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*Forest Service
Region 2*

Nebraska
National Forest

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**Travel Management
On the Nebraska National Forest,
Buffalo Gap National Grassland,
Oglala National Grassland, and
Samuel R. McKelvie National Forest
(Administered by the Nebraska National Forest)**

**Fall River, Custer, Pennington, and Jackson
Counties, South Dakota
Sioux, Dawes, Cherry, Thomas, and Blaine
Counties, Nebraska**

Draft Environmental Impact Statement

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**Draft Environmental Impact Statement
For
Travel Management
On the
Nebraska National Forest**

USDA Forest Service
Rocky Mountain Region
Nebraska National Forest

Located in **Fall River, Custer, Pennington, and Jackson** Counties, South Dakota and **Sioux, Dawes, Cherry, Thomas, and Blaine** Counties, Nebraska

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Comments must be received by 45 days following publication of the Notice of Availability in the Federal Register. E-mail comments should be addressed to: comments-rocky-mountain-nebraska@fs.fed.us . Put **NNFG Travel Management DEIS Comments** in the subject line. Hard copy comments can be mailed to:

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ABSTRACT: The Nebraska National Forest proposes to designate routes and areas open to motorized travel. Actions would occur on most lands administered by the Nebraska National Forest (except the Fort Pierre National Grassland) including the Buffalo Gap National Grassland, Oglala National Grassland, Samuel R. McKelvie National Forest, and the Pine Ridge and Bessey Units of the Nebraska National Forest.

This action is required to meet the November 2005 provisions of 36 CFR Parts 212, 251, 261, and 295 “Travel Management; Designated Routes and Areas for Motor Vehicle Use” (Travel Management Rule or

TMR). This rule requires designation of those roads, trails, and areas that are open to motor vehicle use. It also states that the use of motor vehicles will be prohibited off of the designated system, with exemptions (36 CFR 212.51(a)).

Public involvement was used in the development of this Draft Environmental Impact Statement (DEIS). Public comments helped refine the scope of the decision to be made, identify major issues, shape alternatives, and direct the analysis of effects. The major issues identified in this analysis related to how actions would affect various resources. Four alternatives were analyzed in detail:

Alternative 1, the “No Action” alternative (continuation of current management)

Alternative 2 is our original action proposed with some modifications after initial public scoping. This is the Agency Preferred Alternative and responds to both concerns for resource protection and public access.

Alternative 3 responds to public comments requesting higher levels of motorized access.

Alternative 4 responds to public concerns for resource protection and public requests for less motorized access.

This DEIS is organized to discuss the purpose of and need for action, the Forest Service Proposed Action developed to address those needs, and the alternatives that were developed to respond to issues raised by the public. The document then discusses existing conditions within the project area and the environmental consequences of implementing each of the alternatives. At this time, the preferred alternative is Alternative 2.

Reviewers should 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 to use information acquired in the preparation of the Final Environmental Impact Statement (FEIS), 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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SUMMARY

Introduction

This Draft Environmental Impact Statement (DEIS) describes the environmental effects of a proposal to make changes required by National direction to the motorized travel system on most of the lands administered by the Nebraska National Forest and Grasslands (NNF). The Fort Pierre National Grassland, which completed a separate analysis for Travel Management in 2008, is not included in this analysis.

Purpose and Need for Action (Chapter 1)

The purpose and need for this action is to improve management of motorized vehicle use on National Forest System (NFS) lands within the Nebraska and Samuel R. McKelvie National Forests, and Buffalo Gap and Oglala National Grasslands, in accordance with November 2005 provisions of 36 CFR Parts 212, 251, 261, and 295 “Travel Management; Designated Routes and Areas for Motor Vehicle Use” (Travel Management Rule or TMR). This rule requires designation of those roads, trails, and areas that are open to motor vehicle use. It also states that the use of motor vehicles will be prohibited off of the designated system, with exemptions (36 CFR 212.51(a)).

Proposed Action (Chapter 1)

The Nebraska National Forest proposes to designate roads, trails, and areas open to motor vehicle use to comply with the Travel Management Rule. Designations would be made by vehicle class and time of year. Uses of motor vehicles off the designated system or outside designated areas, or not consistent with designations (i.e. riding a non-highway legal vehicle on a route labeled Highway Legal Vehicles only) would be prohibited.

Scoping (Chapter 1)

From 2006 to 2008, the Nebraska National Forest has distributed travel management comment sheets to the public both in the office and through contacts in the field. The same comment sheets were mailed out with any information or map requests that the office received during the same time period. The comment sheets briefly explained the national rule and requested that people submit their names to the Nebraska National Forest’s Supervisor’s Office to be informed of upcoming information regarding the travel management process. Eventually, over 300 public and other agency comments regarding the Proposed Action were received and included in the alternative development and analysis process.

Issues (Chapter 1)

Issues Driving Alternatives

1. More Dispersed Motorized Access Needed

Motorized access in the Proposed Action is too limited in both overall miles and dispersal across the Forest. This includes both the type of motorized use (HLV and OHV), and the location (roads, trails, and off-road use). More motorized access is needed to:

- meet the public demand for motorized recreation and provide a more varied recreation experience,
 - access hunting, agate collecting, and camping areas and allow for game retrieval
2. Reduce Access to Lessen Resource Effects and User Conflicts
- The amount of motorized use in the Proposed Action would damage sensitive areas by destroying vegetation, causing erosion, and may have a negative impact on Threatened and Endangered (T&E) and Regional Forester Sensitive Species (RFSS) wildlife and plants. Several proposed roads or motorized trails go through areas of unique botanical composition, others traverse areas known to be heavily used by elk and bighorn sheep, and others cross sensitive riparian areas, causing degradation of the streambed and harming riparian vegetation. The Sandhills are especially slow to re-vegetate and are easily eroded, and can not support the proposed network of off-road motorized vehicle trails. Proposed motorized use areas at Railroad Buttes and on the Bessey Unit cause soil damage and erosion.
- Motorized use in the Proposed Action would conflict with non-motorized recreation and negatively affect adjacent lands. Motorized use produces noise, safety concerns, and scars on the landscape which reduce the quality of non-motorized experiences.

Issues Used For Analysis

The issues used for analysis are those that can be defined and analyzed to provide a comparison of alternatives. These issues are section headings in Chapter 3, Affected Environment, and Chapter 4, Environmental Consequences.

1. Motorized Recreation
Many parts of the Nebraska National Forest are used for motorized recreation, both on roads and trails and off-road. The Proposed Action limitations on motorized use would decrease motorized recreation opportunities.
2. Motorized Hunting Access
Reducing routes and areas open to motorized travel would limit motorized access to hunting areas and make game retrieval more difficult.
3. Agate Collecting
Reducing routes and areas open to motorized travel would limit motorized access to areas containing agates.
4. Social and Economic Impact
Reducing motorized access may result in fewer motorized recreationists which can negatively impact the local economy.
5. Sound Level
Motor vehicles create sound, particularly areas that receive heavy OHV use and noted around campsites and adjacent to private land.
6. Soils
Roads, motorized trails, and off-road motorized use cause soil damage and increases in soil erosion.

7. Water Quality

Motorized use that causes increases in erosion and stream bank damage could negatively affect water quality.

8. Wildlife and Plant Species of Concern

Motorized use can have disruptive and negative impacts to certain wildlife and plant species, including Threatened, Endangered, Proposed, and Sensitive (TEPS) species and Management Indicator Species (MIS).

9. Forest and Rangeland Management

Motorized access can conflict with other National Forest and Grassland uses such as forest management and permitted livestock grazing management. Off-road and OHV use can harm structures and resources such as young trees in plantations. Heavy OHV use in grazing allotments disturbs livestock and often results in damaged roads and open gates.

10. Noxious Weeds

Roads, motorized trails, and off-road motor vehicle use area increase the potential for spreading noxious weeds.

