existing camping or other uses. Other visitor use has the potential to cause surface disturbance, which is difficult to estimate. Vegetation management methods utilizing ground disturbing activities and fire suppression methods also have the potential to cause surface disturbance over the entire project area.

Water Quality and Soils

Desired Conditions

Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows.

Affected Environment

The project area is located within portions of both the White River and Cheyenne River Watersheds. Approximately 59% and 41% of the land area of the project are within the White River and Cheyenne River watersheds respectively (See Map 1).

The soils in the geographic area fall mainly into the Pierre-Samsil soil association. The Pierre-Samsil association is on uplands that are dissected by many intermittent drainage ways (USDA, 1980) Soils are moderately deep and shallow, well drained, gently sloping to steep, clayey soils. This soil association makes up 91 per cent of the geographic area and 48 per cent of Fall River County. This association is well-suited or fairly well suited to range and rangeland wildlife habitat. It is poorly suited to cultivated crops.

The other 9 percent of the geographic area mainly consists of the Kadoka-Orella-Buften and Norka soil associations. These soils are on uplands, shallow to deep, well drained, nearly level to steep, and silty to clayey (USDA, 1980). These soils are well suited to range and to rangeland wildlife habitat.

Cheyenne River Basin:

The 305(b) Water Quality Assessment prepared by the South Dakota Department of Environment and Natural Resources (SDDENR) divides the Cheyenne River into six segments; Upper Cheyenne (from the Wyoming State Line to Angostura Reservoir; Beaver Ck to Angostura reservoir; Angostura Reservoir; Angostura Reservoir to Rapid Creek; Rapid Creek to Belle Fourche River; Belle Fourche River to Bull Creek, and Bull Creek to Oahe Reservoir on the Missouri River.

The project watersheds drain into either Angostura Reservoir or the upper portion of the segment from Angostura to Rapid Creek. This area of the Cheyenne basin is very diverse. It includes the Black Hills, part of the badlands, rangeland, irrigated cropland, and many mining areas. None of the project area lies directly on the Cheyenne River. Table 6 lists the beneficial uses and support for those uses on the segments of the Cheyenne River that are downstream of the project area.

White River Basin:

The White River Basin is the most southern of the five major drainages, which enter the Missouri River from the west. Agriculture dominates the basin's economy with the majority of the land used as rangeland or cropland.

The project area affects two segments of the White River basin, one in Nebraska and the other in South Dakota. The Nebraska segment is known as WH1-10000. This segment met all of its designated beneficial uses except for aquatic life, which was due to high pH the source of which was determined to be natural causes. (See Table 6)

The other segment in South Dakota runs from the Nebraska state line to the town of Interior. In general, water quality within this basin is extremely poor. It is the most severely impacted basin in the state of South Dakota. The single most important source of this poor quality is the highly erosive soil within the river drainage. Present water quality monitoring in SD showed no improvement over conditions observed for the past decade. Extremely high accidents of suspended solids were noted in the entire White River drainage.

None of the project area is directly on the White River. Table 6 lists the beneficial uses and support for those uses on the segments of the White River that are downstream of the project area.

Table 6: Beneficial Uses/Support for Segments of the White and Cheyenne Rivers

Location	Beneficial Uses -- Support	Cause[Magnitude]	Source[Magnitude]
Angostura Reservoir to Rapid Creek	Overall Use—Partial Support Warmwater Semi Fish—Partial Support Immersion Recreation--Unknown Limited Contact Rec.—Full Support Fish/Wildlf Prop,Rec, Stock--Full Support Irrigation—Full Support	Pathogens [T] Suspended Solids[M]	
Angostura Reservoir	Overall Use— Full Support Warmwater Semi Fish— Full Support Immersion Recreation—Full Support Limited Contact Rec.—Full Support Fish/Wildlf Prop,Rec, Stock--Full Support Irrigation—Full Support Drinking Water Supply -- Unknown		
Nebraska Border north to Interior, SD	Overall Use—Non-Support Warmwater Semi Fish—Non-Support Limited Contact Rec.—Full Support Fish/Wildlf Prop,Rec, Stock--Full Support Irrigation—Full Support	Salinity/TDS/chlorides [T] Suspended Solids[H]	Agriculture[M] Grazing related sources[M] Natural sources[H] Off-Animal Holding/mgmt Area[M] Range grazing-Riparian and/or upland [M]
Nebraska Segment WH1-10000 to South Dakota Border	Aquatic Life---Partial Support Drinking Water---Full Support Agriculture Water---Full Support Fish Consumption---Full Support	pH	Natural sources

Pathogens

All warm-blooded animals carry pathogens that can be transmitted to water sources through fecal deposition. To be considered a health hazard, pathogens in fecal material must reach streams before any contamination can occur. There are two ways that waters can be contaminated; 1) through direct deposition and 2) through overland transport.

There are considerable discrepancies in research regarding this area of water quality assessment. Generally, it has been found and accepted that bacteria counts increased in grazed pastures and dropped to similar levels as un-grazed pastures in a short period of time.

Though pathogen indicators make interpretation difficult, two trends exist:

1. Peak fecal coliform concentrations are related to runoff events.
2. As grazing intensity increases, bacterial indicators increase.

Animal concentration appears to be a factor though no correlation has been found between grazing systems and bacterial concentration. Bacterial contamination has been found to be small for dispersed livestock use, as opposed to concentrated use. Fecal coverage in uplands is usually less than 1 % and rainfall events large enough to cause overland runoff in semiarid environments are very infrequent. Although risks from large storms (10, 25, or 50 year events) can cause surface runoff, the U.S. Weather Bureau records indicate overland flow events occur less than 1 % of the time in most of the western U.S.

Direct in-stream fecal deposition is another mechanism for bacterial contamination, but all the streams in the project area are ephemeral.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

Direct Effects

The No Grazing Alternative will result in the increased vigor of all vegetation with a trend toward late seral stages. Initially the amount of very fine roots and overall root length density of the plants will increase resulting in increased stability of the general area. Since the only grazing that will occur will be wildlife, the amount of plant litter will increase, further acting to stabilize the site in regards to water quality.

The current range condition of the federal land is generally estimated to be in good to excellent condition. This, combined with the fact that most of the project area is located on uplands with ephemeral drainages, means that any improvement in water quality may be negligible.

Indirect Effects

The reduction in the density of animals grazing in combination with the increased vegetation density and root mass should reduce the likelihood the federal land will contribute to degradation of water quality. Infiltration rates of soils should increase because of reduced compaction from trailing and in concentrated use areas.

Cumulative Effects

The stabilization provided by this alternative will only be attained on the federal lands affected by this decision. There is no guarantee that this alternative will correct current impairments of the Cheyenne and White Rivers. Private lands intermingled with the federal lands would most likely be fenced out of the federal pastures for use by their owners. Increased grazing pressure on private lands, in all likelihood, will nullify any improvement in water quality if the private lands are not capable of supporting the increased pressure.

Permanent removal of grazing will not guarantee increased herbaceous plant production since some research has suggested declining production over time when fully rested from

grazing. This could affect water quality. Accumulation of litter over time provides increased ground protection and may retard production in riparian areas.

The reduction of animal densities will in all likelihood reduce the probability of bacterial contamination. This assumes that wildlife numbers will not significantly increase in specific areas, creating a “de facto” wildlife refuge and thus increased probability of localized bacterial contamination.

Alternative 2 – No Change – No change would occur from the current grazing management.

Direct Effects

Grazing of the range resource will occur over the allotments located in the project area. This includes woody draw/riparian areas, upland areas, and ephemeral draws. Based on sampling for range condition, most areas are stable or in an upward trend. A few pastures show the possibility of downward trend. Maintenance of range improvements and installation of approved range improvements would cause short-term, localized, sedimentation, and is not expected to directly affect water quality in the Cheyenne or White rivers.

Indirect Effects

Range analysis shows that current management improved the range resource. This improvement should, at a minimum, maintain its present condition. With increased range condition comes increased vigor of the plants and their ability to retard soil movement. Current woody draw monitoring indicates that grazing has actually improved factors for increased water quality through increased stabilization.

Pastures showing the possibility of a downward trend may increase probability of adding to sedimentation of impaired segments.

Construction of improvements would affect vegetation utilization, change animal distribution and concentration.

Cumulative Effects

Based on water quality evaluations by the states of South Dakota and Nebraska, current management in the project area within the watersheds draining into Angostura Reservoir and the Nebraska portion of the White River are not contributing toward impairment. This is not anticipated to change.

Management will be able to maintain the current vegetation and ground cover to slow runoff, allowing increased water infiltration, and control of sedimentation to the Cheyenne and White Rivers.

Woody Draw/riparian areas are anticipated to remain stable.

Short-term disturbances from range improvement construction and maintenance are not anticipated to cause water impairment problems. There is the possibility that those pastures that indicate a downward trend may add to sedimentation.

As stated in the NLRMP, there may be an impact on water quality due to increases in the acreage of prairie dog colonies for the reintroduction of the black-footed ferret.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct Effects

Same as Alternative #2 in addition to an increase in prairie dog colonies.

Indirect Effects

Increased acreage managed for sharp tailed grouse will increase litter for increased filtering of overland flow. Woody draws will continue to be stable. There may be short-term sedimentation resulting from disturbance needed for reproduction of woody species.

Reduction of vegetation litter in the areas managed for prairie dogs and the reintroduction of the black-footed ferret.

Cumulative Effects

Construction of improvements would affect vegetation utilization, change animal distribution and concentration. Short-term disturbances from range improvement construction and maintenance are not anticipated to cause water impairment problems.

Adaptive management will provide proactive steps to change any downward trend in range condition and water quality.

Increase in acreage of prairie dog colonies presents the probability of increased sedimentation with the decrease in litter.

Water Uses

Affected Environment

The Forest Service is able to provide for grazing privileges on the National Grassland only to the extent that it can also provide water sources for domestic livestock use, in conjunction with available forage. Water use and storage is an extremely important tool in adaptive management. It assists the user with proper utilization standards of key areas, provides a method to control domestic livestock movement, and provides water for wildlife uses. The lack of water and livestock use in certain areas can also be beneficial for vegetation structural development.

The State of South Dakota has declared ‘...that all water within the state is the property of the people of the state, but the right to use of water may be acquired by appropriation as provided by law.’ (SDCL 46-1-3). The use of water for domestic purposes (includes stock watering – SDCL 46-1-6(7)) is the highest use of water and takes precedence over all appropriative rights... (SDCL 46-1-5(1)).

The Forest Service has historically provided water on the National Grassland thru the construction of stock dams, and more recently through the addition of pipelines. Any person

who has or holds any possession, right or title to any agricultural lands may construct a dam across a dry draw without obtaining a permit to appropriate water unless the dam will impound more than 25 acre feet of water (SDCL 46-4-1). Prior to construction, one must comply with SDCL 46-4-3, 'Any person desiring to avail himself of any of the rights provided in this chapter shall file a location notice with the register of deeds in the county in which the right is located and shall mail a copy of the notice to the water management board.' Construction of the dam shall begin within 60 days after filing the notice (SDCL 46-4-6).

The Forest Service has 290 stock dams in the project area. Their primary purpose is to water domestic livestock and wildlife. These dams all vary in age and condition. A 25 year life expectancy for these types of structures is considered normal. 89% of the dams were constructed prior to January 1, 1979 and only 11% were constructed after that. 75% of the dams are still in satisfactory to good condition, while the other 25% are considered in poor to critical condition or are breached. Three stock dams in the project area are larger than 25 acre-feet and the Forest Service has water rights for their use. They are the Nelson 1, Nelson 2, and Bochert dams. At least 21 other dams have U.S water withdrawal numbers assigned to them by the State as a water right. They were constructed during the 1930's as part of the US Department of Agriculture Resettlement Administration effort. See the specialist report, (Erk, M.L. 2004) on file at the Fall River Ranger District, for a complete list of dams, locations, conditions, and state water numbers (not all dams have State assigned water numbers because none could be found in the records).

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

Direct Effects

No livestock water use would occur. 'Beneficial uses are defined as any use of water...that is reasonable...and beneficial to the appropriator, and ... is consistent with the interests of the public of this state...' (SDCL 46-1-6(3)). Since it could be argued that there are no beneficial uses once livestock are removed, it follows that all stock dams would have to be breached and all appropriated water privileges could cease on the National Grassland.

Indirect Effects

No livestock will be grazing, and it is assumed all surface water will be removed. Indirect effects would be significant long-term reductions in big game populations such as antelope and significant long-term reductions in duck populations that used dams for brood raising.

Cumulative Effects

Will result in increased but sporadic seasonal water flows for downstream users in the Horsehead, White River and Cheyenne River Drainages.

Alternative 2 – No Change – No change would occur from the current grazing management.

Direct Effects

There are no direct effects to continued water use. All water uses will be maintained.

Indirect Effects

No water uses would be planned in the future. Further development of beneficial uses for domestic purposes would cease.

Cumulative Effects

May affect expansion of the Fall River Water Users District pipelines.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct Effects

Same as Alternative 2.

Indirect Effects

Water uses would be planned in the future and development of beneficial uses for domestic purposes would continue.

Cumulative Effects

Expansion of the Fall River Water Users District pipeline across or into the National Grassland would occur where necessary.

Recreation

Desired Conditions

The landscape desired condition is to maintain open, scenic plains and vast prairie landscapes. The desired recreation condition includes an interpretive trail around the wetlands at the Pioneer Picnic Area. Dispersed recreation activities will be emphasized.

Affected Environment

None of the FRSEGA is a nationally significant recreational destination.

The FRSEGA supports one developed recreation site, Pioneer Picnic Ground. There are no stream fishery opportunities, and one fishing pond opportunity in the Gamet allotment. There are no developed trails and no outfitter guide activity in the FRSEGA. Dispersed recreational activities are: wildlife viewing, motorized travel/viewing scenery, bird watching, photography, nature study, big game hunting (deer, pronghorn), upland bird hunting, waterfowl hunting, and prairie dog shooting.

Recreation management provides desired visitor experiences. The Recreation Opportunity Spectrum (ROS) offers a framework for defining classes of recreational settings, opportunities and experiences. The FRSEGA provides 111,610 acres of ‘Roaded Natural’ experience, and 2,880 acres of ‘Semi-primitive Motorized’ experience.

Grand vistas, “big skies”, and a sea of grass on a large scale often characterize grassland scenery. On a smaller scale, wildflower displays in the spring and summer captivate many visitors. Scenery in the FRSEGA will be affected by structures, such as utility lines, railroads, fence densities, and water structures. Interspersed farming practices also affect the scenic qualities of grasslands. There are 29,281 acres of low scenic integrity, and 85,209 acres of moderate scenic integrity.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

This alternative will have the most significant beneficial effect as fences, dams, and pipelines are removed and commodity production (livestock grazing) is removed. This will return the landscape to a high scenic integrity level.

Recreational opportunities will remain stable. Currently, range conditions have improved over the last 10-15 years to a high level, producing conditions for dispersed recreational needs to be met. Further improved range conditions may reduce the opportunity to shoot prairie dogs as towns decline in populations and size.