11. Heritage Resources

The Proposed Action may threaten the preservation of archeological sites, cultural artifacts, and historic sites. The potential for negative effects on sites closed to motorized use would be reduced but designating routes and reducing area open to off-road use would concentrate use and increase potential effects to those routes and areas.

12. Paleontological Resources

Motor vehicle access can allow damage to surfaced fossils and paleontological sites by motorists driving over the resource, and increase access to the resource. The potential for negative effects on sites closed to motorized use would be reduced but designating routes and reducing area open to off-road use would concentrate use and increase potential effects to those routes and areas.

13. Costs of Maintenance

Roads and motorized trails incur costs for construction and maintenance with more roads and trails, and more roads open to OHV use, generally incurring more costs than fewer roads and trails. Even with minimal maintenance roads and trails and volunteer help, the NNF would need to be able to afford the road and trail system that is selected.

14. Safety

Concentrating use on a reduced set of roads, trails, and areas, and allowing mixed use on certain roads, incurs risks to motor vehicle users, especially OHVs.

Alternatives Considered in Detail (Chapter 2)

Four alternatives are considered in detail. These are:

- Alternative 1, No Action, continuation of current management,
- Alternative 2, the Proposed Action,

- Alternative 3, Additional Motorized Access, developed in response to concerns that the Proposed Action does not allow enough motorized access for recreational needs, including motorized recreation, hunting, agate collecting, and dispersed camping.
- Alternative 4, Reduced Motorized Access, developed in response to concerns that the Proposed Action does not adequately protect wildlife, soil, water, and other resources from motor vehicle use, and that negative impacts on non-motorized recreation and adjacent lands would be too high.

Environmental Effects

This section contains a general summary of effects of implementing Alternative 2, 3 or 4. Specific effects are described under each issue in Chapter 4.

Comparison of Alternatives by Issue

Issue		Alternative 1 current*	Alternative 2 proposed*	Alternative 3 additional*	Alternative 4 reduced*
Motorized Recreation - miles of open road, miles of trail, acres open to off-road use		590 miles** 8 miles 833,260 acres	376 miles 427 miles ~1,818 acres	646 miles 687 miles 7,528 acres	294 miles 295 miles ~1,813 acres
Motorized Hunting Access – miles of road or trail open for game retrieval		590 miles**	672 miles	1206 miles	546 miles
Agate Collecting – secondary access routes to agate beds		14 miles**	29 miles	53 miles	18 miles
Social and Economic Impact - Labor income		\$46,593	\$37,422	\$39,751	\$28,322
Sound Level – routes in sound sensitive areas		34 miles**	49 miles	63 miles	23 miles
Soils – routes by impact rating	High	8 miles**	9 miles	9 miles	5 miles
	Moderate	322 miles**	431 miles	803 miles	273 miles
Water Quality - routes by impact rating	High	39 miles**	39 miles	45 miles	36 miles
	Moderate	77 miles**	164 miles	213 miles	74 miles
Wildlife and Plant Species of Concern – routes in habitat for selected species					
Black-footed Ferret		62 miles**	63 miles	86 miles	49 miles
American Burying Beetle		222 miles**	250 miles	417 miles	187 miles
Blowout Penstemon		1.3 miles**	1.1 miles	1.5 miles	1.1 miles
Black-tailed Prairie Dog		50 miles**	58 miles	80 miles	45 miles
Swift Fox		0 miles**	8 miles	15 miles	8 miles
Rocky Mountain Bighorn Sheep		5 miles**	9 miles	15 miles	3 miles
Greater Prairie Chicken		3.9 miles**	3.3 miles	8.6 miles	3.3 miles
Greater Sage Grouse		15 miles**	28 miles	68 miles	18 miles
Barr's Milkvetch		10 miles**	15 miles	24 miles	15 miles

Plains Sharp-tailed Grouse	439 miles**	543 miles	970 miles	421 miles	
Pygmy Nuthatch	6 miles**	24 miles	27 miles	4 miles	
Elk	5 miles**	15 miles	15 miles	3 miles	
Forest Management – acres off-road use in plantations	328 acres	74 acres	74 acres	70 acres	
Rangeland Management – routes in high OHV use allotments	64 miles**	102 miles	141 miles	40 miles	
Noxious Weeds - miles of open road, miles of trail, acres open to off-road use	590 miles** 8 miles 833,260 acres	376 miles 427 miles ~1,818 acres	646 miles 687 miles 7,528 acres	294 miles 295 miles ~1,813 acres	
Heritage - routes with potential impacts	High	0 mi**	14 mi	34 mi	6 mi
	Moderate	0 mi**	183 mi	640 mi	77 mi
Paleontological - routes proximal to fossil sites	47 mi **	80 mi	93 mi	59 mi	
Costs of Construction and Maintenance – trails with new construction, trails 50” or less or single track, mixed use roads and trails open for all vehicles	0 miles new 8 miles trail 222 miles mixed**	40 miles new 97 miles trail 528 miles mixed	46 miles new 103 miles trail 1079 miles mixed	1 miles new 20 miles trail 286 miles mixed	
Safety – mixed use ML 2 roads, mixed use ML 3, 4, or 5 roads, trails open to all vehicles	222 miles ML 2 24 miles ML 3, 4, 5 0 miles trail	199 miles ML 2 11 miles ML 3, 4, 5 329 miles trail	496 miles ML 2 14 miles ML 3, 4, 5 584 miles trail	11 miles ML 2 10 miles ML 3, 4, 5 275 miles trail	

As shown in the above table, Alternatives 2-4 would decrease opportunities for those who prefer motorized use compared to the current condition. Of the action alternatives, Alternative 3 retains the highest amount of designated motorized use, Alternative 4 has the lowest, and Alternative 2 is in between Alternatives 3 and 4.

Labor income related to motorized use may decrease if use decreases as a result of fewer motorized routes and areas than the existing condition. Alternative 3 may produce the greatest labor income from motorized use among the action alternatives.

Effects on other resources, including sound levels, soil and water quality, wildlife, plantation and rangeland management, spread of noxious weeds, and potential impacts to heritage and paleontological resources would decrease overall with Alternatives 2-4 compared to the current condition. Of the action alternatives, Alternative 3 would have the highest effect on other resources while Alternative 4 would have the least effects. Effects from Alternative 2 would be between the other action alternatives.

Of the action alternatives, Alternative 3 would be the most expensive to implement, Alternative 4 the least, and Alternative 2 in between. Alternative 3 would also pose the greatest safety risk, due to the highest mileage of highway legal vehicles and off-highway vehicles on the routes, Alternative 4 the least, and Alternative 2 in between.

Chapter

1

**Purpose of
and Need for
the Action**

Introduction

Project Area

Purpose and Need for Action

Proposed Action

Decision Framework

National Direction for Travel Management

Current Condition

Desired Condition

Public Involvement

Scoping Issues

CHAPTER 1 PURPOSE AND NEED FOR ACTION

Introduction

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 document discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and alternatives.

Specifically, this DEIS describes the environmental effects of a proposal to make changes required by National direction to the motorized travel system on most of the lands administered by the Nebraska National Forest and Grasslands (NNF). The Fort Pierre National Grassland, which completed a separate analysis for Travel Management in 2008, is not included in this change. The Environmental Assessment for Fort Pierre Travel Management is available at http://www.fs.fed.us/r2/nebraska/projects/travel_management/index.shtml

This DEIS is tiered to the Northern Great Plains Management Plans Revision Final EIS (an analysis document that includes the Nebraska National Forest), the Land and Resource Management Plan for the Nebraska National Forest and Associated Units (Forest Plan), and the Forest Plan Record of Decision (ROD). These are incorporated by reference. Tiering is used to reduce paper work as stated in 40 CFR 1500.4 and 40 CFR 1502.20. The Forest Plan, Forest Plan ROD and the Final EIS are on file at the Nebraska National Forest Supervisor's Office, 125 N. Main St., Chadron, NE 69337. They are also available on the Internet at: <http://www.fs.fed.us/ngp/docs.html>.