This alternative would have no substantial cumulative effect on recreation. However, once livestock grazing is removed and the area is left open, then it is possible that more people will want to use the area. With more people using the area it is possible there could be more user conflict, which in turn will require more restrictions on the users themselves, hence lowering their recreational experience.

Alternative 2 – No Change – No change would occur from the current grazing management.

This alternative will have no effects to the existing scenic integrity levels. All range improvements will be maintained, livestock grazing will continue, and the scenic integrity levels will remain at low to moderate.

Recreational opportunities will remain stable, and dispersed recreational needs will be met.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

This alternative will not change the existing scenic integrity levels of low and moderate. Any effects from underground pipeline installation will be mitigated, and disturbed areas returned to natural vegetation. 2.1 miles of fence will be constructed to improve certain sensitive plant vegetative conditions, and 4.8 miles to improve grazing management, but are minor across the landscape of over 114,000 acres.

Most recreational opportunities will remain stable. Grouse hunters may have greater opportunities as vegetative structure improves. The blackfooted ferret re-introduction site will be closed to shooting resulting in a decline in prairie dog hunting opportunities. An eventual increase is expected in opportunities to photograph and view a threatened and endangered species.

Perennial Streams

Desired Conditions

Streams and riparian areas will maintain soil moisture to perpetuate riparian plant communities with strong root masses (NLRMP, pg 2-26).

Affected Environment

There are no perennial streams in the FRSEGA.

Effects Analysis

No effects under any of the alternatives.

Caves/Buildings

Desired Conditions

There is no specific desired condition for caves or buildings. They are mentioned in relation to the habitat they provide for bats. A general guideline in the NLRMP, pg 1-15, provides direction that when closing caves or mine shafts, the Forest Service will continue to provide access for bats.

Affected Environment

There are no caves or old buildings on the FRSEGA.

Effects Analysis

No effects under any of the alternatives.

Biological Conditions

Threatened, Endangered, Candidate, Sensitive and Management Indicator Species

There are 3 threatened, endangered, or candidate animal species that may be present in the project area (U.S. Fish and Wildlife Service): the endangered black-footed ferret (*Mustela nigripes*), the threatened bald eagle (*Haliaeetus leucocephalus*), and the candidate black-tailed prairie dog (*Cynomys ludovicianus*). There are no threatened, endangered, or candidate plant species in the project area.

A description of distribution and status, habitat, existing conditions, direct, indirect, and cumulative effects are given for each species in the FRSEGA BABE.

Effects Analysis

For the black-footed ferret, it is determined that if Alternative 1 is selected, this would result in a “May affect, likely to adversely affect” determination, because the tall vegetation is not optimum prairie dog habitat and eliminating livestock grazing will slow the expansion of prairie dog colonies compared to the other alternatives.

If alternatives 2 and 3 are selected, it will result in a “May affect, not likely to adversely affect” determination, because in both alternatives, prairie dogs will be managed consistent with direction outline in the revised NLRMP (USDA Forest Service 2003). An objective of the revised NLRMP is to develop a prairie dog colony complex in the northeastern part of this geographic area over the next 10 to 15 years for black-footed ferret reintroduction. Grazing levels are enough to promote expansion of prairie dog colonies (at least greater than that of the no grazing alternative).

For the bald eagle the determination is “No effect”. There have been no documented sighting of bald eagles in the FRSEGA and there are no flowing rivers or lakes within the study area. If and when bald eagles frequent the area, they would be considered a rare visitor to the area. It is doubtful that any change in management of the SEGA will have any effect on the bald eagle populations.

For the black-tailed prairie dog it is determined that if Alternative 1 were selected this would result in a “Likely to result in a loss of viability in the Planning Area, or in a trend toward federal listing” determination, because the tall vegetation is not optimum prairie dog habitat and no grazing will slow the expansion of prairie dog colonies compared to the other alternatives.

If alternatives 2 and 3 are selected it will result in a “May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing” determination, because in both alternatives, prairie dogs will be managed consistent with direction outline in the revised NLRMP (USDA Forest Service 2003). Grazing levels are enough to promote expansion of prairie dog colonies (at least greater than that of the no grazing alternative).

Sensitive Species

Table 7 provides a list of the Rocky Mountain Region sensitive animal species that could be located on the Fall River Ranger District, Nebraska National Forest and a summary of the biological determination. The FRSEGA BABE discusses the distribution and status, habitat, existing conditions, direct, indirect, and cumulative effects, and rationale for the biological determinations for each species.

Table 7: Fall River Ranger District Sensitive Animal Species and Determination of Effects

Common Name	Scientific Name	Determination of effect		
		Alternative 1	Alternative 2	Alternative 3
Mammals				
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Species excluded from detailed analysis		
Fringed myotis	<i>Myotis thysanodes</i>	Beneficial Impact ¹	May adversely impact individuals ²	May adversely impact individuals ²
Swift fox	<i>Vulpes velox</i>	Likely to result in a loss of viability ³	May adversely impact individuals ²	May adversely impact individuals ²
Amphibians				
Northern leopard frog	<i>Rana pipiens</i>	Beneficial Impact ¹	May adversely impact individuals ²	May adversely impact individuals ²
Fish				
Sturgeon chub	<i>Macrhybopsis gelida</i>	Species excluded from detailed analysis		
Pearl dace	<i>Margariscus margarita</i>	Species excluded from detailed analysis		
Finescale dace	<i>Phoxinus neogaeus</i>	Species excluded from detailed analysis		
Plains minnow	<i>Hybognathus placitus</i>	Species excluded from detailed analysis		
Molluscs				
Cooper's mountainsnail	<i>Oreohelix strigosa cooperi</i>	Species excluded from detailed analysis		
Insects				
Ottoe skipper	<i>Hesperia ottoe</i>	Species excluded from detailed analysis		
Regal fritillary butterfly	<i>Speyeria idalia</i>	Beneficial Impact ¹	May adversely impact individuals ²	May adversely impact individuals ²
Birds				
American bittern	<i>Botaurus lentiginosus</i>	Beneficial Impact ¹	May adversely impact individuals ²	Beneficial Impact ¹
Trumpeter swan	<i>Cygnus buccinator</i>	Species excluded from detailed analysis		
Ferruginous hawk	<i>Buteo regalis</i>	May adversely impact individuals ²	May adversely impact individuals ²	May adversely impact individuals ²
American peregrine falcon	<i>Falco peregrinus anatum</i>	Species excluded from detailed analysis		
Northern harrier	<i>Circus cyaneus</i>	Beneficial Impact ¹	May adversely impact individuals ²	May adversely impact individuals ²
Greater prairie-chicken	<i>Tympanuchus cupido</i>	Species excluded from detailed analysis		
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Species excluded from detailed analysis		
Mountain plover	<i>Charadrius montanus</i>	Likely to result in a loss of viability ³	May adversely impact individuals ²	May adversely impact individuals ²
Long-billed curlew	<i>Numenius americanus</i>	Likely to result in a loss of viability ³	May adversely impact individuals ²	May adversely impact individuals ²
Black tern	<i>Chlidonias niger</i>	Species excluded from detailed analysis		

Common Name	Scientific Name	Determination of effect		
		Alternative 1	Alternative 2	Alternative 3
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	No Impact ⁴	No Impact ⁴	No Impact ⁴
Burrowing owl	<i>Athene cunicularia</i>	May adversely impact individuals ²	May adversely impact individuals ²	May adversely impact individuals ²
Short-eared owl	<i>Asio flammeus</i>	Beneficial Impact ¹	May adversely impact individuals ²	May adversely impact individuals ²
Loggerhead shrike	<i>Lanius ludovicianus</i>	Beneficial Impact ¹	May adversely impact individuals ²	Beneficial Impact ¹
Brewer's sparrow	<i>Spizella breweri</i>	Species excluded from detailed analysis		
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Beneficial Impact ¹	No Impact ⁴	May adversely impact individuals ²
McCown's longspur	<i>Calcarius mccownii</i>	Species excluded from detailed analysis		
Chestnut-collared longspur	<i>Calcarius ornatus</i>	Likely to result in a loss of viability ³	May adversely impact individuals ²	May adversely impact individuals ²

¹ "Beneficial impact" -- where effects are expected to be beneficial, and no negative effects are expected to occur.

² "May adversely impact individuals", but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing -- where effects in the project area are not expected to be significant and the species and its habitat will remain well distributed.

³ "Likely to result in a loss of viability" in the Planning Area, or in a trend toward federal listing-- where effects are expected to be detrimental and substantial, and the species and its habitat will not be maintained in sufficient numbers or distribution through time.

⁴ "No impact" -- where no effect is expected

Table 8 provides a list of the Rocky Mountain Region sensitive plant species that could be located on the Fall River Ranger District, Nebraska National Forest and a summary of the biological determination. The FRSEGA botany biological evaluation discusses the distribution and status, habitat, existing conditions, direct, indirect, and cumulative effects, and rationale for the biological determinations for each species

Table 8: Fall River Ranger District Sensitive Plant Species and Determination of Effects

Common Name	Scientific Name	Determination of effect		
		Alternative 1	Alternative 2	Alternative 3
Barr's milkvetch	<i>Astragalus barrii</i>	May adversely impact individuals ²	May adversely impact individuals ²	May adversely impact individuals ²
Dakota Buckwheat	<i>Erigonum visheri</i>	May adversely impact individuals ²	May adversely impact individuals ²	May adversely impact individuals ²

² "May adversely impact individuals", but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing -- where effects in the project area are not expected to be significant and the species and its habitat will remain well distributed.

The determination of management change impacts on Region 2 sensitive species are made as a direct result of field inventory and site reconnaissance (FRRD 2001, 2003). This information was augmented with information from specialist and databases cited in the Botany Biological Evaluation on file in the project record, Fall River Ranger District.

Management Indicator Species:

Regulations in 36 CFR 219.19 and 219.20 (USDA-Forest Service, 1982. National Forest System Land and Resource Management Planning) call for the selection, evaluation, and monitoring of management indicator species (MIS) and their habitat. MIS are plant or

animal species selected because “their population changes are believed to indicate the effects of management activities on other species of selected major biological communities”. The process used during the revision of the NLRMP to select management indicator species is described in Appendix B of the FEIS-NGPMMPR.

The MIS selected in the revised NLRMP for the FRSEGA are the plains sharp-tailed grouse (*Tympanuchus phasianellus*) and black-tailed prairie dog (*Cynomys ludovicianus*). A detailed discussion of these two species and habitat needs is presented in Appendix H of the NLRMP. No plant species have been selected as MIS.

Appendix B of the FRSEGA BABE summarizes all of the data collected on plains sharp-tailed grouse, black-tailed prairie dogs and their habitat within the FRSEGA. It assesses population trends, whether or not the current management is meeting the objectives spelled out in the revised NLRMP, and presents management recommendations for the allotment management plans.

Plains Sharp-tailed Grouse

The plains sharp-tailed grouse is selected as a management indicator species for the biological community most often found in grasslands with a diversity of structural stages, including an abundance of high structure grasslands. Habitat description for the plains sharp-tailed grouse is presented in Appendix H of the NLRMP.

Desired Condition

The desired conditions described in the NLRMP for the upland grassland are:

- To perpetuate diverse and healthy mixed grass communities that provides a mixture of grassland structure levels. The vegetation structure objectives identified in the NLRMP are 15 to 35% in high structure, 40 to 60% in moderate structure, and 15 to 35% in low structure.
- Design and implement livestock grazing strategies that provide quality nesting and brooding habitat on at least 25% of the grasslands (consistent with vegetation objectives for the geographic area) within 1.0 mile of active sharp-tailed grouse display grounds.
- Diverse and quality grassland habitat across this geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing sharp-tailed grouse populations (long-term trends) and viable populations of other wildlife species with similar habitat needs.
-
- Establish and maintain quality winter foraging habitat for sharp-tailed grouse and associated wildlife by enhancing and/or maintaining diverse forb species in grassland communities and regenerating shrub patches and the shrub component of wooded draws and riparian habitats.

Existing Conditions

All of the grasslands, with the exception of the range sites that have very low production capability, are potential grouse habitat. A map of potential sharp-tailed grouse habitat is presented on page 2425 of the FEIS-NGPMPR administrative record.

The habitat needs for plains sharp-tailed grouse nesting are high structure grasslands and shrub patches. Approximately 11 % (13,088 acres) of the FRSEGA is currently high structure grasslands.

There have been 37 grouse leks located in the Southeast Geographic area between 1993 and 2003. There were 10 leks, selected for permanent monitoring, that consistently had birds dancing on them through most of the years.

The average number of sharp-tailed grouse per lek on the 10 leks selected for permanent monitoring was fairly consistent between 1993 and 2002 (varying from a low of 9 birds per lek in 1999 to a high of 15 in 1996). The numbers dropped off in 2003 to an average of 3 birds per lek.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

The habitat that would be used by sharp-tailed grouse in the FRSEGA is high structure grasslands. All of the high productive range sites that are not prairie dog colonies will become high structure grassland, at least initially. All of the potential sharp-tailed grouse habitat would be in favorable condition.

Alternative 2 – No Change – No change would occur from the current grazing management.

The habitat that would be used by sharp-tailed grouse in the FRSEGA is high structure grasslands. If alternative 2 were implemented, 11 % or 13,088 acres would be high structure. The rest of the area would be low or intermediate structure. Prairie dog colonies will increase in size.

The construction phase of any improvement can have negative effects on any species by killing animals, destroying their habitat, or by displacing them.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

The habitat that would be used by sharp-tailed grouse in the FRSEGA is high structure grasslands. If alternative 3 were implemented, high structure grassland would increase from the existing condition (11 %), to 22 % or 25,104 acres.

Twenty-nine leks have been located on the National Grasslands within the FRSEGA by Forest Service personnel over the years (map 4). Not all of the leks are currently active. Leks

do vary in their location from year to year. 72 % of these leks are located in areas that all or in part will be managed for high residual cover.

Overall there will be more habitat that is beneficial to sharp-tailed grouse than in the existing condition, but not all of the potential habitat will be in favorable condition. Most of the current leks are within areas that will be managed for high residual cover.

The construction phase of any improvement can have negative effects on any species by killing animals, destroying their habitat, or by displacing them.

Black-tailed Prairie Dog

The black-tailed prairie dog is selected as a management indicator species for low structure grasslands and the biological community associated with prairie dog colonies. Habitat description for the black-tailed prairie dog is presented in Appendix H of the NLRMP.

Black-tailed prairie dog habitat is discussed on pages 49-52 of this document.

Wildlife

Introduction

This section lists the different vegetative communities and wildlife habitats located within the FRSEGA and presents a general discussion of the effects that livestock grazing, range improvements, and control burning has on these habitats. Also, an estimate of the current condition of each habitat is given as well as the desired condition in the NLRMP. Finally, discussions of the effects that each alternative would have on the habitat are presented.

Grassland Habitat:

Desired Conditions

The vegetation structure objectives identified in the NLRMP are: High Structure - 15 to 35%; Moderate Structure - 40 to 60%; and Low Structure - 15 to 35% (Table 9).