An EIS is not a decision document. It is a document disclosing the environmental effects of implementing the Proposed Action and alternatives to that action. The DEIS is available for a 45- day public review and comment period beginning with publication in the Federal Register. The purpose of the comment period is to provide an opportunity for the public to provide meaningful comments on the DEIS prior to a decision being made. Following public review, any substantial or meaningful changes will be made to the DEIS to produce a final EIS (FEIS). The decision will be documented in a Record of Decision (ROD) signed by the Nebraska National Forests and Grasslands Supervisor. The ROD will specify which alternative was selected for implementation and the rationale for the decision.

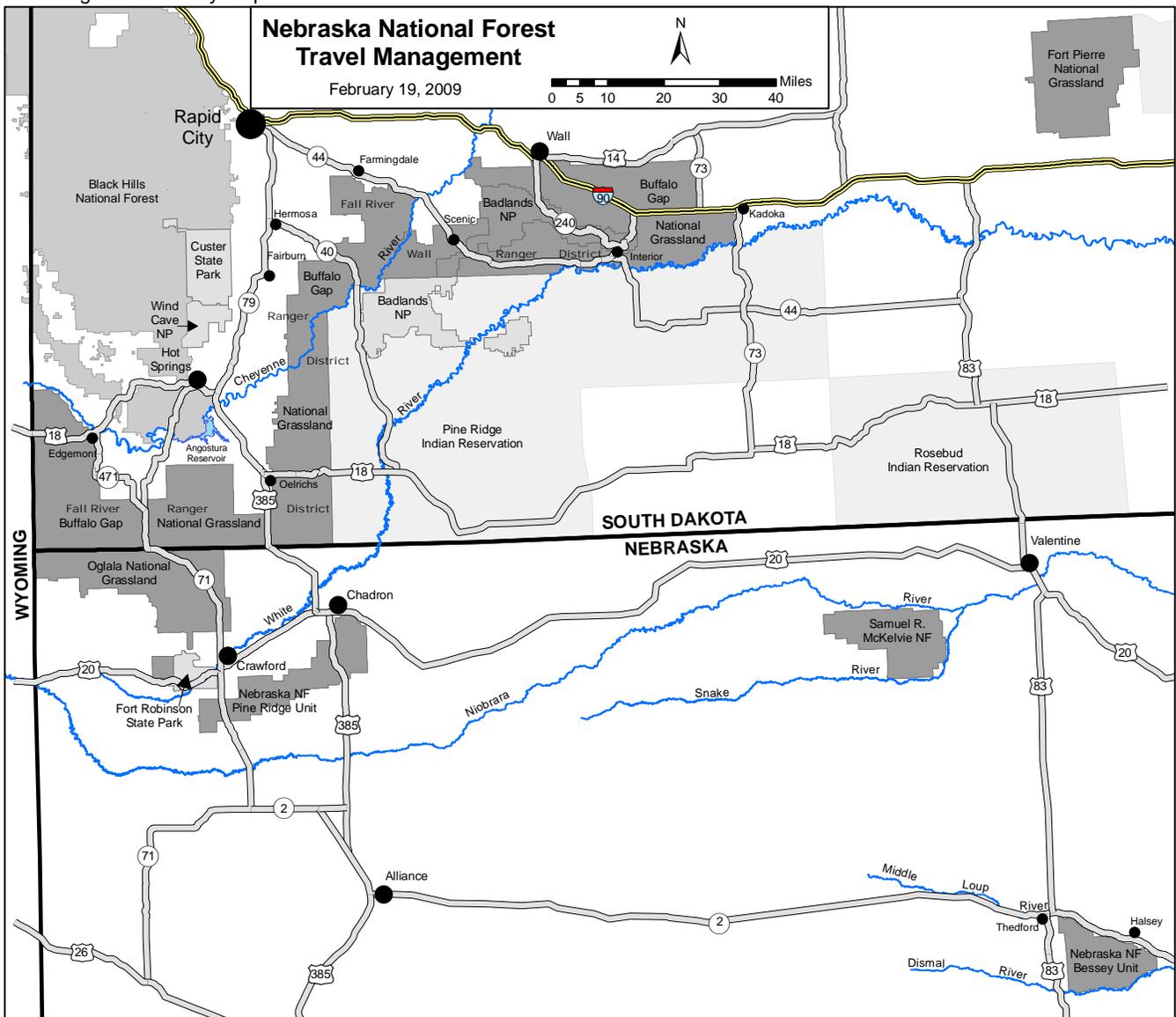
Project Area

The project area includes the Nebraska and Samuel R. McKelvie National Forests and the Buffalo Gap and Oglala National Grasslands (see Figure 1). The project area is administered by four districts of the Nebraska National Forest: 1) Fall River Ranger District ([FRRD or Fall River] includes the western half of the Buffalo Gap National Grassland [BGNG]), 2) Wall Ranger District ([WRD or Wall] includes the eastern half of the Buffalo Gap National Grassland), 3) Pine Ridge Ranger District ([PRRD] includes the Pine Ridge Unit of the Nebraska National Forest [PRU or Pine Ridge] and the Oglala National Grassland [ONG or Oglala]), and 4) Bessey Ranger District ([BRD] includes the Bessey Unit of the Nebraska National Forest

[BU] and the Samuel R. McKelvie National Forest [SMNF]). Hereafter this document will refer to the entire project area as the Nebraska National Forest (NNF) or will refer to specific Ranger Districts or other units described above.

The Nebraska National Forest is known for its dispersed recreation opportunities. Many recreation activities involve motorized vehicles, such as All Terrain Vehicle (ATV) and motorcycle riding (primarily in the Railroad Buttes area of the FRRD, in the Bessey Unit, or in the Pine Ridge Unit), using motorized vehicles to access agate hunting areas (on the Buffalo Gap or Oglala National Grasslands), or for game retrieval. Non-motorized activities such as bird watching, horseback riding, and mountain biking are also becoming more popular across the Forests and Grasslands.

Figure 1 - Vicinity Map



Purpose and Need for Action

The purpose and need for this action is to improve management of motorized vehicle use on National Forest System (NFS) lands within the Nebraska and Samuel R. McKelvie National Forests, and Buffalo Gap and Oglala National Grasslands, in accordance with November 2005 provisions of 36 CFR Parts 212, 251, 261, and 295 “Travel Management; Designated Routes and Areas for Motor Vehicle Use” (Travel Management Rule or TMR). This rule requires designation of those roads, trails, and areas that are open to motor vehicle use. It also states that the use of motor vehicles will be prohibited off of the designated system, with exemptions (36 CFR 212.51(a)).

Specifically, this project intends to:

- Implement the National Travel Management Rule by designating roads, trails and areas open for motorized travel and restricting cross-country travel.
- Amend the Forest Plan, which specifically allows off-road motorized use to continue in compliance with Forest Supervisor special orders, to make the Forest Plan consistent with the TMR.
- Reduce adverse resource impacts caused by user-created routes or excessive all-terrain vehicle use on existing roads and trails.
- Provide a sustainable system of roads, trails, and areas for long-term recreational and administrative motor vehicle use.
- Reduce potential for conflicts between motorized and non-motorized recreational uses.
- Provide for appropriate seasonal restrictions of certain designated routes to protect resources while providing access to public lands.
- Ensure safe efficient travel for administration, utilization, and protection of National Forest System lands.
- Comply with Nebraska National Forest Land and Resource Management Plan (Forest Plan), Goal 4a, Objectives 1, 2, and 3, which discuss identifying the minimum transportation system and identifying and designating motorized and non-motorized opportunities while minimizing adverse environmental effects.

Proposed Action

The Nebraska National Forest proposes to designate roads, trails, and areas open to motor vehicle use to comply with the Travel Management Rule. Designations would be made by vehicle class and time of year. Uses of motor vehicles off the designated system or outside designated areas, or not consistent with designations (i.e. riding a non-highway legal vehicle on a route labeled Highway Legal Vehicles only) would be prohibited.

Details concerning the Proposed Action are described and listed in Chapter 2, Alternative 2: Proposed Action.