Affected Environment

Grassland structure refers to the vertical structure (height and density) of vegetation types dominated by grasses, sedges and forbs. Vertical structure may be the most important variable in wildlife habitat selection in the grassland ecosystem. However, grassland structure is greatly influenced by range site production capabilities and livestock grazing intensity.

The following discussions summarize range site production, grassland structure, and livestock grazing intensity in the FRSEGA.

Range Site Production

Range sites vary across the FRSEGA from overflow sites to thin upland sites. Each site varies in species composition and potential production. Livestock grazing, depending on how it is done, can move these range sites up or down (late or early) in successional stages.

The following information is taken from the Natural Resource Conservation Service (NRCS) South Dakota Technical Guide – Western Technical Guide Area – Section II Rangeland, Grazed Forestland, Native Pastureland Interpretations (1993) and the Soil Survey of Fall River County South Dakota (1982).

The most productive range sites located within the FRSEGA are the overflow and loamy terrace range sites. They occupy about 2% of the area. Overflow sites occur on nearly level to gently sloping lands that receive stream overflow or runoff from higher lands. This range site is capable of producing up to 3,600 pounds per acre (NRCS 1993), depending on the range condition and moisture.

A small percentage of the FRSEGA is in a silty range site (5%). The climax plant cover consists of mid and tall cool season grasses. This range site is capable of producing up to 2,500 pounds per acre (NRCS 1993), depending on the range condition and moisture.

Seventy-four percent (74%) of the grassland habitat on the FRSEGA is in a clayey or clayey complex range site. These sites occur on rolling uplands. This range site is capable of producing up to 2,400 pounds per acre (NRCS 1993) depending on the range condition and moisture.

The shallow, shallow clay, and thin upland range sites occur on the more steeply sloped uplands. These sites make up about 11% of the FRSEGA. They are less productive sites. Maximum production is 1900 pounds per acre (NRCS 1993). With severe overuse they can become bare and subject to erosion.

The thin claypan range site makes up about 8% of the FRSEGA. Claypans occur on nearly level to gently sloping uplands and occasionally on nearly level bottomlands. Maximum production in a thin claypan is less than 1200 pounds per acre (NRCS 1993). In cases of severe overuse there will be considerable bare ground.

Grassland Structure

Grassland structure in the FRSEGA was measured between 1995 and 2002 using a modified Robel pole (Benkobi et al 2000). After interpreting this data, it was determined that approximately 11 % (13,088 acres) of the area is high structure grassland, 59 % (67,055 acres) is moderate structure grasslands, and 30 % (33,517 acres) is low structure grasslands. The low structured areas can be divided into two categories, long-term low structure and short-term low structure. There is about 12 % (14,180 acres) of the FRSEGA that could be considered long-term low structure and 17 % (19,337 acres) short-term low structure (Table 9).

It is assumed that all range sites have the potential to produce high structure grasslands with the exception of the thin claypan. Shallow clay, shallow, and thin uplands are marginal but with sufficient moisture these sites can be very productive.

Table 9: Desired and Existing Vegetation Structure Categories in the FRSEGA.

	High Structure		Moderate Structure		Low Structure			
	%	Acres	%	Acres	Long-Term ¹		Short-Term ²	
					%	Acres	%	Acres
Desired Condition	15-35	28,625	40-60	57,250	15-35% or 28,625 acres			
Existing Condition	11	13,088	59	67,895	12	14,180	17	19,377

1-Long-term low structure area will be in low structure year after year (prairie dog colonies, low productive range sites, or near livestock concentration areas such as watering points)

2-Short-term low structure areas are fall VOR transect sites that average less than 2.0, but the cover in these areas could change year after year depending on pasture rotations.

Grassland wildlife species can be separated into guilds, each of which requires different vegetation structure categories for survival. The mountain plover and species with similar needs prefer areas with short vegetation, and sharp-tailed grouse will be found in tall, dense vegetation, with an entire array of species in between.

Threatened, endangered, sensitive, or management indicator species that would use high structured grasslands are: American bittern (nesting), ferruginous hawk, northern harrier, short-eared owl, grasshopper sparrow, regal fritillary butterfly, and sharp-tailed grouse (MIS).

Threatened, endangered, sensitive, or management indicator species that would use moderate structured grasslands are: swift fox, ferruginous hawk, mountain plover, long-billed curlew, and grasshopper sparrow.

Threatened, endangered, sensitive, or management indicator species that would use low structured grasslands are: swift fox, long-billed curlew, and chestnut-collared longspur.

Livestock Grazing Intensity

Livestock grazing intensity is a primary factor influencing both plant species composition and vegetation structure on the grasslands. Livestock affect an area by consuming vegetation and trampling. Suggested stocking rates for achieving different levels of vegetative structure are presented in Appendix I of the NLRMP. Light grazing intensity is suggested for plant and animal species that benefit from high vegetative structure. The suggested stocking rate for this grazing intensity is 30 to 40 % lighter than the suggested stocking rates used by the NRCS in the local area. Moderate grazing intensity is suggested for plant and animal species that benefit from moderate vegetative structure. The suggested stocking rate for this grazing intensity is the suggested stocking rates used by the NRCS in the local area. Heavy grazing intensity is suggested for plant and animal species that benefit from low vegetative structure.

The suggested stocking rate for this grazing intensity is 10 to 20 % heavier than the suggested stocking rates used by the NRCS in the local area.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

If Alternative 1 were implemented, all of the high productive range sites would become high structure grassland, at least initially. Moderate structure habitat would be eliminated and the low structure habitat would be reduced to low productive range sites and prairie dog colonies. It is probable that over time the undisturbed grasslands would become less productive because of litter layers building up and restricting the growth of the plants, but how long it would take and how much production would be reduced is unknown. An assumption is made that the prairie dog levels would remain about the same as the existing condition. It is believed that no grazing will cause more cover on the grasslands, which will make it more difficult for the prairie dogs to cut down the tall vegetation. This at the minimum should slow the expansion of prairie dog colonies and possibly cause them to actually shrink in size.

This would result in approximately 90 % (102,920 acres) of the area is high structure grasslands, no moderate structure, and 10 % (11,580 acres) long-term low structure (Table 10).

Table 10: Effects Analysis – Vegetation Structure Class Results by Alternative

	High Structure		Moderate Structure		Low Structure			
	%	Acres	%	Acres	Long Term ¹		Short Term ²	
					%	Acres	%	Acres
Alternative 1	90	102,920	0	0	10	11,580	0	0
Alternative 2	11	13,088	59	67,895	12+	14,180	17	19,337
Alternative 3	22	25,104	49-	55,879-	12+	14,180+	17+	19,337+

1-Long-term low structure area will be in low structure year after year (prairie dog colonies, low productive range sites, or near livestock concentration areas such as watering points)

2-Short-term low structure areas are fall VOR transect sites that average less than 2.0, but the cover in these areas could change year after year depending on pasture rotations.

Alternative 2 – No Change – No change would occur from the current grazing management.

If Alternative 2 were implemented all structure levels will be the same as existing condition (high structure (11 % or 13,088 acres), moderate structure grasslands (59 % or 67,895 acres)

and low structure (12 % or 13,340 acres), at least initially. Long term low structure, (range sites in early seral stages, prairie dog colonies, and where livestock congregate would be expected to increase because one of the objectives in the NLRMP is to increase black-tailed prairie dog populations over the next 10 to 15 years (this is difficult to quantify at this time) (Table 10).

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

If Alternative 3 were implemented, high structure grassland would increase to approximately 22 % of the area or about 25,100 acres. This includes 472 acres that lie within livestock enclosures, approximately 7,000 acres that lie within pastures that will not be managed for high residual cover (Appendix B of the FRSEGA Biological Assessment/Biological Evaluation BABE explains how this number was determined), and about 17,000 acres that will be managed for high residual cover. The 17,000 acres will be located in 9 allotments in which at least one pasture each year will be grazed 30 to 40 % lighter than the suggested stocking rates used in the NLRMP.

Long-term low structure would increase because one of the objectives in the NLRMP is to increase black-tailed prairie dog populations over the next 10 to 15 years (this is difficult to quantify at this time). Within this alternative there is no reduction in the over all numbers of Animal Unit Months (AUM's), so in order to graze more pastures at low intensities, others will be grazed more intensely, which will most likely result in an increase in short-term low structure grassland. With the increase in high & low structure grasslands, there will be a corresponding decrease in moderate structure grasslands (Table 10).

Hardwood Draw Habitat:

Desired Conditions

The desired condition for the woody draws/riparian is multiple layers and age classes of vegetation including herbaceous plants, shrubs, and trees.

Affected Environment

The hardwood draws exist on the landscape in various community types. These include Chokecherry (*Prunus virginiana*) shrubland, western snowberry (*Symphoricarpos occidentalis*) shrubland, buffaloberry (*Sheperdia argentea*) shrubland, green ash (*Fraxinus pennsylvanica*) -- American elm (*Ulmus americana*) /choke cherry woodland, green ash -- American elm/western snowberry woodland, and plains cottonwood (*Populus deltoides*) -- peachleaf willow (*Salix amygdaloides*) /sandbar willow (*Salix exigua*) woodland. These habitats comprise less than 5% of the total area of the Great Plains (Bolt et al. 1978) but provide critical areas for many plant and animal species. These areas are important habitat for many wildlife species that inhabit the FRSEGA.

Cattle affect hardwood draws by eating and/or trampling young trees and shrubs. Prolonged use can compact the soil to the point of affecting species composition. Summer grazing at almost any stocking rate will concentrate cattle in the hardwood draws because of the lush vegetation and shade. Summer use will prevent regeneration and also damage the existing tree and shrub layer, which will eventually eliminate the tree and shrub layer from the area (Bellows 2003, Mosley et al, 1999, Ehrhart et al. 1998, Ehrhart et al. 1997).

There are 8 pastures with hardwood draws as a part of their landscape. Within these pastures about 220 acres of land has woody vegetation. All of these woodlands are in low intermediate to high seral stage. No livestock grazing occurs within the hardwood draw pastures between June 15 and November 1 with the exception of the First Black Canyon willow community and the Osmotherly snowberry community. This favorable management was implemented in the geographical area in the late 1980's to early 1990's.

A Cottonwood – peachleaf willow community type is located in the First Black Canyon drainage of the Gamet Allotment. This community developed in an area where an old dam had breached. This was a large dam that was formerly excluded from grazing. This area is currently grazed season long as a part of the Gamet Allotment. The community is currently in satisfactory condition but there is concern that prolonged livestock grazing could become detrimental.

A Cottonwood – snowberry community type is located in the Osmotherly Allotment. There will be changes in the livestock management in alternative 3 on this allotment, which will favor the growth and development of the snowberry patches.

Threatened, endangered, sensitive, or management indicator species that would use hardwood draws are: fringed-tailed myotis, ferruginous hawks, yellow-billed cuckoo, and loggerhead shrike.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

No livestock grazing use would occur within the hardwood draw pastures. All of the hardwood draws would be expected to perpetuate multiple layers and age classes of herbaceous plants, shrubs and trees.

Alternative 2 – No Change – No change would occur from the current grazing management.

Favorable management was implemented in the wooded draws in the SEGA during the late 1980's to early 1990's with the exception of First Black Canyon and Osmotherly. These hardwood draws are expected to continue to perpetuate multiple layers and age classes of herbaceous plants, shrubs and trees. Season long use on the willow community in First Black Canyon and the Osmotherly snowberry community is expected to cause the vegetative condition to trend downward.

There is a lack of wooded plant reproduction in the Burgess, Harris, and North Black-tail Allotments. Although existing trees and shrubs in the area appear to be healthy the lack of regeneration will cause problems in the long term.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Favorable management was implemented in the wooded draws in the SEGA during the late 1980's to early 1990's with the exception of First Black Canyon and Osmotherly. These hardwood draws are expected to continue to perpetuate multiple layers and age classes of

herbaceous plants, shrubs and trees. First Black Canyon will be excluded from grazing and livestock will be grazed at different times on the Osmotherly. The trend in both of these areas is expected to be upward.

There is a lack of wooded plant reproduction in the Burgess, Harris, and North Black-tail Allotments. It is believed that reintroduction of fire into these areas will help with this problem.

Wetlands Habitat:

Desired Conditions

The desired condition in the NLRMP for wetlands/aquatic areas is to have healthy submergent and emergent vegetative cover along the shorelines, with reduced sediment levels to maintain high quality aquatic habitat.

Affected Environment

The majority of wetlands in the FRSEGA are man-made dams built to water livestock. There are currently 290 dams in the FRSEGA.

Livestock congregate at the stock dams to drink. Cattle affect wetlands by eating wetland vegetation, and doing physical damage through trampling. Livestock grazing results in dams with no emergent vegetation and bare ground up to the waters edge.

Stockdams are a problem for resource managers. The dams were built for livestock water but if managed correctly can provide valuable habitat for many of the native plains species.

There are also other naturally occurring rare plant communities that occur in the FRSEGA. For the purpose of this document, they are best placed in the wetlands category because they all occur on moist sites. The species that would inhabit them are wetland species. These include closed depressions and various riparian grassland communities (Botany Specialist report).

There are 290 stock dams in the FRSEGA and 10 of these are excluded from livestock grazing have healthy submergent and emergent vegetative zones. Two waterfowl studies have been completed in the FRSEGA, one in 1989 and the other in 2001. In the 1989 study, a monitoring unit was set up in the Old Pioneer 2, Old Pioneer 4, Hay canyon Butte, and Kneebone Allotments. The 1989 surveys were completed after a series of very dry years and about 50 % of the dams were dry, sixty percent of the stockdams had no emergent vegetation, and only the dams inside of exclosures had abundant emergent vegetation (Hodorff 1993). In 2001 stockdams in the Gamet and Southeast Hay Canyon Allotments were examined (Bohnenkamp 2001). This survey followed a series of very wet years in which all of the dams had water in them and twenty eight percent of the dams were classified as having abundant emergent vegetation (over 60 % of the shore line was occupied). Gamet grazed from May 16th through September 31st and Southeast Hay Canyon is in a skim deferred rotational grazing system. Fifteen percent of the stockdams looked at in the Gamet Allotment (season long grazing) had abundant emergent vegetation compared to 37 % in the Southeast Hay Canyon Allotment (skim deferred).

It would be inappropriate to extrapolate these figures across the entire SEGA to determine what percentage of the stock dams provide well-developed emergent vegetation through the growing season (to comply with Guideline F10 of the NLRMP), because there are too many variables. It is safe to say that 15 to 25 % of the stockdams have healthy emergent vegetation. Wetlands in rotational grazing systems are more likely to have emergent vegetation along the shoreline than wetlands season long pastures. Studies need to be done, testing different stocking rates and grazing systems, to find out what it takes for stockdams to become functioning wetlands, without having to fence each dam.

There are approximately 192 acres of the natural “wetland” communities located throughout the SEGA. There are 102 acres of these rare plant communities located in the Hughson, Railroad, and Warner Allotments. These communities are currently in acceptable condition and current management appears to be maintaining the integrity of the community. There are 58 acres of these rare plant communities located in the Kneebone and Old Pioneer 2 Allotments. These areas are degraded, and livestock grazing is probably the reason for the problem. Finally there are 32 acres of closed depressions located in the Gann and Hay Canyon Butte Allotments. These areas are also degraded, and livestock grazing is probably the reason.

Threatened, endangered, sensitive, or management indicator species that would use the large wetlands of the SEGA are American bittern, trumpeter swans, northern harrier, and black terns. The species that could be found in any of the wetlands is the northern leopard frog. Species that could be found foraging in and around the wetlands are long-billed curlews, bald eagles, fringed-tailed myotis, swift fox, ferruginous hawks, and short-eared owls.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

No livestock grazing would eventually result in healthy submergent and emergent vegetative cover along the shorelines, while reducing sediment levels to maintain high quality aquatic habitat.

Alternative 2 – No Change – No change would occur from the current grazing management.

All of the stock dams and natural ‘wetlands’ would remain the same as the existing condition.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

A cross fence is proposed in the Sand Creek Allotment which will create a 450 acre pasture that would isolate the Nelson 1 dam. The Nelson 1 dam is a Ducks Unlimited project that was constructed in 1999. Grazing will be allowed in the pasture for short intervals and the vegetation will be monitored.

Stock dams located in pastures that are in deferred rotation grazing systems and in which light grazing intensities are applied should show some increase in emergent and submergent vegetation. The rest of the stock dams will remain the same as existing conditions.

The natural “wetland” communities located in Kneebone, Old Pioneer 2, Gann, and Hay Canyon Butte Allotments will be excluded from livestock. They would be expected to recover.

Black-tailed Prairie Dog Colony Habitat:

Desired Conditions

Objectives listed in the NLRMP for the black-tailed prairie dog are below:

- Increase black-tailed prairie dog populations over the next 10 to 15 years.
- Maintain or expand the current distribution of black-tailed prairie dogs across the geographic area over the next 10 to 15 years.
- Develop a prairie dog colony complex in the northeastern part of this geographic area over the next 10 to 15 years. This area has been designated as MA 3.63.

Affected Environment

Black-tailed prairie dog colonies are a unique habitat that occurs across the FRSEGA. Prairie dogs tend to cut all tall vegetation down in the vicinity of the colony creating a low structure grassland, and their burrows create a unique habitat for other creatures, including burrowing owls, badgers, rabbits, black-footed ferrets, snakes, salamanders, and insects. Prairie dog colonies are biologically rich. In a study comparing wildlife on prairie dog colonies to adjacent grasslands, there are greater densities of small mammal and birds on the prairie dog colonies (Agnue et al). This abundance of animals, combined with prairie dogs, attracts a large array of predators.

In general, livestock grazing is considered to be compatible with black-tailed prairie dogs, because the cropping of vegetation can contribute to habitat suitability for prairie dogs (U.S. Fish and Wildlife Service 1988, Interstate Coordinating Committee 1991). Evidence suggests prairie dog colony establishment and growth can be related to livestock grazing (USDA, May, 1994). Disturbance seems to promote colony establishment and is likely related to habitat preference for areas with low growing vegetation.

The most important affect livestock grazing has on prairie dogs is the practice of poisoning prairie dog colonies to increase the forage available to livestock.

There have been 74 black-tailed prairie dog colonies identified by the Forest Service in the FRSEGA (Map 5). The last significant control effort was done in 1995, and 3 colonies were controlled in 1998. Prairie dog acres have increased steadily from 1995 (455 acres) to 2003 (1,253 acres) . The number of active colonies has increased from 16 in 1995 to 27 in 2003.

A 3.63 Back-footed Ferret Reintroduction Habitat (BFRH) management area is identified in the NLRMP. The quality of the habitat for black-footed ferret depends on size and density of prairie dog colonies. Currently there are no ferrets in the area. The BFRH is located in the Bochert and Gamet Allotments. There have been 27 different black-tailed prairie dog colonies identified by the Forest Service in the BFRH (Map 4). Prairie dog acres have

increased steadily from 1995 (340 acres) to 2003 (745 acres) . The number of active colonies has increased from 14 in 1995 to 17 in 2003.

There are prairie dog colonies on private land adjacent to the FRSEGA. The South Dakota Game Fish and Parks (SDGFP) is completing a comprehensive inventory of all of the colonies in South Dakota. This information will be released with their State-wide Prairie Dog Conservation Plan. An important point about prairie dog colonies on private land is most landowners do not welcome prairie dog colonies, and these colonies will be periodically controlled.

The Pine Ridge Indian Reservation is located east of the FRSEGA. A preliminary result of the SDGFP survey shows there are large prairie dog complexes located on the reservation. One of the complexes is located a few miles east of the FRSEGA, and is thought to include more than 25,000 acres of active prairie dog colonies. It is unknown what the management of these colonies will be.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

The assumption will be made that prairie dog colonies will be managed according to the NLRMP.

The starting point for this action would be the same as existing conditions. It is believed that no grazing will cause more cover on the grasslands, which will make it more difficult for the prairie dogs to cut down the tall vegetation. This at the minimum should slow the expansion of prairie dog colonies and possibly cause them to actually shrink in size, depending upon the precipitation.

Control would be done only in limited situations depending on provisions listed in the NLRMP and the not yet completed South Dakota State Prairie Dog Conservation Plan.

Alternative 2 – No Change – No change would occur from the current grazing management.

Prairie Dogs will be managed consistent with direction outline in the NLRMP.

Objectives for this alternative are to increase black-tailed prairie dog populations over the next 10 to 15 years. The starting point would be the existing condition. Grazing levels are enough to promote expansion of prairie dog colonies (at least greater than that of the no grazing alternative). Control would be done only in limited situations, depending on provisions listed in the NLRMP and the not yet completed South Dakota State Prairie Dog Conservation Plan.

The net result would be more prairie dogs than the existing condition or than would result in Alternative 1. The difference between Alternatives 2 & 3 is very difficult to differentiate. Although there are differences in grazing schemes, the overall stocking rate will be the same

for each alternative. The assumption will be that prairie dog expansion rates will be the same for each alternative.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Prairie Dogs will be managed consistent with direction outline in the NLRMP.

Objectives for this alternative are to increase black-tailed prairie dog populations over the next 10 to 15 years. The starting point would be the existing condition. Grazing levels are enough to promote expansion of prairie dog colonies (at least greater than that of the no grazing alternative). Control would be done only in limited situations, depending on provisions listed in the NLRMP and the not yet completed South Dakota State Prairie Dog Conservation Plan.

Controlled fire is suggested for areas around the prairie dog colonies in the black-footed ferret reintroduction area, to assist in the expansion of prairie dogs.

The net result would be more prairie dogs than Alternative 1. The difference between Alternatives 2 & 3 is very difficult to differentiate. Although there are differences in grazing schemes, the overall stocking rate will be the same for each alternative, but with the addition of fire this alternative should result in the fastest prairie dog expansion rates.

Badlands Habitat:

Desired Conditions

Vegetation is sparse in the areas and in general is unsuitable for livestock grazing. The habitat is thought to be unaffected by livestock because of the inaccessibility and lack of forage.

Affected Environment

Badland formations consist of eroding exposures of siltstone and shale around the head of drainage ways on the sides of ridges and buttes. Slopes range from nearly level on the butte tops to very steep in the drainage ways. Deep narrow gullies are on the lower parts of the landscape.

There are about 800 acres of badland habitat within the FRSEGA. Various wildlife species use this habitat including bats, which use the crevices in the badland formations for roosting.

Effects Analysis

Alternative 1 – No Action – No livestock grazing.

The habitat is thought to be unaffected by livestock because of the inaccessibility and lack of forage.

Alternative 2 – No Change – No change would occur from the current grazing management.

The habitat is thought to be unaffected by livestock because of the inaccessibility and lack of forage.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

The habitat is thought to be unaffected by livestock because of the inaccessibility and lack of forage.

Caves/Buildings Habitat:

Desired Conditions

There is no desired condition expressed in the NLRMP for buildings and caves. There is direction on page 1-15 to allow the Forest Service to close mine shafts and caves, but must provide access for bats.

Bats, for roosting sites, could use caves or buildings.

Affected Environment

To date there are no known caves in the FRSEGA. There are many ranch headquarters in the area. At each headquarters there are houses, barns, sheds and other buildings, which could provide roosting sites for the bats.

Effects Analysis

This habitat is not affected by this project because there are no caves or buildings on the grasslands, but the proximity of ranch headquarters in the area could indicate a chance that these bats could use the grasslands for feeding.

Alternative 1 – No Action – No livestock grazing.

The habitat is thought to be unaffected by this alternative.

Alternative 2 – No Change – No change would occur from the current grazing management.

The habitat is thought to be unaffected by this alternative.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

The habitat is thought to be unaffected by this alternative.

Vegetation

Desired Conditions

The desired condition is to perpetuate diverse and healthy mixed grass and short grass communities, representing both cool season and warm season species such as western wheatgrass, green needlegrass, needleandthread grass, little bluestem, threadleaf sedge, prairie sandreed, sideoats grama, buffalo grass, and blue grama. Hardwood draws will be managed to perpetuate multiple layers and age classes of herbaceous plants, shrubs and trees, contingent on local site potential. Streams and riparian areas will maintain soil moisture to perpetuate riparian plant communities with strong root masses. Natural and constructed wetlands should have well developed emergent vegetation through the grazing season on 30% to 50% of them, contingent on local site potential.

The desired plant species composition objectives across the FRSEGA are: Late Seral, 20-30%; Late Intermediate Seral, 40-60%; Early Intermediate Seral, 15-25%; and Early Seral, 1-10%.

Affected Environment

Rangeland capability analysis was completed in the Final Environmental Impact Statement for the Northern Great Plains Management Plans Revision, May 2001 (FEIS-NGPMR). The analysis identifies areas with the physical characteristics conducive to livestock grazing. The FRSEGA has 113,172 (98.8%) acres of capable rangeland. The other 1318 acres (1.2%) are non-capable due to ROW, un-capable soils, or water.

The vegetation of the BGNG FRSEGA is a mosaic of many native plant communities/associations as described in the National Vegetation Classification System (NatureServe 2003). Species composition within these communities varies across the landscape, providing productivity and sustainability and preventing soil nutrient losses (Tilman et. al. 1996). Losses of species threaten healthy ecosystem functions and stability, thereby preventing quick recovery from disturbances—such as drought (Tilman and Downing 1994, Howery 1999). Table 11 summarizes the plant communities documented in the FRSEGA, and identifies those designated as rare plant communities and plant communities of concern.

Table 11: Plant Communities of the FRSEGA

PLANT COMMUNITY – <i>scientific name</i>	- common name	DESIGNATION (Rare plant community or Plant community of concern or None)	NOTES: Numbering system follows: Faber- Langendoen, D. editor, 2001. Plant communities of the Midwest Classification in an Ecological Context. Association for biodiversity Information, Arlington, VA 61 pp. + appendix (705 pp.)
WETLANDS			
1.4.2.3 Great Plains Saline Emergent Marshes			

PLANT COMMUNITY – <i>scientific name</i>	- common name	DESIGNATION (Rare plant community or Plant community of concern or None)	NOTES: Numbering system follows: Faber-Langendoen, D. editor, 2001. Plant communities of the Midwest Classification in an Ecological Context. Association for biodiversity Information, Arlington, VA 61 pp. + appendix (705 pp.)
<i>Schoenoplectus pungens</i> Herbaceous Vegetation	Three-square bulrush Herbaceous Vegetation	Rare plant community	May be found in closed depressions or draws; examples in Old Pioneer II and Kneebone allotments
1.5.5.1 Great Plains Freshwater Wet Prairies and Meadows			
<i>Pascopyrum smithii</i> – <i>Eleocharis</i> spp. Herbaceous Vegetation	Western wheatgrass - Spikerush spp. Herbaceous Vegetation	Rare plant community	Found in closed depressions or playas in Bochert, Gann, Hay Canyon Butte, Warner and Railroad allotments
<i>Spartina pectinata</i> – <i>Carex</i> spp. Herbaceous Vegetation	Prairie cordgrass – Sedge species Herbaceous Vegetation	Rare plant community	Usually found in draws, such as Jim Wilson and Black canyons of Gamet allotment
1.5.5.2 Great Plains Saline Wet Prairies and Meadows			
<i>Distichlis spicata</i> – <i>Hordeum jubatum</i> – <i>Puccinellia nuttalliana</i> – <i>Suaeda calceoliformis</i> Herbaceous Vegetation	Saltgrass – Foxtail Barley – Nuttall’s Alkali grass – Seablite Herbaceous Vegetation	Rare plant community	Found in Hughson allotment
<i>Hordeum jubatum</i> Herbaceous Vegetation	Foxtail Barley Herbaceous Vegetation	None	Found in draws
<i>Pascopyrum smithii</i> – <i>Distichlis spicata</i> Herbaceous Vegetation	Western wheatgrass – Saltgrass Herbaceous Vegetation	None	Found in draws
<i>Sporobolus airoides</i> Northern Plains Herbaceous Vegetation	Alkali sacaton Northern Plains Herbaceous Vegetation	None	Found in draws
HARDWOODS			
1.6.5.1 Northern and Central Great Plains Wooded Riparian Vegetation			
<i>Populus deltoides</i> – (<i>Salix amygdaloides</i>)/ <i>Salix exigua</i> Woodland	Eastern cottonwood – (Peachleaf willow)/Coyote Willow Woodland	Rare plant community	Found near old dam in Gamet allotment
<i>Salix exigua</i> Temporarily Flooded Shrubland	Coyote willow Temporarily Flooded Shrubland	None	Found near old dam in Gamet allotment, also Bochert allotment
<i>Fraxinus pennsylvanica</i> -(<i>Ulmus americana</i>)- <i>Symphoricarpos occidentalis</i> Forest	Green ash-(American elm)/Western snowberry Forest	Plant community of concern	Found in Warner and Burgess allotments
UPLANDS			
2.3.5.1 Great Plains Rock Outcrops			