Decision Framework

Given the purpose and need for action, the Responsible Official will review the effects of the Proposed Action and alternatives before making the following decisions:

- Which routes and areas will make up the forest transportation system for motorized travel on the Nebraska National Forest.
- Which motorized uses will be allowed on specific roads or trails (including but not limited to OHVs).
- What special seasonal or timing restrictions may be applied to specific routes.
- What allowance will be made for travel off of the designated system for parking, game retrieval, or dispersed camping.
- What mitigation and/or monitoring measures will be implemented as part of the selected action/alternative.

National Direction for Travel Management

Travel Management Rule

Environmental and social impacts associated with unmanaged motorized vehicle use are a nationwide problem. Consequently, in January of 2004, the former Chief of the Forest Service recognized unmanaged recreation – especially impacts from Off-Road Vehicles (ORVs, also called Off Highway Vehicles or OHVs, of which ATVs and motorcycles are two types) – as one of the four major threats to the nation’s forests and grasslands. At that time, he expressed concern about the number of unplanned roads and trails, soil erosion, and watershed and habitat impacts from OHV use. He also proposed amending regulations regarding travel management on National Forest System lands to clarify policy relating to OHVs. On November 9, 2005, “36 CFR Parts 212, 251, 261, and 295 Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule” went into effect. The Travel Management Rule (TMR) requires designation of roads, trails, and areas that are open to motorized vehicle use. It also restricts use of motorized vehicles off of the designated routes and areas. While not establishing a date by which such designations are to be completed, the TMR emphasizes the importance of completing route and area designations as quickly as possible (Travel Management Rule, 2005, a copy of which is located in Appendix A of this document).

These regulations implement Executive Order 11644 (February 9, 1972), “Use of Off-Road Vehicles on the Public Lands,” as amended by Executive Order 11989 (May 24, 1977). These Executive Orders direct Federal agencies to ensure that the use of off-road vehicles on public lands will be controlled and directed to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. Direction for off-road travel management is found in Forest Service Manual 2350.

The final rule states that motor vehicle use on National Forest System roads, on National Forest System trails, and in designated open areas on National Forest System lands shall be designated by vehicle class and, if appropriate, by time of year by the responsible official, provided that the following vehicles and uses are exempted from these designations:

- (a) Aircraft;
- (b) Watercraft;
- (c) Over-snow vehicles;
- (d) Limited administrative use by the Forest Service;
- (e) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;
- (f) Authorized use of any combat or combat support vehicle for national defense purposes;
- (g) Law enforcement response to violations of law, including pursuit;
- (h) Motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations; and
- (i) Use of a road or trail that is authorized by a legally documented right-of-way held by a State, county or other local public road authority.

The decision resulting from this EIS will be used to generate a Motor Vehicle Use Map (MVUM) that provides the designation information. The modes of travel categories that can be designated are listed below. The designation “Roads Open to All Vehicles (Motorized Mixed Use)” includes smaller off highway vehicles that may or may not be licensed for highway use.

Modes of Travel

Roads Open to All Vehicles (Motorized Mixed Use)
Roads Open to All Vehicles – Seasonally (Motorized Mixed Use)
Roads Open to Highway Legal Vehicle Only
Roads Open to Highway Legal Vehicles Only – Seasonally
Trails Open to All Vehicles
Trails Open to All Vehicles - Seasonally
Trails Open to Vehicles Less than or equal to 50 Inches
Trails Open to Vehicles Less than or equal to 50 Inches – Seasonally
Trails Open to Motorcycles Only – Single Track
Special Designations (such as rock crawling vehicles)

Other Management Requirements

Additional direction for travel management and the development of Forest transportation systems is found in the National Forest Roads and Trails Act of October 13, 1964 as amended (16 U.S.C. 532-538, P.L. 88-657), the Highway Safety Act of 1966 (23 U.S.C. 402, P.L. 89-564), the National Trails System Act of October 2, 1968 (16 U.S.C. 1241-1249, P.L. 90-543), and the Surface Transportation Assistance Act of 1978 as amended (23 U.S.C. 101a, 201-205, P.L. 95-5999 and 97-424). The Surface Transportation Assistance Act corresponds to policy and direction in Forest Service Manuals 2300 and 7700.

Current Condition

There are over 1.8 million acres within the administrative boundaries of the NNF, over 900,000 acres of which is NFS land (see Table 1-1). The NNF manages over 600 miles of National Forest System Roads (NFSRs) and one designated motorized trail, the Dismal River Trail on the Bessey Unit. The NNF also contains roughly 2,800 miles of unauthorized roads and motorized

trails. ATV and motorcycle trails occur mostly in the Bessey, Pine Ridge, and Railroad Buttes areas while other unauthorized roads and trails occur on all units. The NFSRs are often signed with Carsonite or wooden posts identifying the road number that corresponds with current visitor maps, but in many cases there is little to distinguish NFSRs from other routes.

Table 1-1 Unit Acres and Roads

Administrative Units		Total Administrative Acres*	National Forest System Land (acres)	Total System Roads (miles) ***	Un-authorized Roads (miles) ***	Other Public Roads (miles) #
Fall River Ranger District	Buffalo Gap National Grassland	821,700	322,400	199	1,140	397
Wall Ranger District		488,540	266,360	101	750	359
Pine Ridge Ranger District	Oglala National Grassland	215,750	94,480	67	235	139
	Pine Ridge Unit	140,100	50,380	60	110	109
Bessey Ranger District	Samuel R. McKelvie NF	116,610	116,040	71	370	22
	Bessey Unit	90,240**	90,460**	123	230	3
Total		1,872,940	940,120	621	2,835	1,029

* Reported acreages are of lands within administrative boundaries and are approximate based on data sets in a Geographic Information System (GIS).

** The Bessey Unit contains more acreage of NFS land than administrative acres because of recent land acquisition outside of the administrative boundary.

*** Total System Roads include all NFSRs, even those closed to the public, and the one designated motorized trail, the 8.5 mile Dismal River Trail on the Bessey Unit. Unauthorized Roads include all mapped “two-track” roads and motorized trails on National Forest lands. It does not include roads or trails on private lands within the unit boundaries. The reported mileage is approximate since not all mapped “two-track” roads should be considered roads and some features that may be considered a road or motorized trail have not been mapped.

Other Public Roads includes all state or federal highways, county roads, and un-maintained but not vacated “section line” roads within the administrative boundaries of the respective units.

Existing Off-Road Motor Vehicle Use Restrictions

The majority of the NNF is open to off-road vehicle travel although some areas are not open to motorized travel. Use of unauthorized routes over most of the area is not prohibited. The NNF Forest Plan and Forest Plan Record of Decision (ROD) specifically prohibit motorized use in several management areas (Forest Plan ROD, p. 43). These are:

- MA 1.1 Soldier Creek Wilderness
- MA 1.2 Recommended Wilderness
- MA 1.31 Backcountry Recreation Non-Motorized
- MA 1.31a Pine Ridge National Recreation Area
- MA 2.2 Research Natural Areas; and specific MA 2.1 Special Interest Areas (SIAs) listed in the Forest Plan, Chapter 3, MA 2.1

An exemption is listed on page 43 of the Forest Plan ROD for the Steer Creek Research Natural Area (RNA) on the Samuel R. McKelvie National Forest for NFSRs 601 and 602. Motorized use is allowed within the Steer Creek RNA but only on these roads.

For the remaining management areas the Forest Plan allows off-road motorized use to continue. The Forest Plan ROD in no way designates or accepts user-created routes on a permanent basis; the decision recognizes the need for site-specific analysis with public involvement for the purpose of designating permanent transportation facilities.