PLANT COMMUNITY – <i>scientific name</i>	- common name	DESIGNATION (Rare plant community or Plant community of concern or None)	NOTES: Numbering system follows: Faber- Langendoen, D. editor, 2001. Plant communities of the Midwest Classification in an Ecological Context. Association for biodiversity Information, Arlington, VA 61 pp. + appendix (705 pp.)
Shale Barren Slopes Sparse Vegetation	Shale Barren Slopes Sparse Vegetation	Plant community of concern	Found in shale area in Hughson allotment
2.4.4.3 Great Plains Badlands			
Great Plains Badlands Sparse Vegetation	Great Plains Badlands Sparse Vegetation	Plant community of concern	Found in Burgess, Limestone Butte, and South Blacktail allotments
2.6.3.1 Northern and Central Great Plains Dry Shrublands			
<i>Artemisia filifolia/Calamovilfa longifolia</i> Shrubland	Sand sagebrush/Prairie sandreed Shrubland	Rare plant community	Found in sandy soils in Gamet allotment
2.6.3.2 North and Central Great Plains Mesic Shrublands			
<i>Artemisia cana/Pascopyrum smithii</i> Shrubland	Silver sagebrush/Western wheatgrass Shrubland	None	Found infrequently in uplands
<i>Prunus virginiana</i> – (<i>Prunus americana</i>) Shrubland	Choke cherry – (American plum) Shrubland	Plant community of concern	Found in South Blacktail allotment
<i>Shepherdia argentea</i> Shrubland	Silver buffaloberry Shrubland	Plant community of concern	Found in Gamet and South Blacktail allotments
<i>Symphoricarpos occidentalis</i> Shrubland	Western snowberry Shrubland	None	Found in upland draws
2.9.3.2 Great Plains Mixedgrass Prairies			
Black-tailed Prairie Dog Town Grassland Complex	Black-tailed Prairie Dog Town Grassland Complex	None	Found in prairie dog towns
<i>Pascopyrum smithii</i> – <i>Bouteloua gracilis</i> – <i>Carex filifolia</i> Herbaceous Vegetation	Western wheatgrass – Blue grama – Threadleaf sedge Herbaceous Vegetation	None	Found in uplands
<i>Pascopyrum smithii</i> – <i>Hesperostipa comata</i> Central Mixedgrass Herbaceous Vegetation	Western wheatgrass – Needle-and-thread Central Mixedgrass Herbaceous Vegetation	None	Found in uplands
<i>Pascopyrum smithii</i> – <i>Nassella viridula</i> Herbaceous Vegetation	Western wheatgrass – Green needlegrass Herbaceous Vegetation	None	Found in uplands
<i>Pascopyrum smithii</i> Herbaceous Vegetation	Western wheatgrass Herbaceous Vegetation	None	Found in uplands
<i>Schizachyrium scoparium</i> – <i>Bouteloua (curtipendula, gracilis)</i> – <i>Carex filifolia</i> Herbaceous Vegetation	Little bluestem – Grama grass (sideoats, blue) – Threadleaf sedge) Herbaceous Vegetation	Rare plant community	Found on upland slopes
2.9.3.3 Great Plains Shortgrass Prairie			
<i>Bouteloua gracilis</i> – <i>Buchloe dactyloides</i> Xeric Soil Herbaceous Vegetation	Blue grama – Buffalograss Xeric Soil Herbaceous Vegetation	None	Found in uplands

Upland Plant Communities

Five types of Western wheatgrass plant communities occur on the uplands on the FRSEGA. These are: 1) *Pascopyrum smithii* (Western wheatgrass) Herbaceous Vegetation, 2) *Pascopyrum smithii* – *Bouteloua gracilis* – *Carex filifolia* (Western wheatgrass – Blue grama – Threadleaf sedge) Herbaceous Vegetation, 3) *Pascopyrum smithii* – *Hesperostipa comata* (Western wheatgrass – Needle-and-thread) Central Mixedgrass Herbaceous Vegetation, 4) *Pascopyrum smithii* – *Nassella viridula* (Western wheatgrass – Green needlegrass) Herbaceous Vegetation, and 5) *Pascopyrum smithii* – *Distichlis spicata* (Western wheatgrass – Inland saltgrass) Herbaceous Vegetation.

In addition, present in the uplands of FRSEGA are stands of *Schizachyrium scoparium* – *Bouteloua curtipendula*/*Bouteloua gracilis* – *Carex filifolia* (Little Bluestem – Sideoats/Blue grama – Threadleaf sedge) Herbaceous Vegetation and *Artemisia filifolia*/*Calamovilfa longifolia* (Sand sagebrush/Prairie sandreed) Shrubland. The uplands also support Great Plains Badlands Sparse Vegetation Complexes and a limited amount of Shale Barren Slopes Sparse Vegetation.

Western wheatgrass herbaceous communities are common and widespread in the Great Plains” (Nature Serve 2003).” Mid- and shortgrasses characterize this prairie. The dominant indicator graminoid species western wheatgrass (*Pascopyrum smithii*) is mixed with codominants that include green needlegrass (*Nassella viridula*), needle-and-thread (*Hesperostipa comata*), grammas (*Bouteloua gracilis*, *Bouteloua curtipendula*) and threadleaf sedge (*Carex filifolia*). Forb species that contribute to the integrity of the grassland include, but are not limited to, Barr’s milkvetch (*Astragalus barrii*), breadroot scurfpea (*Pediomelum esculentum*), bush morningglory (*Ipomoea leptophylla*), desert biscuitroot (*Lomatium foeniculaceum*), dotted gayfeather (*Liatris punctata*), easter daisy (*Townsendia exscapa*), lanceleaf bluebells (*Mertensia lanceolata*), littleleaf pussytoes (*Antennaria microphylla*/*parvifolia*), pincushion cactus (*Escobaria vivipara*/*missouriensis*), purple coneflower (*Echinacea angustifolia*), sego lily, (*Calochortus nuttallii*) and venus looking-glass (*Triodanis leptocarpa*).

Riparian/Wetland Plant Communities

Intermittent and briefly flooded sites of mesic swales, depressions, ravines and floodplains support Northern and Central Great Plains Mesic Shrublands [*Prunus virginiana* (Choke cherry) Shrubland, *Shepherdia argentea* (Buffaloberry) Shrubland, *Symphoricarpos occidentalis* (Western snowberry) Shrubland], and Great Plains Freshwater Wet Prairies and Meadows [*Spartina pectinata* (Prairie cordgrass) – *Carex* spp. (Sedge spp.), *Eleocharis palustris* (Spikerush) Herbaceous Vegetation, *Distichlis spicata* (Inland saltgrass) – *Hordeum jubatum* (Foxtail barley) – *Puccinellia nuttalliana* (Nuttall alkaligrass) – *Suaeda calceoliformis* (Sea blite) Herbaceous Vegetation, *Hordeum jubatum* (Foxtail barley) Herbaceous vegetation and *Sporobolus airoides* (Alkali sacaton) Northern Plains Herbaceous vegetation] (TNC/ABI, Faber-Lagendoen 2001.). See Table 12 for current riparian area conditions.

Hardwood Plant Communities

Several hardwood zone types are present. Intermittent stream locations support Northern Great Plains Ash-Elm Woodlands and Forests [*Fraxinus pennsylvanica* (Green ash) – *Ulmus americana* (American elm)/*Prunus virginiana* (Choke cherry) Woodland and *Fraxinus pennsylvanica* (Green ash) – *Ulmus americana* (American elm)/*Symphoricarpos occidentalis* (Western snowberry) Forest] and Northern and Central Great Plains Wooded Riparian Vegetation [*Populus deltoides* (Cottonwood) – *Salix amygdaloides* (Peachleaf willow)/*Salix exigua* (Sandbar willow) Woodland].

Literature cites critical periods and impacts to riparian areas are likely to occur in late spring-early summer and late summer-early fall (Bellows 2003, Mosley et al. 1999, Ehrhart et al. 1998, Ehrhart et al. 1997). Cattle affect hardwood draws by eating and/or trampling young trees and shrubs. Prolonged use can compact the soil to the point of affecting species composition. Summer grazing at almost any stocking rate will concentrate cattle in the hardwood draws because of the lush vegetation and shade. Summer use damages the existing tree and shrub layer, which will eventually eliminate the tree and shrub layer from the area.

The Fall River Ranger District changed hardwood draw management in the late 1980's around the assumption that grazing timing has the greatest potential impacts to Hardwood Draw conditions. The Fall River Pasture Capacity Guide emphasizes no grazing between June 15 and November 1. Hardwood draws were re-evaluated in 2001 for seral stage conditions. The surveys showed that seral stage conditions in the FRSEGA had not changed, but, also, that no regeneration occurred. Our premise that we could improve hardwood conditions by limiting grazing was only partially correct. Cattle were damaging existing seedlings and saplings during summer use and to maintain high condition hardwoods, eliminating summer grazing was necessary. However, regeneration appears to be a function of natural or man-made disturbance, particularly flooding and potentially fire, and removing cattle did nothing to promote regeneration.

Hardwood zones were evaluated in the late 1980's in the Thomsen, Tobin-Ormesher, Railroad and Osmotherly allotments. The Thomsen and Tobin-Ormesher zones are being dropped from further consideration due to the extremely low potential for those areas to have produced shrubs and trees in the last 10-15 years. The Railroad and Osmotherly zones are being dropped for the same reason; however, they are considered to have riparian site potentials. See Table 12 for current hardwood draw conditions.

Rare Plant Communities

In the uplands, closed depressions support stands of two of the seven rare plant communities in the FRSEGA identified on the Buffalo Gap National Grassland in the FEIS-NGPMR. These rare plant communities are *Schoenoplectus pungens* (Three-square Bulrush) Herbaceous Vegetation and *Pascopyrum smithii* – *Eleocharis* spp. (Western wheatgrass – Spikerush) Herbaceous Vegetation. See Table 12 for current closed depressions conditions.

Previous Analysis of the Affected Environment
Floristic Quality Survey

The Northern Great Plains Floristic Quality Assessment Panel (2001) has developed a method of ranking to determine the floristic quality of native plant communities. Coefficients (C values) have been assigned for each plant species of the Dakotas. The C value reflects a particular plant’s dependency upon a natural area. Weedy plants are assigned a C value of zero whereas plants with a C value of 5-9 are generally those plants found in natural areas. A C value of 10 would represent a plant restricted to natural undisturbed habitats in the Dakotas. Plant communities experiencing degradation will reflect lower mean C values whereas those communities high in native species richness will have high mean C values. Plant communities experiencing degradation lose native species. As weedy non-natives replace the native species or over-grazing removes native elements, mean C values for the community decline. If habitat quality is improving and more native species move in, a reflecting increase in species composition will occur and mean C values for the community increase (Northern Great Plains Floristic Quality Assessment Panel 2001). Mean C values for the areas indicated are calculated as:

$$C_{\text{Mean}} = \Sigma C_{\text{(conservation coefficient)}} \div N_{\text{(number of species in plot)}}$$

In addition to the C_{Mean} as an indicator of habitat integrity, a measure of the invasive component (% non-natives) for each site is included as well. This value is calculated as:

$$\text{Invasive Component} = \Sigma \text{Invasive Species}_{\text{(plot total)}} \div N_{\text{(number of species in plot)}}$$

Table 12: Current Hardwood Draw and Riparian/Wetland Area Conditions

Hardwood Draw/ Riparian Areas	Acres	*Hardwood Seral Stage	Riparian Cmean	Invasive Component (%)
Bochert Hardwood	67.4	H w/ R	--	--
Burgess Hardwood	31.5	HI to H w/o R	--	--
Gamet Hardwood	16.1		1.71	26.7
Gann Closed Depression	22.7		2.00	33.3
Harris Hardwood	27.5	HI w/o R	--	--
Haycny Butte Closed Dep.	9.5		1.00	25.0
Hughson Saltgrass	74.6		2.47	23.5
Kneebone Spikerush	23.0		2.67	16.7
NrthBlacktail Hardwood	25.4	H w/o R	2.40	13.0
OP2 Spikerush	34.8		1.73	26.7
Osmotherly Shrubland	19.5		1.80	30.0
Railroad Spikerush	11.8		2.07	23.5
SthBlacktail Hardwood	3.7	LI w/o R	--	--
Warner Hardwood	29.2	H w/ R	2.79	2.70
Warner Spikerush	16.0		1.40	22.0

*

Seral conditions are L = Low, LI = Low Intermediate, HI = High Intermediate and H = High.

Range Condition Surveys

For the last 20 years, the Fall River Ranger District has conducted vegetation inventory surveys utilizing the Natural Resource Conservation Service (formerly Soil Conservation Service) Doubling Sampling methodology (NRH-1, July 13, 1976). This method is used in making production and composition determinations (percent composition by weight), and most plots are estimated, while some plots are clipped and used to calibrate the surveyor's estimations.

The NRCS methodology summarizes the raw transect data and determines a final range condition class by comparing the present plant community with that of the climax plant community. The four range condition classes are 'Poor' (0-25% of climax), 'Fair' (26-50% of climax), 'Good' (51-75% of climax) and 'Excellent' (76-100% of climax).

Surveys were run on a variety of range sites (see wildlife section for description of range sites present in the FRSEGA), however, most range sites selected are predominantly on upland plant association sites. Each range condition class was entered into the Forest common vegetation unit coverage. Baseline range condition surveys were established between June 1986 and June 1995, with the majority of the surveys being completed in 1989 and 1990. A total of 304 range condition surveys were conducted.

The Fall River Range District began conducting a re-inventory of range sites in the geographical area again in June 2001, with most surveys being completed that year. Some surveys were not completed until August 2003. In addition, due to a lack of funding, the District could only complete a re-survey of 80 of the original baseline transects. These surveys were completed on only major range sites within each allotment, and then each updated range condition class was entered into a copy of the Forest common vegetation unit coverage. All condition classes not re-surveyed were updated in the copy of the common vegetation unit based on an interpolation of the trend of the re-surveyed transects.

In 1995, The Fall River District began sampling sites for canopy cover and frequency of occurrence by plant species, utilizing Daubenmire's canopy-coverage method of vegetation analysis (Daubenmire, R. 1959). This effort was to coincide with the NLRMP, which would describe vegetation in ecological seral classifications, rather than range condition. Dan Uresk, Rocky Mountain Research Station has conducted analysis on the data sets to determine if range condition could be cross-walked to an ecological seral classification. Dan states in an April 27, 2004 letter to Mike McNeill, District Ranger, Fall River Ranger District, that "...the NRCS and crosswalk predicted ecological seral assignments are in close agreement." and "...accuracy for the crosswalk is 61%". However, again due to a lack of funding, none of the original sampling sites have been re-sampled. The data only establishes a set of baseline information.

Without a doubt, the range condition analysis gives a clearer trend picture at this time and makes effects predictions more reliable. Range condition will be used as a measure in this DEIS.

The baseline, current range condition classes, and changes in acres of conditions classes are summarized in Table 13 for the FRSEGA. Detailed range analysis survey data is on file at the Fall River Ranger District.

Table 13: Baseline (1989-1990), Current (2001), and Change in Acres of Range Condition Classes

Range Condition Class	Baseline Acres - 1989	Current Acres - 2001	Change in Acres
Excellent	25,101	41,223	+16,122
Good	60,185	62,649	+2,464
Fair	27,562	8,976	-18,586
Poor	256	256	0
*Riparian	193	193	0
*Water	462	462	0
*Badlands	806	806	0
<i>Total Acres</i>	<i>114,565</i>	<i>114,565</i>	

**Badlands, Riparian and Water are not assigned a range condition class and are only 1.2% of the total area. All acres in the table were rounded to equal the land status acres.*

Invasive Species Surveys and Management

An intensive invasive species inventory was completed during 1997 and 1998. Additional spot inventories have occurred every year since then. Total acres, by allotment, and locations of invasive plant species can be found in Map 6.

Invasive species in the project area are currently being treated under direction of the Noxious Weed Control Decision Notice signed June 28, 1999. Invasive species known to exist within the project area include: Canada thistle, Russian knapweed, leafy spurge, and salt cedar. Treatment has been accomplished through the work of district personnel, Pioneer Cooperative Grazing Association, and the Fall River County Weed and Pest Department. An integrated approach has been used to address the weed problem through the use of biological, chemical and some mechanical means. Biological control measures were attempted on Canada thistle, but were unsuccessful. Mechanical control, due to cost, has been limited to isolated plant infestations of salt cedar. As a result, most control has been accomplished through the use of herbicides. The project area accounts for approximately 25% of the district annual weed control target of 1600 acres. This annual target generally is exceeded.

Riparian areas most commonly represent sites of invasive species. Canada thistle (*Cirsium arvense*) has nearly a 100% frequency of occurrence in wet riparian areas while Leafy spurge (*Euphorbia esula*), Whitetop (*Cardaria draba*), Tamarisk (*Tamarix ramosissima*) and Knapweeds (*Centaurea* spp.) are exotics that, while less common, have also invaded riparian sites on the FRSEGA. BGNG botanical inventories in 2001 indicated a 5.56% in plot occurrence for Canada thistle, a 0% in plot occurrence for Leafy spurge, a 0% in plot occurrence for Whitetop, a 0% in plot occurrence for Tamarisk and a 0% in plot occurrence for Knapweed. (Sample calculation: Canada thistle = 6 total occurrences ÷ 108 total plots = 5.56%).

Effects Analysis

Table 14: Effects Analysis – Estimated Change in Acres of Hardwood and Riparian/Wetland Conditions

Hardwood Draw/ Riparian Areas	Acres	Alternative One	Alternative Two	Alternative Three
Bochert Hardwood	67.4	0	0	0
Burgess Hardwood	31.5	0	0	0
Gamet Hardwood	16.1	0	16.1	0
Gann Closed Depression	22.7	0	22.7	0
Harris Hardwood	27.5	0	0	0
Haycny Butte Closed Dep.	9.5	0	9.5	0
Hughson Saltgrass	74.6	0	74.6	*74.6
Kneebone Bulrush	23.0	0	23.0	0
NrthBlacktail Hardwood	25.4	0	0	0
OP2 Bulrush	34.8	0	34.8	0
Osmotherly Shrubland	19.5	0	19.5	0
Railroad Spikerush	11.8	0	0	0
SthBlacktail Hardwood	3.7	0	0	0
Warner Hardwood	29.2	0	0	0
Warner Spikerush	16.0	0	0	0

*Skim rotation grazing with 365 day rest every other year.

Table 15: Effects to Range Condition Classes by Alternative

Range Condition Class	Alternative One	Alternative Two	Alternative Three
Excellent	112,104	46,000	45,000
Good	0	62,604	55,104
Fair	0	3,000	10,000
Poor	1000	1500	3,000
*Riparian	193	193	193
*Water	462	462	462
*Badlands	806	806	806
<i>Total Acres</i>	<i>114,565</i>	<i>114,565</i>	<i>114,565</i>

Alternative 1 – No Action – No livestock grazing.

Direct Effects

No livestock grazing use at any time of the year would occur within the 187.4 acres of hardwood draws. The hardwood draws are not expected to perpetuate multiple layers and age classes of herbaceous plants, shrubs and trees without some type of disturbance. The Gamet hardwood draw (16.1 acres), due to the immediate removal of livestock, will experience some type of improvement, at least during the temporal scope of this project.

The riparian area conditions on 57.8 acres as well as the 32.2 acres of the closed depression rare plant communities, negatively impacted by past grazing use, will experience a rapid

improvement in conditions. Little to no change is expected on 102.4 acres where riparian area conditions are already favorable.

Invasive species populations will decline in riparian habitats due to improved conditions. Continued control of invasive species will lead to a more rapid decline in their populations than in alternative 2 and 3 as grazing is removed.

Under this alternative, all good range condition would become excellent range condition, at least initially. Fair condition range would be eliminated as it succeeds to good condition range. Poor condition range, especially in prairie dog towns, is expected to expand slowly. Over time, it is probable that undisturbed grasslands will become stagnant as litter layers build. It cannot be determined if that will happen within the temporal scope of this DEIS. This will all result in a poor mix of range condition classes with a disproportionate share of range condition being in excellent and very little in any of the other condition classes.

Directly, this alternative would eliminate cattle trampling and grazing rare plant communities, several of which are riparian communities. Vegetation adversely impacted by cattle grazing would make a complete recovery; vegetation favorably impacted by grazing would decrease in vigor. Riparian areas are known to be adversely impacted by cattle, both through grazing impacts and through soil compaction caused by trampling. The most rapid improvements would be in those areas that have been negatively impacted by grazing.

Grazing cessation would also allow litter covers to increase. The species *Botrychium campestre* has been found to utilize sites where grass leaf litter is present.

The plant species of concern currently grazed by cattle would potentially make complete recovery.

Indirect Effects

The continued static condition and lack of re-generation in hardwood draws will result in no increase in associated avian and amphibian populations.

Removal of invasive species will improve vegetative conditions as native species replace the invasive species.

Removing grazing will improve range conditions and make it difficult to achieve an increase of black-tailed prairie dogs in management area 3.63. Improved range conditions and subsequent vegetative structure will lead to an increase in habitat for the sharp-tail grouse. There will be little to no moderate to low condition ranges. This will provide no habitat for the guild of wildlife species that prefer moderate to short vegetation and low structure.

This action alternative will potentially cause an increase in litter cover, resulting in an increase of hazardous fuel for wildfires.

Eliminating grazing will eliminate the trampling of soil surface by cattle and eliminate the grazing of vegetation associated with rare plant communities and species of concern. In addition, potable water sources currently being distributed via pipelines and stock tanks throughout the FRSEGA would cease operating. Cessation of this action would result in reduced ground disturbances, and reduce the cumulative grazing pressure impacts associated with cattle congregating near water sources.

Cumulative Effects

Activities occurring off of the FRSEGA will provide opportunities for wildlife to use riparian areas more within the FRSEGA. This habitat improvement in the FRSEGA will then mitigate impacts to private lands.

Alternative 2 – No Change – No change would occur from the current grazing management.

Direct Effects

No livestock grazing use in the summer would continue to occur within the 187.4 acres of hardwood draws. The hardwood draws are not expected to continue to perpetuate multiple layers and age classes of herbaceous plants, shrubs and trees without some type of disturbance. The Gamet hardwood draw (16.1 acres), due to a lack of fencing, will not experience any improvement.

There are no plans in this alternative to change grazing management or fence riparian areas. The riparian area conditions on 57.8 acres, as well as the 32.2 acres of closed depression rare plant communities, negatively impacted by past grazing use, will continue to experience a decline in condition. Little to no change is expected on 102.4 acres where riparian area conditions are already favorable.

Invasive species populations may increase in riparian habitats due to current grazing management practices. Only herbicide control would be used to keep populations in check. Changes in invasive species populations in other areas are hard to predict as grazing continues and livestock may spread seed, although herbicide control will certainly keep populations in check.

Upward trend in range conditions have occurred under current management. Range conditions are expected to continue to improve. Because range health is dynamic due to many factors, some sites will decrease in condition while others improve, resulting in a change in location of each condition class. Poor condition acres will increase due to the expansion of prairie dogs in management area 3.63, but at a slower rate than in Alternative 3 and at a faster rate than in Alternative 1. This will all result in a poor mix of range condition classes with a disproportionate share of range condition being in good to excellent condition and very little in lower condition.

Western wheatgrass (*Pascopyrum smithii*) – Spikerush (*Eleocharis*) spp. and Three-square bulrush (*Schoenoplectus pungens*) Herbaceous Vegetation communities on the Gann and Hay Canyon Butte allotments may continue to decrease in vigor and species diversity may be irrevocably decreased. At present, although an ocular plot was set into place to monitor the rare plant community on the Gann allotment, it is not possible to determine, in a comprehensive manner, the species composition and cover values due to the severely overgrazed condition of this closed depression.

Indirect Effects

The continued static condition and lack of re-generation in hardwood draws will result in no increase in associated avian and amphibian populations. Those same species will continue to be negatively impacted in the riparian areas that are not improving.

Removal of invasive species will improve vegetative conditions as native species replace the invasive species, although the amount of improvement is predicted to be less than Alternative 1 and the same as in Alternative 3.

Improved range conditions and subsequent vegetative structure will lead to an increase in habitat for the sharp-tail grouse. There will be little low condition ranges. This will provide little habitat for the guild of wildlife species that prefer short vegetation and low structure.

Cumulative Effects

Under this alternative, the mix of desired conditions will not be satisfied. Negative impacts will occur to threatened and endangered, candidate, and sensitive animal species, and to sensitive plant species.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct Effects

No livestock grazing use in the summer would continue to occur within the 187.4 acres of hardwood draws. Implementing prescribed fire in the hardwood draws is expected to begin the perpetuation of multiple layers and age classes of herbaceous plants, shrubs and trees. The 16.1 acres of the Gamet hardwood draw will be fenced and will begin to experience the perpetuation of multiple layers and age classes of herbaceous plants, shrubs and trees during the temporal scope of this project.

The riparian area conditions on 57.8 acres, as well as the 32.2 acres of closed depression rare plant communities, negatively impacted by past grazing use, will be fenced or grazing management changed and will experience a rapid improvement in conditions. Little to no change is expected on 102.4 acres where riparian area conditions are already favorable.

Invasive species populations will decrease in riparian habitats due to proposed changes in grazing practices and continued control. Changes in invasive species populations in other areas are hard to predict as grazing continues and livestock may spread seed, although herbicide control will certainly keep populations' in-check

Range condition class acres will change slightly from the current condition. As more pastures are managed for higher vegetation structure, excellent range condition will increase at about the same rate as in alternative 2, but much less than alternative 1. In order to graze more pastures at lower intensities, others will be grazed heavier. This will result in increased poor and fair range condition, more than in alternatives 1 and 2. Areas managed for prairie dog expansion in management area 3.63 will also result in an increase in poor and fair range condition. This results in a corresponding decrease in good condition range. The result is a

fairly balanced mix of desired rangeland conditions and diverse and healthy mixed and short grass communities.

It is expected that the desired condition of diverse, healthy, native mixed grass and short grass plant communities in a mosaic with other less common, but equally important, native plant communities will occur. These include riparian communities (including closed depressions), Shale Barren Slopes Sparse Vegetation, Great Plains Badlands Sparse Vegetation, Little bluestem/Grama/Carex, Sandsage and the other communities. The conservation of healthy stands of these plant communities will aid in the conservation of individual species, biotic interactions, and ecological processes as set forth in the USFS Rangeland and Forest Health Initiatives (Northern Great Plains FEIS, Chapter 3).

It is expected that both cool season and warm season graminoid species will be represented. These species include, but are not limited to, Western wheatgrass (*Pascopyrum smithii*), Green needlegrass (*Nassella viridula*), Needle-and-thread grass (*Hesperostipa comata*), Little bluestem (*Schizachyrium scoparium*), Threadleaf sedge (*Carex filifolia*), Prairie sandreed (*Calamovilfa longifolia*), Sideoats grama (*Bouteloua curtipendula*), Buffalo grass (*Buchloe dactyloides*), and Blue grama (*Bouteloua gracilis*).

A variety of forb species characterizing the biodiversity of the FRSEGA will also be present. These species include, but are not limited to, Barr's milkvetch (*Astragalus barrii*), Breadroot scurfpea (*Pediomelum esculentum*), Bush morning-glory (*Ipomoea leptophylla*), Desert biscuitroot (*Lomatium foeniculaceum*), Dotted gayfeather (*Liatris punctata*), Easter daisy (*Townsendia exscapa*), Lanceleaf bluebells (*Mertensia lanceolata*), Littleleaf pussytoes (*Antennaria microphylla/parvifolia*), Pincushion cactus (*Escobaria vivipara/missouriensis*), Purple coneflower (*Echinacea angustifolia*), Sego lily, (*Calochortus nuttallii*) and Venus looking-glass (*Triodanis leptocarpa*).

The plant communities that will continue to occur in a mosaic on the uplands in the desired future condition landscape include six types of Western wheatgrass plant communities: 1) Western wheatgrass (*Pascopyrum smithii*) Herbaceous Vegetation, 2) Western wheatgrass – Blue grama – Threadleaf sedge (*Pascopyrum smithii*—*Bouteloua gracilis*—*Carex filifolia*) Herbaceous Vegetation, 3) Western wheatgrass – Needle-and-thread (*Pascopyrum smithii*—*Hesperostipa comata*) Herbaceous Vegetation, 4) Western wheatgrass – Green needlegrass (*Pascopyrum smithii*—*Nassella viridula*) Herbaceous Vegetation, 5) Western wheatgrass – Spikerush (*Pascopyrum smithii*—*Eleocharis* spp.) Herbaceous Vegetation, and 6) Western wheatgrass – Inland saltgrass (*Pascopyrum smithii*—*Distichlis spicata*) Herbaceous Vegetation. Healthy stands of Shale Barren Slopes Sparse Vegetation and Great Plains Badlands Sparse Vegetation will also continue to occur in appropriate areas on the FRSEGA.

Closed depressions found in the uplands of FRSEGA will increase in vigor and species diversity with protection from grazing as provided in the mitigation section and will support stands of rare plant communities: Western wheatgrass – Spikerush spp. (*Pascopyrum smithii*—*Eleocharis*) Herbaceous Vegetation and Three-square Bulrush (*Schoenoplectus pungens*) Herbaceous Vegetation.

Riparian areas will maintain soil moisture to perpetuate riparian plant communities with strong root masses. Herbaceous plant species of riparian areas will include, but are not limited to, Prairie cordgrass (*Spartina pectinata*), Inland saltgrass (*Distichlis spicata*), Foxtail barley (*Hordeum jubatum*), Alkali sacaton (*Sporobolus airoides*), Spikerushes (*Eleocharis*

spp.), and sedges (*Carex* spp.) Native plant communities that will occur in healthy riparian areas are Spikerush (*Eleocharis*) spp. Herbaceous Vegetation; Western wheatgrass – Spikerush (*Pascopyrum smithii*—*Eleocharis*) spp. Herbaceous Vegetation; Prairie cordgrass–Sedge (*Spartina pectinata*—*Carex* spp.) Herbaceous Vegetation; Saltgrass – Foxtail barley – Nuttall’s alkali grass – Sea blite (*Distichlis spicata*—*Hordeum jubatum*—*Puccinellia nuttalliana*—*Suaeda calceoliformis*) Herbaceous Vegetation; Foxtail barley (*Hordeum jubatum*) Herbaceous Vegetation, Western wheatgrass – Saltgrass (*Pascopyrum smithii*—*Distichlis spicata*) Herbaceous Vegetation and Alkali sacaton (*Sporobolus airoides*) Northern Plains Herbaceous Vegetation.

Shrub species that will occur in draws are Western snowberry (*Symphoricarpos occidentalis*), Choke cherry (*Prunus virginiana*), American plum (*Prunus americana*) and Ill-scented sumac/Skunkbrush (*Rhus trilobata*). Tree species that will occur in draws with more available water are Eastern cottonwood (*Populus deltoides*), Green ash (*Fraxinus pennsylvanica*), Sandbar willow (*Salix exigua*), and Peachleaf willow (*Salix amygdaloides*).

Indirect Effects

The continued hardwood draw improvement and the improved riparian areas will experience an increase in associated avian and amphibian populations.