Forest Supervisor Forest Orders have also been used to restrict travel. Forest Orders may be long-term or short-term. Short-term Forest Orders restricting travel are for specific needs, e.g. an Order restricting travel because of fire hazard. These typically expire after a few months and have little impact on long-term travel management. But several long-term Forest Orders have been issued that have an affect on the current travel management situation. These include:

- Order No. NNF-77 (specifies seasonal closure of central part of Bessey unit)
- Order No. 93-04 (specifies Pine Ridge trail as non-motorized only)
- Order No. 96-1 (closes certain areas in the vicinity of Railroad Buttes, Buffalo Gap National Grassland, to motor vehicle use)
- Order No. BRD-01-99 (prohibits use of ATVs on certain NFSRs on the Bessey Unit and in the vicinity of Scott Lookout)
- Order No. FRRD-2000-01 (closes an area south of the abandoned ordnance plant on the Buffalo Gap National Grassland to any unauthorized travel)
- Order No. 2007-0207-NNF-01 (specifies closure of those areas with motorized use prohibited in the Forest Plan ROD, specifies roads that will remain open for public use within those areas, and specifies a 33 foot from road centerline corridors to allow for parking.)

Overall, the majority of the NNF does not have restrictions concerning off-road motor vehicle travel. A summary by unit is in Table 1-2. See Appendix B – Description of Alternatives by Administrative Unit for more details on current condition restrictions by administrative unit.

Table 1-2 Acres Open to Off-Road Motor Vehicle Traffic

Administrative Units		National Forest System Land (acres)	Acres with Forest Plan Motor Vehicle Limitations	Acres Restricted by Forest Order	Acres Open to Off-Road Motor Vehicle Traffic
Fall River Ranger District	Buffalo Gap National Grassland	322,400	16,370	1640	304,390
Wall Ranger District		266,360	38,740	0	227,620
Pine Ridge Ranger District	Oglala National Grassland	94,480	2,050	0	92,790
	Pine Ridge Unit	50,380	16,220	0	34,160
Bessey Ranger District	Samuel R. McKelvie NF	116,040	2,620	0	113,420
	Bessey Unit	90,460	500	29,080*	60,880*
Total		940,120	76,500	30,720	833,260

* The Bessey unit includes 150 acres of year-around closure at Scott Lookout and 28,930 acres of seasonal closure in effect from September 1 to November 30 each year. The seasonally closed area is open to off-road motor vehicle traffic for the remainder of each year.

Public Roads under Other Jurisdictions

The primary access to most of the NNF is through state and federal highways and county roads, collectively called “other public roads”. This is especially true on the Buffalo Gap and Oglala National Grasslands and Pine Ridge Unit where over 1,000 miles of “other public roads” are found within the administrative boundaries. Land ownership within these units is a mix of federal and other ownership, mostly private lands. The Samuel R. McKelvie National Forest and Bessey units are more contiguous so they have fewer miles of “other public roads” (see Table 1-1).

Most “other public roads” are maintained all-weather surface roads, pavement or gravel, but some public roads are “section line” roads. In South Dakota, counties frequently claim public access rights along section lines unless section line access has been officially vacated. This results in public roads that are non-maintained two-track roads that run along section lines and sometimes provide important access to public land and adjacent private land.

National Forest System Roads (NFSRs)

The roads that are maintained and used for Forest and Grassland management and other uses are referred to as National Forest System Roads (NFSRs). These roads are maintained to various standards depending on their function, level of use, and management.

There are five Maintenance Levels (MLs) used by the Forest Service which define the level of service provided by and maintenance required for a specific road. These MLs are described in FSH 7709.58 – Transportation System Maintenance Handbook (1992) and are briefly defined as follows:

- ML 1. Basic Custodial Care (closed to motor vehicle traffic)
- ML 2. High Clearance Vehicles
- ML 3. Suitable for Passenger Cars
- ML 4. Suitable for Passenger Cars, Moderate Degree of User Comfort
- ML 5. Suitable for Passenger Cars, High Degree of User Comfort – usually paved

The ML 1 roads have been closed to vehicular traffic for periods of over one year. Resource protection measures have been performed, if necessary, usually resulting in grassed over roadbed. These roads are ‘put in storage’ until the time they are needed again for resource management. The only ML 1 roads in the project area are within the Backcountry Non-motorized area adjacent to the Soldier Creek Wilderness on the Pine Ridge Unit.

Maintenance Level 2 roads are primarily one lane, native surface roads suitable for high clearance vehicles. They are usually low speed with minimal traffic volumes. They include the majority of roads across the project area and provide the only roaded access into many areas. The majority of these are user-created, typically “two-track” roads with no surface or drainage

improvements. Permittees or other users may drive a vehicle to a particular location that is not accessed by previously designated NFSR, such as a stock pond or windmill. By the time several vehicles use the same path, a “user-created” route becomes visible. At some point certain user-created routes have been considered necessary for forest or rangeland management, given a road number, and added to the Forest transportation system.

Maintenance Level 3, 4, and 5 roads are typically designed rather than user-created, mostly crowned, bordered with vegetated ditches, and with cross drains that are generally appropriately spaced for erosion control purposes. Examples of these roads include the Circle Road and other primary access roads in the Bessey Unit along with many of the campground loops and other recreation or facility access roads across all units. Maintenance Level 3 roads are typically single-lane with aggregate surfacing. Maintenance Level 4 roads provide a moderate level of user comfort, can be single- or double-lane, and have mostly aggregate (gravel) surfacing. Maintenance Level 5 roads provide the highest standard of maintenance and are generally double-lane and paved.

Current mileage of NFSRs in the project area by maintenance level is displayed in Chapter 3 in Table 3-10.

Some NFSRs and other legal routes through the Forest are designated as “Closed to Public”. These are open for a specific or permitted use but not open to the general public. These may be administrative roads, such as around the Bessey nursery (Bessey Unit) or Pine Ridge Job Corp Civilian Conservation Center (Pine Ridge Unit), or permitted or easement roads that allow access to private land. These roads are considered part of the overall road mileage but not considered as open roads in this analysis.

There are also approximately 2,835 miles of unauthorized routes in the project area not maintained by the Forest Service. They are referred to in the Travel Management Rule as unauthorized roads / routes because they are not part of the forest transportation system and are not officially recognized by the Forest Service.

State ATV Laws and Licensing

The Buffalo Gap National Grassland lies entirely within the State of South Dakota while the other units are within Nebraska. State laws differ between Nebraska and South Dakota regarding the legality of ATVs on public roads.

South Dakota requires licensing of ATVs for riding on public roads. A rider with a valid driver’s license can ride a licensed and registered ATV on public roads in South Dakota, subject to equipment and safety laws. ATVs that are not licensed, and riders without driver’s licenses, are prohibited from riding on public roads. The State of South Dakota considers Forest Service roads “public roads” subject to state law. The Forest Service has not enforced this portion of the state law and the Buffalo Gap National Grassland and has not established rules prohibiting non-highway legal OHVs on Forest roads.

Nebraska does not have licensing requirements for ATV riders and riding ATVs on public roads in Nebraska is not allowed. The Forest Service has not enforced this portion of the state law and has not prohibited ATVs and other OHVs to ride on its roads in Nebraska, except for those roads on the Bessey Unit specified in Order No. BRD-01-99.

Desired Condition

The NNF strives to provide a transportation system that offers a variety of experiences for both motorized and non-motorized users. The system is designed to protect physical, biological, and social values of the NNF while meeting the standards, guidelines and management objectives of the TMR and Forest Plan. A wide range of users have been encouraged to actively participate in system planning, design, and implementation in an attempt to address and reduce potential conflicts.

The road and motorized trail system and motorized use areas would be clearly marked so that allowed uses are easy to identify. Designated roads, trails and areas would be adequately maintained to provide for designed uses. Policies and procedures are in place to protect natural resources, promote safety of all users, and minimize conflicts among various uses of the NNF.

Public Involvement

From 2006 to 2008, the Nebraska National Forest has distributed travel management comment sheets to the public both in the office and through contacts in the field. The same comment sheets were mailed out with any information or map requests that the office received during the same time period. The comment sheets briefly explained the national rule and requested that people submit their names to the Nebraska National Forest's Supervisor's Office to be informed of upcoming information regarding the travel management process.

The specific proposal for the NNF was first listed in the Schedule of Proposed Actions (SOPA) for the Nebraska National Forests in January, 2008. A notice of intent to prepare an environmental impact statement was published in the Federal Register on January 11, 2008.

On December 21, 2007 a formal scoping letter describing the Proposed Action, purpose and need for the action, nature of decisions to be made, and comment opportunities was mailed to over 1400 interested and potentially affected individuals, groups, organizations, tribes, and agencies. In addition to describing the proposal and requesting comments on it, the scoping letter informed the public of five Open House meetings on January 15, 16, and 17, 2008 hosted at four locations in Nebraska and in Rapid City, South Dakota. A Forest Service news release was published in area newspapers to notify the general public of the proposal and of the Open House meetings. Information about the meetings was also distributed to the public through several other methods, including newspapers, radio, and television.

The purposes of the Open Houses were: 1) to provide information about the analysis process; 2) to discuss options of the Proposed Action; 3) to display maps showing existing roads as delineated by digital ortho-quads (aerial photographs); and 4) to solicit issues and concerns from the public. Approximately 235 people attended the Open House meetings.

During the summer of 2008, the Forest Service made an additional request for comments based on public response requesting additional time. This included local press releases, a public meeting in Chadron, and interviews with radio and television stations and newspapers.

Scoping was a continuous process in which comments were received throughout the alternative development phase of the project. Eventually, over 300 public and other agency comments regarding the Proposed Action were received.

The Forest Service used comments received from the public, other federal and state agencies, permittees, and local groups to develop a list of issues to be addressed during the analysis process.

Scoping Issues

The Forest Service separated the issues into three groups: issues driving alternatives, issues used for analysis, and other issues identified as non-key. Non-key issues are those: 1) outside the scope of the analysis; 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 for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not key or which have been covered by prior environmental review (Sec. 1506.3)..."

Consistent with these regulations, the interdisciplinary (ID) team assigned to this project reviewed the public comments received in response to this proposal and identified the issues raised in compliance with FSH 1909.15, Section 12.32. All of the issues associated with this project are categorized and listed below:

Issues Driving Alternatives

1. More Dispersed Motorized Access Needed

Motorized access in the Proposed Action is too limited in both overall miles and dispersal across the Forest. This includes both the type of motorized use (HLV and OHV), and the location (roads, trails, and off-road use). More motorized access is needed to:

- meet the public demand for motorized recreation and provide a more varied recreation experience,
- access hunting, agate collecting, and camping areas and allow for game retrieval

2. Reduce Access to Lessen Resource Effects and User Conflicts

The amount of motorized use in the Proposed Action would damage sensitive areas by destroying vegetation, causing erosion, and may have a negative impact on Threatened and Endangered (T&E) and Regional Forester Sensitive Species (RFSS) wildlife and plants. Several proposed roads or motorized trails go through areas of unique botanical composition, others traverse areas known to be heavily used by elk and bighorn sheep, and others cross sensitive riparian areas, causing degradation of the streambed and harming riparian vegetation. The Sandhills are especially slow to re-vegetate and are easily eroded, and can not support the proposed network of off-road motorized vehicle trails. Proposed motorized use areas at Railroad Buttes and on the Bessey Unit cause soil damage and erosion.

Motorized use in the Proposed Action would conflict with non-motorized recreation and negatively affect adjacent lands. Motorized use produces noise, safety concerns, and scars on the landscape which reduce the quality of non-motorized experiences.

Issues Used For Analysis

The issues used for analysis are those that can be defined and analyzed to provide a comparison of alternatives. These issues are section headings in Chapter 3, Affected Environment, and Chapter 4, Environmental Consequences.

1. Motorized Recreation

Many parts of the Nebraska National Forest are used for motorized recreation, both on roads and trails and off-road. The Proposed Action limitations on motorized use would decrease motorized recreation opportunities.

Units of measure: 1) Miles of road open to motorized vehicles, 2) miles of motorized trails, and 3) acres open to off-road motor vehicle use.

2. Motorized Hunting Access

Reducing routes and areas open to motorized travel would limit motorized access to hunting areas and make game retrieval more difficult.

Unit of measure: Miles of road or motorized trail open for game retrieval.

3. Agate Collecting

Reducing routes and areas open to motorized travel would limit motorized access to areas containing agates.

Unit of measure: Miles of secondary motorized routes to agate beds.

4. Social and Economic Impact

Reducing motorized access may result in fewer motorized recreationists which can negatively impact the local economy.

Unit of measure: Labor income dollars from recreation visits.

5. Sound Level

Motor vehicles create sound, particularly areas that receive heavy OHV use and noted around campsites and adjacent to private land.

Unit of measure: Miles of roads and motorized trails near sound level sensitive areas.

6. Soils

Roads, motorized trails, and off-road motorized use cause soil damage and increases in soil erosion.

Unit of measure: Miles of roads and motorized trails by soil rating.

7. Water Quality

Motorized use that causes increases in erosion and stream bank damage could negatively affect water quality.

Unit of measure: Miles of roads and motorized trails by water quality rating.

8. Wildlife and Plant Species of Concern

Motorized use can have disruptive and negative impacts to certain wildlife and plant species, including Threatened, Endangered, Proposed, and Sensitive (TEPS) species and Management Indicator Species (MIS).

Units of measure: Miles of designated roads and motorized trails in habitat for:

- A. Black-footed ferret,
- B. American burying beetle,
- C. Blowout penstemon,
- D. Black-tailed prairie dog,
- E. Swift fox,
- F. Rocky Mountain bighorn sheep,
- G. Greater prairie chicken,
- H. Greater sage grouse,
- I. Barr's milkvetch,
- J. Plains sharp-tailed grouse,
- K. Pygmy nuthatch, and
- L. Elk.

9. Forest and Rangeland Management

Motorized access can conflict with other National Forest and Grassland uses such as forest management and permitted livestock grazing management. Off-road and OHV use can harm structures and resources such as young trees in plantations. Heavy OHV use in grazing allotments disturbs livestock and often results in damaged roads and open gates.

Unit of measure: 1) Acres with potential impacts to plantations, and 2) miles of mixed use road and motorized trail in high OHV use allotments.

10. Noxious Weeds

Roads, motorized trails, and off-road motor vehicle use area increase the potential for spreading noxious weeds.

Units of measure: 1) Miles of road open to motorized vehicles, 2) miles of motorized trails, and 3) acres open to off-road motor vehicle use.

11. Heritage Resources

The Proposed Action may threaten the preservation of archeological sites, cultural artifacts, and historic sites. The potential for negative effects on sites closed to motorized use would be reduced but designating routes and reducing area open to off-road use would concentrate use and increase potential effects to those routes and areas.

Unit of measure: Miles of designated routes proximal to heritage sites.

12. Paleontological Resources

Motor vehicle access can allow damage to surfaced fossils and paleontological sites by motorists driving over the resource, and increase access to the resource. The potential for negative effects on sites closed to motorized use would be reduced but designating routes and reducing area open to off-road use would concentrate use and increase potential effects to those routes and areas.

Units of measure: Miles of designated routes proximal to known fossil sites.

13. Costs of Maintenance

Roads and motorized trails incur costs for construction and maintenance with more roads and trails, and more roads open to OHV use, generally incurring more costs than fewer roads and

trails. Even with minimal maintenance roads and trails and volunteer help, the NNF would need to be able to afford the road and trail system that is selected.

Units of measure: 1) miles of new trail construction, 2) miles of trails 50” or less and single track, and 3) miles of mixed use roads and trails open to all vehicles.

14. Safety

Concentrating use on a reduced set of roads, trails, and areas, and allowing mixed use on certain roads, incurs risks to motor vehicle users, especially OHVs.

Units of measure: 1) miles of mixed use Maintenance Level 2 roads, 2) miles of mixed use Maintenance Level 3, 4, and 5 roads, and 3) miles of trails open to all vehicles.