Removal of invasive species will improve vegetative conditions as native species replace the invasive species, although the amount of improvement is predicted to be less than Alternative 1 and the same as in Alternative 2.

Improved mixes of range conditions and subsequent vegetative structure will lead to improved habitats for most guilds of wildlife species.

Cumulative Effects

Cumulatively, there will be a more desirable mix of healthy functioning upland, hardwood, wetland and riparian communities. This in turn will lead to a higher quality habitat for the full range of wildlife and sensitive plants.

Economic And Social Conditions

Affected Environment

Introduction

The social and economic implications of grassland resource management are of interest to local residents surrounding the Buffalo Gap National Grassland, users of the grassland, and to people throughout the United States. Residents in Fall River County will be most likely to experience the direct social and economic impacts of the Southeast Geographic Area RAMP project. Visitors to the grassland may also be affected while recreating in the project area. Future grassland management issues will be of interest to people both locally and nationally. Commercial users of the project area may potentially be affected positively or negatively depending on alternative selection and mitigation measures. These social and economic

issues are discussed and analyzed by alternative in the following social and economic analysis.

When available, data for this chapter is displayed by Fall River County Subdivision as reported in the 2000 census data summaries. Those subdivisions are: Argentine Township (AR); Hot Springs City (HS); Edgemont City (ED); Oelrichs Town (OE); Northeast Fall River Unincorporated Township (NE); Robins Township (RO); Southwest Fall River Unincorporated Township (SW); and Provo Township (PR). Maps of these subdivisions can be found in the project record or on the US Census Bureau website. The Southeast Geographic Area is located entirely within the Northeast Fall River UT and Robins Township subdivisions of Fall River County.

Issues

Lands administered by the Forest Service in the project area have a great deal of value to people who live in and adjacent to them. Commodity and amenity benefits derived from public lands can perpetuate or disrupt local economies and lifestyles if the affected area is not diversified.

General discussions with constituents, County Commissioners, and the affected Grazing Association have indicated that issues associated with this analysis include those imbedded in economic and social values. Issues identified in those discussions include:

- What are the effects of the agency action on livestock permittee?
- What are the effects of the agency action at the County Level?
- How will the agency action affect the rural agricultural customs and culture?

Indicators

- Viability of livestock permittees
- Job and Income effects on the County's economic base
- Changes in uses of existing agricultural lands

The entire analysis area is located in Fall River County. The communities most likely to be impacted include Hot Springs, Oelrichs, and Buffalo Gap. Some residents of these communities depend upon ranching-based activities and livestock use of the project area for their economic livelihood. Some residents in the area surrounding the project area may also consider the grassland resources as an important part of their quality of life. Visitors, both local and non-local, use the area for a wide range of recreation activities including; driving for pleasure, hunting, rock hounding, dispersed camping, wildlife viewing, all-terrain vehicle use, and other dispersed forms of recreation including hiking, bird watching and snow-machining. These activities have varying effects to the economy of Fall River County.

As a small rural County, the National Grassland not only plays an important role in the economy, but also its historic cultural. The importance of this role is evidenced by a recently passed resolution; "supporting county custom, culture and heritage in decision making regarding federal lands in Fall River County, State of South Dakota".

Population

In 2002, South Dakota ranked 46th out of 50 states in total population. Between 1990 and 2000, South Dakota's population increased by 8.5% compared to the national population growth of 13.2%. The largest population centers are located in the northern Black Hills and eastern side of the state. Fall River County is located in the far southwest corner of the state, which is sparsely populated. The population increase for Fall River County between 1990 and 2000 was only 1.4%. Table 16 highlights specific demographic data for South Dakota, Fall River County, and the individual communities within the study area. Fall River County accounts for about .99% of the total population of South Dakota. The city of Hot Springs has the largest population center within the County. In general, each community and Fall River County reflects a lack of racial diversity although it is typical of the state of South Dakota.

South Dakota and Fall River County have a higher percentage of rural farm households. 52% of South Dakota households can be characterized as being in an urban setting compared to United States at 78% of the households. 13.4% of the rural households in South Dakota are farm while the remaining 86.6% are non-farm rural households. This compares to the United States where 4% of rural households are farm and 96% are non-farm rural households. Fall River County households are characterized by 49% urban and 51% rural. Mirroring the state, 13% of the rural households in the county are farm households. The Southeast Geographic Area is primarily rural with 20% being farm households. The statewide housing unity density is 4.3 per square mile of land area. Fall River County is less dense at 2.2 housing units per square mile of land area.

Fall River County has a median age of 45.5, which is higher than the state average median age of 35.6. This could be due to the fact that the Black Hills region is a popular retirement area and because the State Veterans Home is located in Hot Springs. Hot Springs is the largest population center in Fall River County.

Table 16: Population Statistics for South Dakota and Fall River County

	South Dakota	Fall River County	Hot Springs	Edgemont	Oelrichs
Population	754,844	7,453	4,129	867	145
White	669,547	6,746	3,636	808	121
Black	4,529	24	16	0	0
American Indian	62,652	451	427	34	24
Asian	4,529	17	27	0	0
Other race	3774	26	8	4	0
Hispanic or Latino	10,568	130	79	16	0
Median Age	35.6	45.5	44.9	48.8	51.3
Percent of people 65 and over	14.3	22.5	24.2	24.6	33.8
Total Housing Units	323,208	3,812	1900	516	76
Housing Units for seasonal Recreational or occasional use	9,823	285	28	5	1
Percentage of seasonal units	3%	7.5%	1.5%	0.1%	1.3%
<i>Source: 2000 Census</i>					

The ethnicity of the county is comparable to the state where the non-white population is 9% and 11% respectively. The primary ethnic background in the analysis area is American Indian (70% of the non-white population) with Hispanic and Latino people second (20%). The remaining 10% of the ethnic population is distributed across the other recognized ethnic groups.

With the exception of American Indians, recognized ethnic groups are under-represented in the state and the county. Although the possibility could exist in the future, currently no persons with recognized ethnic backgrounds hold livestock permits. Any agency action undertaken within the context of this analysis would have little to no potential to impact these groups.

Environmental Justice and Civil Rights

Examination of community composition, as required under E.O. 12898, found no minority or low-income communities or groups to be disproportionately affected under any of the livestock grazing alternatives. This was not raised as an issue during public scoping.

Employment

The majority of employment in Fall River County is in the professional, service and sales occupations (see Table 17). Fall River County has 190 individuals who indicated they are operating farms or ranches. At 6%, farm and ranch managers are small portions of the total employment in the county. The Northeast Fall River UT and Robins Township have 90 individuals who indicated they are operating farms or ranches. This represents 47.3% of the

total operating farms or ranches in Fall River County and 9.5% of the total employment of those two areas.

Table 17: Employed Civilian Population 16 Years And Over By Occupation

OCCUPATION	SD	AR	HS	ED	OE	NE	RO	SW	PR
Management (Except farm and ranch)	25,432	0	79	19	2	63	0	3	2
Farmers and Ranchers	19,808	3	20	6	2	88	2	65	4
Business and financial operations	12,179	0	12	2	1	12	0	2	0
Professional and Related	64,788	0	387	62	0	228	0	33	3
Service (Includes healthcare support, protective, food preparation, personal care, etc.)	58,573	0	316	70	17	191	1	8	0
Sales and Office	99,073	4	402	69	18	110	2	21	5
Farming, fishing, and forestry	7,247	3	14	2	2	46	0	19	0
Construction, extraction and maintenance	34,031	3	181	43	4	94	0	4	0
Production, transportation, and material moving	53,242	0	196	81	6	112	2	20	1

Table abbreviations are **SD** – South Dakota; **AR** – Argentine Township; **HS** – Hot Springs; **ED** – Edgemont; **OE** – Oelrichs; **NE** – Northeast Fall River UT; **RO** – Robins Township; **SW** – Southwest Fall River UT; **PR** – Provo Township.

Fall River County: Private wage workers 58.2%, Government workers 26.2%, Self-employed 14.8%, unpaid family workers 0.7%. South Dakota: Private wage workers 72.9%, Government workers 15.2%, Self-employed 11%, unpaid family workers 0.8%

Source of Information is US Census Bureau, Census 2000 Summary File 3 (SF 3)

Income

The median household income for Fall River County is \$28,515 compared to the median for South Dakota of \$33,267 (County Estimates for Median Household Income for South Dakota, March 1999 Population Survey, U.S. Census Bureau). The highest state median household income was reported in Lincoln County at \$48,386 while the lowest was reported in Buffalo County at \$16,793. Table 18 reflects the distribution of household income. The lower median income can be explained in part by the lack of professional and highly technical jobs in the county as 4.6% of the persons in Fall River County, 5.9% of the persons in South Dakota, and 15.2% of the persons in the USA as a whole have annual earnings that exceed \$100,000¹.

The percentage of families whose incomes fall below the poverty level in Fall River County is lower than the State of South Dakota and the USA as a whole. Percentage of families below the poverty level in 1999 was 7.8%, 9.3%, and 9.2% respectively.

¹ US Census Bureau, American FactFinder. Census 2000 Summary file 3 (SF3)-Sample Data

Table 18: Distribution of Household Income by Percent of Total Numbers

Household Income	United States	South Dakota	Fall River County
Less than \$10,000	9.6%	10.6%	13.4%
\$10,000 to \$14,999	6.4%	7.7%	10.1%
\$15,000 to \$24,999	12.8%	16.1%	18.9%
\$25,000 to \$34,999	12.8%	15.1%	15.9%
\$35,000 to \$49,999	16.5%	19.0%	15.6%
\$50,000 to \$74,999	19.4%	18.5%	16.1%
\$75,000 to \$99,999	10.2%	6.9%	5.5%
\$100,000 to \$149,999	7.7%	3.8%	3.5%
\$150,000 to \$199,999	2.2%	1.0%	0.4%
\$200,000 or more	2.4%	1.1%	0.7%

The per capita income for Fall River County is comparable to the state average, although both are below the national average. The average per capita income in Fall River County is \$17,048 compared to South Dakota, which is \$17,562 and US, which is \$21,587. Fall River County and the state of South Dakota have a higher percentage of households at the poverty level (13.2% and 12.5% respectively) than the US (11.8%).

Personal income can be described in several ways. It is comprised of non-farm and farm income, the largest component being non-farm income, which included all wages and salaries that are not directly associated with farming activity. Farm income includes the proprietor's net farm income, wages and payments-in-kind for farm labor, and salaries of corporate farms. Personal income can also be described in terms of earnings, property income, and transfer payments. Net earnings include all income earned throughout employment, property income is made from rent, dividends, and interest from investments. Transfer payments include several types of income not related to employment such as retirement, disability payments, income maintenance such as social security, food stamps, and WIC assistance, unemployment benefits, and veteran benefits. Table 19 reflects income by source.

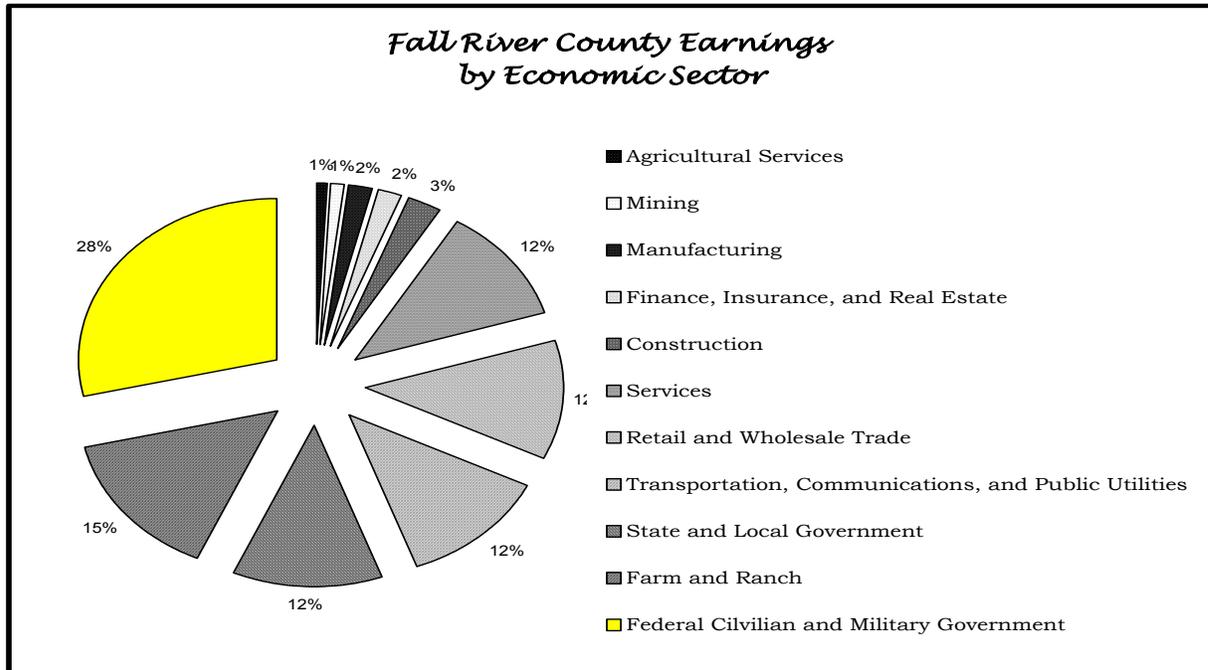
Table 19: Aggregate Income by Source (In Thousands of Dollars)

Income Source	Fall River County	AR	HS	ED	OE	NE	RO	SW	PR
Wage or Salary	75,900	464	40,147	9,709.1	704	21,930	142.7	2,551.5	251.6
Self-Employment	10,384.9	- 30	4,297.1	736.9	120.1	3,911.4	0	1353.3	- 4
Social Security	12,025.1	16.8	6,152.5	1,690	433.9	3,009.8	43	603.6	75.5
Supplemental Security Income	928.3	0	689.7	144.2	9.1	24	0	57.9	3.4
Public Assistance	129.5	0	38.6	66.3	6	18.5	0	0	0
Retirement	8,793.4	9.1	5,473.7	574.4	137.4	2,022.3	21.5	146.8	408.2
Other Sources	4,545.7	0	2,810.2	822.3	132.6	633.9	18.9	106.7	21
Interest, Dividends or net Rental	10,904.3	.7	6,966.8	443.8	190.6	2,930.4	13.6	340.7	17.7
Production, transportation, and material moving	53,242	0	196	81	6	112	2	20	1

Source of Information is US Census Bureau, Census 2000 Summary File 3 (SF 3)

The largest contributors to the county’s total earnings are the Federal Civilian and Military Government at 28% with State and Local Government accounting for 12% of the total earnings (See Figure 1 – Fall River County Earnings by Economic Sector).

Figure 1: Fall River County Earnings by Economic Sector



Although farms and ranches comprise 9.5% of the total county employment, farm and ranch earnings represent 15% of Fall River County’s total earnings. The Census of Agriculture

indicated that in 1997 there were 123 ranches/farms with grazing permits in Fall River County, 98 of which were with the Forest Service on National Grasslands. The Southeast Geographic Area includes 50 ranches/farms with permits on National Grasslands. Table 20 displays information collected by the South Dakota Agricultural Statistics Service.