Other Issues Identified as Non-Key

1. Limited Access for Persons with Physical Limitations

According to several commenters, the Proposed Action limits access to the National Forest for people with disabilities and persons with physical limitations, including the elderly and children. There are large areas that would be limited to only the most physically fit hikers.

This issue is considered non-key because it decided by laws and policy concerning persons with disabilities. Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. Consistent with 36 CFR 212.1, FSM 2353.05, and Title V, Section 507(c), of the Americans with Disabilities Act (ADA), wheelchairs and mobility devices, including those that are battery-powered, that are designed solely for use by a mobility-impaired person for locomotion and that are suitable for use in an indoor pedestrian area are allowed on all NFS lands that are open to foot travel.

There is no legal requirement to allow people with disabilities to use motor vehicles on roads, on trails, and in areas that are closed to motor vehicle use. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. Generally, granting an exemption from designations for people with disabilities would not be consistent with the resource protection and other management objectives of designation decisions and would fundamentally alter the nature of the Forest Service's travel management program (29 USC 794; 7 CFR 15e.103).

Section 504 of the Rehabilitation Act (29 USC 794) states that no otherwise qualified individual with a disability in the United States shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency. A “qualified person with the disability” must be able “to achieve the purpose of the program or activity without modification to the program or activity that fundamentally alters the nature of that program or activity”.

A fundamental alteration of the nature of a program occurs when a basic aspect of that program is changed. A basic aspect of the route and area designation program is to identify routes and areas where motor vehicle use is appropriate for all members of the public, after considering the criteria at 36 CFR 212.55. Allowing exemptions for persons with disabilities

would generally not be consistent with the resource protection and other management objectives of route and area designations, and would therefore fundamentally alter its nature (Bedwell 2008).

2. Effect on Adjacent Lands

Some commenters indicate that reducing motorized access on National Forest System lands may put more OHV pressure on adjacent lands.

While it is possible that implementing the Proposed Action (reducing OHV riding opportunities on NNF lands) could result in more OHV riding pressure on adjacent lands, the opposite is also possibly true. Less OHV riding on National Forests and Grasslands could reduce the likelihood of OHV trespass onto adjacent lands, thus lessening OHV pressure on those lands. Since it is not known for certain whether the Proposed Action would increase or decrease OHV pressure on adjacent lands, any analysis of this issue would not be relevant to the decision.

3. Law Enforcement

Many commenters indicate that the Proposed Action may be difficult to enforce due to the lack of Law Enforcement Officials, and that limiting areas for motorized travel may result in more violations in areas where traditional access has been reduced.

The nature of law is restrictive. The more laws that exist, the more enforcement is required to be effectual. This is the case with Travel Management on the NNF: what is permissible with the existing condition (Alternative 1) may become “illegal” with the action alternatives. Any alternative that is more restrictive than the existing condition would result in enforcement changes on the NNF.

The existing condition contains regulations for safety, resource protection, and noise, with Forest Orders restricting motorized use in several areas. However the Forests and Grasslands are managed with an “open unless designated closed” policy regarding off-road motor vehicle use. Alternatives 2, 3, and 4 (the action alternatives) further restrict motorized use by including a “closed unless designated open” policy for off-road motor vehicle use. The “closed unless designated open” policy may result in an additional number of violation but does not cause an untenable burden on law enforcement. The difference between action alternatives is minor from a law enforcement perspective and law enforcement would have no bearing upon which action alternative is chosen.

4. Jurisdictional Issues

Several commenters mention that road jurisdiction as shown on the Proposed Action maps is incorrect, primarily concerning roads listed as “other public roads” that are considered private routes.

This is not a key issue because jurisdictional issues are resolved as they are noted and cause management concerns. Known errors in jurisdiction have been corrected between creation of the Proposed Action maps in February 2008 and issuance of this DEIS. However there may still be disputes over public access in certain areas. The NNF has done and will continue to do its best to represent public access as accurately as possible, although some specific issues, i.e. whether or not a particular section line right-of-way has been officially vacated, would need to be handled in a different forum than this Travel Analysis document.

The task of determining legal jurisdiction for roads across various ownerships is never completely finished since easements are granted and revoked independent of other processes. For purposes of this analysis, State and US Highways and other public roads are determined based on best available information. Any changes to the status of “other public roads” are outside of Forest Service jurisdiction and not evaluated in this process. Although other public roads are important for access to public lands, roads of various types under Forest Service jurisdiction are the focus of the Travel Management process.

5. Inventoried Roadless Areas

Inventoried Roadless Areas (IRAs) have been the subject of national controversy for many years. In an attempt to resolve the roadless area issue, the Forest Service in 2001, near the end of the Clinton administration, passed the Roadless Rule which forbids any new road construction in IRAs. This rule has been the subject of modifications under the Bush administration. The rule has also been the subject of lawsuits, both against the rule as a whole and against modifications proposed by the Bush administration. In simultaneously upholding and overturning the rule, the courts have created confusion. Currently, the Forest Service operates under an interim directive which provides decision-making authority to the Secretary of Agriculture over proposed forest management or road construction projects in IRAs.

The Nebraska National Forest contains six Inventoried Roadless Areas, all on the Buffalo Gap National Grassland roughly between the towns of Fairburn and Scenic. These are:

- Cheyenne River
- First Black Canyon
- Jim Wilson Canyon
- Red Shirt RARE II Area
- Red Shirt
- Indian Creek

The majority of Indian Creek and Red Shirt roadless areas are included in the Indian Creek and Red Shirt Recommended Wilderness Areas respectively. The remaining parts of the Red Shirt area (outside Recommended Wilderness) are allocated to MA 2.2, Research Natural Area (South Pasture RNA) or MA 6.1, Rangeland with Broad Resource Emphasis. The remaining parts of the Indian Creek IRA (outside Recommended Wilderness) are MA 3.63, Black-footed Ferret Reintroduction Habitat or MA 6.1.

The Cheyenne River IRA (located just south of the Red Shirt Recommended Wilderness, bounded by NFSR 7064, East French Creek Road, Bison Road, and private land) is allocated MA 6.1. First Black Canyon and Jim Wilson Canyon (located south of Riverside Road and bounded by 7045, 7045.1, 7063, 7049, 7049.2, and private land, with 7063 separating the two) are allocated MA 3.63 (Forest Plan ROD, pp 30-31).

The Red Shirt and Indian Creek Recommended Wilderness Areas exclude parts of earlier roadless designations because they are roaded. The Indian Creek Recommended Wilderness Area excludes the area immediately adjacent to NFSR 7129 while the Red Shirt Recommended Wilderness Area excludes the area immediately adjacent to NFSRs 7053E

and 7055. The three NFSRs within the boundaries of the IRAs are already existing (therefore are not new road construction) and are included in all alternatives.

Several unauthorized routes within the IRAs are periodically used by motor vehicles. Alternative 3 includes designation of six of these routes as motorized trails, four in the Cheyenne River IRA (7064.1, 7064.1A, 7064.1B, and 19.1) and two in the Jim Wilson Canyon IRA (7063.1 and 7063.2). These routes currently exist as motorized trails (which are not forbidden in IRAs in the roadless rule) and require no construction.

Since all roads or motorized trails in IRAs considered in this Travel Management analysis are existing routes, no new road construction in IRAs is considered for any alternative. There would be no change to roadless characteristics. This Travel Management decision would not require Secretary of Agriculture decision-making authority to meet the interim directive on roadless areas.

Chapter 2 Alternatives, including the Proposed Action

Introduction

Alternatives Considered in Detail

Alternatives Considered but Eliminated
from Detailed Study

Comparison of Proposed Action and
Alternatives

Implementation and Monitoring

Forest Plan Amendment Requirements

CHAPTER 2 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Introduction

This section describes and compares the Proposed Action and alternatives for Travel Management on the Nebraska National Forest. Each alternative is described and compared to other alternatives providing a clear basis of choice for the decision maker.