Table 20: Fall River County Livestock Inventory/Cash Receipts

LIVESTOCK INVENTORY	1999	2000	2001
All Cattle	77,000	79,000	71,000
Beef Cows	29,000	30,000	30,000
Milk Cows	0	0	0
Hogs & Pigs	224	224	224
All Sheep	7,103	7,103	7,103
CASH RECEIPTS			
Crops	\$3,536,000	\$3,379,000	\$3,352,000
Livestock & Related Products	\$71,570,000	\$78,724,000	\$79,342,000
Government Payments	\$1,597,000	\$1,299,000	\$1,483,000

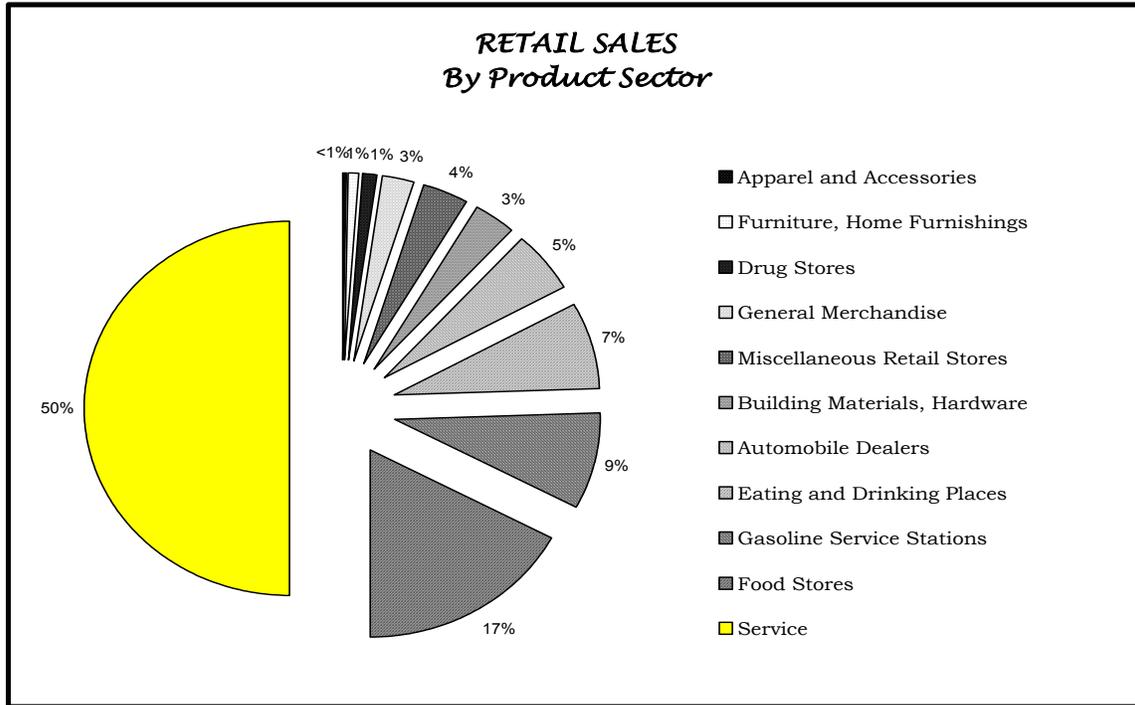
The exact amount of the cash receipts shown in Table 20 includes all livestock and related products produced in the county. They would include individual ranch/farm owners, Fall River County Feedlot, and related products. The earnings shown in Figure 1 would be net earnings for all farms and ranches within the county. The portion of total cash receipts and/or earnings attributed to the 50 ranches/farms with grazing permits on the Southeast Geographic Area cannot be determined by the source data. It is reasonable, however, to assume that the total cash receipts for livestock and related products are a large contributor to the County's total cash receipts for all economic sectors.

Livestock operations in Fall River County were mostly constant for the period of 1999 to 2002. Beef cow inventories and cash receipts showed very little change over that same period. Although specific statistics are not available for Fall River County, cattle on feed in South Dakota on February 1, 2004 were 93% of the numbers on the same date in 2003. However, the 2004 numbers were identical to the February 1 numbers in 2002. This number would suggest a fairly constant inventory over that time period. These statistics suggest that Fall River County continues to have a mostly stable and viable livestock economy.

Retail Sales

Strongly influenced by tourism, retail activity in Fall River County is dominated by the service sector providing half of the total sales. Despite the dominance by the service sector, the county has a fairly diverse retail sales base with 12 sectors providing more than \$250,000 in annual retail sales. This would include those identified in Figure 2 as well as the cash receipts noted in Table 20.

Figure 2: Fall River County Retail Sales Sector



Summary

Fall River County is more ethnically and racially homogeneous than the rest of the state and nation. It is located in a sparsely populated region. It has a somewhat diversified economy with the government economic sectors contributing the largest portion (40%) of personal income. Farms and Ranches are the next largest sector (15%) of the county income although it provides a much larger part of the total County cash receipts. Earnings are a small portion of the economy, although, it does add to the diversity and is part of the county local custom and culture.

The importance of the ranching sector is highlighted more as a social benefit than an economic benefit, although it does provide an important role in economic diversity. It is an important part of the people's heritage in Fall River County. Ranching operations in the area often operate at a loss or close to the margin and their profitability can be significantly affected by a variation of market conditions. If altered significantly enough, access to federal lands for grazing could affect individual ranching profits. If enough individual ranching operations are impacted, there could be affects on economic diversification in Fall River County.

Effects Analysis

Each alternative has been analyzed against the economic and social issues identified. Economic efficiency includes costs and revenues directly attributed to each of the alternatives and summarized for all partners (Pioneer Cooperative Grazing Association, Direct Permittees, Other Partners, and Forest Service). There were derived from the Quick-Silver Financial Program and a base analysis run. The complete results of that run are found in the project file.

Alternative 1 – No Action – No livestock grazing.

Direct and Indirect Effects

The elimination of all grazing within the Southeast Geographic Area would likely result in significant impacts to the 50 ranches/farms whose primary income source is at risk along with some additional part-time seasonal jobs being lost. Based on 2003 permitted grazing use, that amounts to 32,304 Head Months. The permitted use is shared unequally among the 50 ranches/farms whose primary income source is at risk.

Alternative 1 would have the greatest negative social impact to local communities as the elimination of all grazing on all allotments would likely cause ranching operations to go out of business or drastically change their current level of operation. If individuals and families move from the area, communities may lose their leaders, volunteers, participants, or other types of community energy and capacity in terms of residents. This alternative does not assist local communities that are trying to maintain a lifestyle that includes ranching. This alternative could result in changes of use of existing agricultural land. Hence there may be significant social effects, even though the economic effects would be less because of the number of ranches involved.

Cumulative Effects

Other factors affecting viability of livestock operations in Fall River County include market volatility, feed costs, fuel costs and cash flow/interest rates. Although factors have been favorable during the immediate past, future shifts to lower prices received and higher costs could combine with the effects of this alternative to have serious effects on individual livestock permittee viability and on income and jobs in the County.

The total loss of income from individual ranches and these other economic sectors could have measurable impact on the county's economic base. The full cumulative effect is difficult to quantify because other diverse entrepreneurial endeavors could fill in behind the loss in viability of livestock permittees such as a shift toward hay or crop production on private lands. This could serve to mitigate some of the impact to economic generation in the county.

Entrepreneurial adjustments may include a shift from small livestock operations to larger operations or they could mean total shifts in affected ranch and farm properties. Dependent upon the nature of these adjustments in land uses, there could be a major change from current agricultural uses toward non-agricultural uses, which would have a negative impact on the County's custom and culture.

Economic Efficiency

See table 21 for values associated with this alternative.

Table 21: Economic Efficiency – Alternative 1

Present Value of Benefits	N/A
Present Value of Costs	N/A
Present Net Value	N/A
Benefit/Cost Ratio	N/A
Composite Rate of Return	N/A

Environmental Justice

No minority or low-income communities or groups would be disproportionately affected with this alternative.

Alternative 2 – No Change – No change would occur from the current grazing management. .

Direct and Indirect Effects

The continuation of the current situation will not create any risk to operations using Forest Service forage. Outside forces such as, cattle prices, feed costs, interest rates or fuel prices could change the margin of profit for any operation regardless of the permitted grazing on National Grasslands. There will likely be no change from current economic situation due to Forest Service action.

Cumulative Effects

As with Alternative 1, other factors affecting viability of livestock operations in Fall River County include market volatility, feed costs, fuel costs and cash flow/interest rates. This alternative projects no impact from agency actions on the viability of individual livestock operations and no impact to the jobs and income base of Fall River County. As such, cumulative impacts from implementing this alternative are confined to those factors.

Economic Efficiency

See table 22 for values associated with this alternative.

Table 22: Economic Efficiency – Alternative 2

Present Value of Benefits	\$4,586,394.23
Present Value of Costs	-\$484,886.52
Present Net Value	\$4,101,507.71
Benefit/Cost Ratio	9.46
Composite Rate of Return	33.49

Environmental Justice

No minority or low-income communities or groups would be disproportionately affected with this alternative.

Alternative 3 – Proposed Action - Graze with adaptive management grazing practices and associated activities.

Direct and Indirect Effects

Alternative 3 requires management changes and some compromises between users and resources, so the potential benefits of this action alternative could have some effects on individual ranch/farm operations. This alternative projects limited potential for grazing reductions to meet stated Forest Plan goals and objectives.

Adaptive management measures listed in Appendix B have been reviewed for impacts to economic resources. All management tools listed in this table were reviewed for this analysis, but only those considered to impact economic resources were further evaluated. Alternative 3 requires allotments be managed more actively than alternative 2. Due to the potential changes in starting and ending dates for grazing, requirements for grazing rotations, possible alterations in allotments, additional fencing and other general management requirements in alternative 3, it is difficult to predict the impact to individual ranching operations. Some operators will be effective in adapting to more intensive management requirements, while others will find it more difficult. On one allotment, this alternative identifies a potential for reduction. This projection is a minimal part of the analysis area and the total livestock use in the Southeast Geographic Area. As with alternative 2, outside forces play a large role in an operations ability to remain profitable.

The few ranchers who find it difficult to adapt to the new management practices and or profit margins could be economically impacted by this alternative. Affecting a small number of individual ranches/farms, the analysis of this alternative does not indicate that this would be an impact on the County's economic health.

Socially, it is likely that alternative 3 has the potential for greater benefit and value to a larger number of interest groups than alternative 2, although for some groups/individuals, less than those provided by Alternative 1. People who are interested in protecting and improving resources including wildlife and fish habitat, and increasing hunting and fishing opportunities may see their values emphasized more in alternative 3's outcomes.

Cumulative Effects

This alternative projects minimal impact to individual operations and no impact to the economic base of Fall River County. As with Alternative 1 and 2, other factors affecting viability of livestock operations in Fall River County include market volatility, feed costs, fuel costs and cash flow/interest rates. This alternative projects limited impact from agency actions on the viability of individual operations and no impact to the jobs and income base of Fall River County. As such, cumulative impacts from implementing this alternative are minimal and primarily confined to factors external to the decision.

Economic Efficiency

See table 23 for values associated with this alternative.

Table 23: Economic Efficiency – Alternative 3

Present Value of Benefits	\$4,574,781.31
Present Value of Costs	-\$1,024,046.21
Present Net Value	\$3,550,735.09
Benefit/Cost Ratio	4.47
Composite Rate of Return	22.82

Environmental Justice

No minority or low-income communities or groups would be disproportionately affected with this alternative.

Short-term Uses and Long-term Productivity _____

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16).

The proposed action will have short-term uses (livestock grazing) that may have impacts to different resources and uses. Some allotments may result in lower or higher vegetative structure depending on stocking rates, season of use and rotation systems. Recreationist (hunters, rock hounds, sight seers) may find impediments (fences without strategically placed gates), while some sportsman may find areas of high vegetative cover providing a positive hunting experience. As these short-term trade-offs change from year to year, or are rectified, the long-term productivity and sustainability for rangeland resources in the project area will be moving toward and meeting the desired conditions described in the NLRMP. This condition will provide the public with a diverse ecological setting meeting the multiple use demand.

Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources in Alternatives 1 and 3. Several of the rare plant communities and riparian areas may become extinct under continued management practices in Alternative 2.

Cumulative Effects _____

Cumulative effects are addressed in the ‘Effects Analysis’ discussion for each issue by alternative.

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.”

The Forest Service has consulted with the following agencies:

- South Dakota State Historical Preservation Office as required under the National Historic Preservation Act for causing ground disturbing actions in historical places;
- U.S. Fish and Wildlife Service and the National Marine Fisheries Service in accordance with the ESA implementing regulations for projects with threatened or endangered species; and
- State of South Dakota, Department of Environment and Natural Resources, in accordance with the Clean Water Act to assess water quality issues caused by proposed actions.

CHAPTER 4. CONSULTATION AND COORDINATION

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The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal, State, County, and Local Agencies:

Black Hills RC&D	Congressman William Janklow
Fall River County Commissioners	Governors Office of Economic Dev
Senator Tim Johnson	Senator Tom Daschle
SD Archeological Research Center	SD Dept of Game, Fish, & Parks
SD Dept of Environment and Natural Resources	SD Dept of Economic & Tourism Dev.
SD Office of School & Public Lands	USDA Natural Resources Conservation Service
USDA - Rocky Mountain Forest & Range Experiment Center	USDI Army Corps of Engineers
USDI - Badlands National Park	USDI – Bureau of Land Management
USDI – Fish & Wildlife Service	

Tribes:

Cheyenne River Sioux Tribe	Crow Creek Sioux Tribe
Flandreau Santee Sioux Tribe	Lower Brule Sioux Tribe
Oglala Natural Resource Regulatory Agency	Oglala Sioux Tribe
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USDI – Bureau of Indian Affairs	

Organizations:

Association of National Grasslands	Black Hills Badlands & Lakes Assn
Black Hills Forest Resource Assn	Black Hills Four Wheelers
Black Hills Power and Light	Black Hills Multiple Use Coalition
Black Hills Sportsmen	Black Hills Sportsmens Club
Cottonwood Cooperative Grazing District	Tony Dean Outdoors Inc
Farm Bureau Federation	Izaak Walton League
Muzzle Loaders of the Black Hills	National Audubon Society – Missouri River Breaks Chapter
Pioneer Cooperative Grazing District	Prairie Hills Audubon Society
Sierra Club	South Dakota Cattlemen
South Dakota Farmers Union	South Dakota Stock Growers Assn
South Dakota Trail Riders	South Dakota Wildlife Federation
Western Dakota Gem and Mineral Society	Wildlife Management Institute

Others

A total of 60 scoping letters were sent to individuals asking for input concerning this analysis. A copy of the mailing list can be obtained from the project file.

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APPENDICES

APPENDIX A: Allotment Summaries

APPENDIX B: Details of Proposed Actions & Monitoring

APPENDIX C: Landscape Scale Maps

APPENDIX D: Allotment Maps

APPENDIX E: Acronyms