Two alternatives to the Proposed Action have been developed in response to issues described in Chapter 1. In summary, Alternative 1 is the existing condition and Alternative 2 is the Proposed Action (agency preferred alternative). Alternative 3 (Additional Motorized Access) adds motorized routes and areas (compared to the Proposed Action) to address the desire of many commenters for more motorized opportunities. Alternative 4 (Reduced Motorized Access) decreases motorized access (compared to the Proposed Action) to address concerns over negative impacts of motor vehicles on other resources.

Alternative development is informed by the Travel Analyses conducted for each unit (Travel Analyses are in the project record). In essence, the Proposed Action (Alternative 2) includes those routes and areas considered important for resource management and recreation. Alternative 3 includes all routes and areas in the Proposed Action plus additional routes and areas less needed for management and recreation but desired by members of the public. Alternative 4 includes routes and areas from the Proposed Action minus those considered to have negative impacts to other resources and not essential for management and recreation. While many potential options for road designation exist, it is neither practical nor feasible to consider every possible combination. Therefore, the Proposed Action and alternatives described here represent a range of management options which address the issues raised and meet the purpose of and need for the proposal.

The descriptions of alternatives are relatively brief. Summary information (miles of designated road and motorized trail and acreage of designated motorized use areas) is displayed in Tables 2-1 to 2-3. A summary of alternatives by analysis issue is in the Comparison of Alternatives table (Table 2-4). Appendix B provides details of each alternative by administrative unit. A report listing each route and route segment by alternative and by administrative unit is in Appendix C.

Maps of all alternates and all areas are provided. Alternative maps are organized into eight mapping areas, one mapping area for each unit in Nebraska (four units, Oglala, Pine Ridge, McKelvie, and Bessey) and four areas for the Buffalo Gap National Grassland (buffalo west, buffalo mid-west, buffalo mid-east, and buffalo east). There are 32 maps total, four alternative maps for each of the eight mapping areas. Each map is in Adobe Acrobat (PDF files), made for 11x17 color printing (but can be blown up to a larger size) and can be downloaded from http://www.fs.fed.us/r2/nebraska/projects/travel_management/index.shtml

Alternatives Considered in Detail

Four alternatives are considered in detail. These are:

- Alternative 1, No Action, continuation of current management,
- Alternative 2, the Proposed Action,
- Alternative 3, Additional Motorized Access, developed in response to concerns that the Proposed Action does not allow enough motorized access for recreational needs, including motorized recreation, hunting, agate collecting, and dispersed camping.
- Alternative 4, Reduced Motorized Access, developed in response to concerns that the Proposed Action does not adequately protect wildlife, soil, water, and other resources from motor vehicle use, and that negative impacts on non-motorized recreation and adjacent lands would be too high.

Alternatives are most easily compared based on miles of open road, miles of motorized trail, and acreage open to off-road motorized use. Table 2-1 displays a summary of designated open road miles by alternative by administrative unit; Table 2-2 displays designated motorized trails by alternative by unit; and Table 2-3 displays designated motorized use area acreage by alternative by unit.

Table 2-1 Designated Open Road Mileage

Administrative Units		Alt 1 current*	Alt 2 proposed	Alt 3 additional	Alt 4 reduced
Fall River Ranger District	Buffalo Gap National Grassland	188.1	14.3**	14.3**	14.3**
Wall Ranger District	Buffalo Gap National Grassland	96.7	15.8**	15.8**	15.8**
Pine Ridge Ranger District	Oglala National Grassland	66.9	115.7	126.1	67.1
	Pine Ridge Unit	55.5	51.5	66.4	40.2
Bessey Ranger District	Samuel R. McKelvie NF	70.7	76.0	215.6	60.4
	Bessey Unit	112.3	102.2	207.2	96.4
Total		590.2	375.5	645.4	294.2

* Alternative 1 road mileage includes only designated roads (NFSRs) open to the public. It does not include the 20.8 miles of NFSRs closed to the public, the 8.5 mile Dismal River Trail (reported in Table 2-2), or the roughly 2,800 miles of user-created/unauthorized roads and motorized trails.

** The action alternatives on the BGNG contain far fewer open road miles than Alternative 1 because most routes will be managed as “trails open to all vehicles” rather than roads with these alternatives.

Table 2-2 Designated Motorized Trail Mileage

Administrative Units		Alt 1 current	Alt 2 proposed	Alt 3 additional	Alt 4 reduced
Fall River Ranger District	Buffalo Gap National Grassland	0	244.1*	455.6*	199.1*
Wall Ranger District	Buffalo Gap National Grassland	0	95.2*	137.7*	86.0*
Pine Ridge Ranger District	Oglala National Grassland	0	8.5	7.5	0
	Pine Ridge Unit	0	52.2	56.0	1.3
Bessey Ranger District	Samuel R. McKelvie NF	0	0	0	0
	Bessey Unit	8.5	27.0	30.2	8.7
Total		8.5	427.0	687.0	295.1

* The majority of trails in the action alternatives on the BGNG are “two-tracks” that will be managed as “trails open to all vehicles”.

Table 2-3 Acreage Open to Off-Road Motorized Use

Administrative Units		Alt 1 current	Alt 2 proposed	Alt 3 additional	Alt 4 reduced
Fall River Ranger District	Buffalo Gap National Grassland	304,390	~1,800	4,870	~1,800
Wall Ranger District	Buffalo Gap National Grassland	227,620	0	480	0
Pine Ridge Ranger District	Oglala National Grassland	92,790	0	2,160	0
	Pine Ridge Unit	34,160	0	0	0
Bessey Ranger District	Samuel R. McKelvie NF	113,420	0	0	0
	Bessey Unit	60,880	18	18	13
Total		833,260	~1,818	7,528	~1,813

Alternative 1: No Action; Current Management

National Environmental Policy Act regulations require the Forest Service to analyze a No Action alternative as a baseline for comparing the effects of other alternatives (40 CFR 1502.14(d) and Forest Service Handbook 1909.15, 23.1).

The No-Action alternative would result in continuing the current management of the designated road system and allowing use of undesignated roads and off-road motorized vehicle use in those areas not currently restricted.

The Nebraska National Forest (excluding the Fort Pierre National Grassland) currently has over 600 miles of designated motorized routes in the travel system with an additional approximately 2,800 miles of undesignated routes. The NNF contains one officially recognized motorized trail of approximately 8.5 miles (the Dismal River Trail on the Bessey Unit) plus additional ATV and motorcycle trails mostly in the Bessey, Pine Ridge, and Railroad Buttes areas.

Most of the NNF is open to off-road motor vehicle travel. Of the 940,000 acres of federal land in the analysis area, over 833,000 acres do not have limitations on off-road motorized vehicle travel (see Background section in Chapter 1 and Appendix B for more details).

As most of the Forest is open to motorized travel in this alternative, Alternative 1 would not meet the Purpose and Need as outlined in Chapter 1 of this DEIS. It is included for comparative analysis purposes. An excerpt from the TMR further discusses this point:

Areas designated for motor vehicle use are not intended to be large or numerous. The Department agrees that the definition in the proposed rule, “a discrete, specifically delineated space that is smaller than a Ranger District,” is too broad to effectuate this intent. Therefore, the Department has revised the definition of “area” in the final rule to read “a discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District.” Only a few areas currently designated for motor vehicle use, such as the Oregon Dunes National Recreation Area on the Siuslaw National Forest, encompass a significant portion of a Ranger District. Other designated areas are expected to be much smaller.

No motor vehicle use map would be issued and no roads, trails, or areas would be officially designated open to motorized vehicle travel on lands administered by the Forest. If this alternative were selected the Forest Service would not comply with the 2005 travel rule.

Features Common to All Action Alternatives (Alternatives 2, 3, and 4)

Any selected alternative would include the following common features:

- Motorized vehicle use would be restricted to the routes and areas designated as part of the NNF transportation system. All routes and areas designated for motorized use would be identified on the Motor Vehicle Use Map (MVUM) which would be legal document for enforcement. The public would be responsible to understand where they can and cannot travel with a motor vehicle based on the MVUM. These would be provided at district offices and other appropriate locations, including the following website:
<http://www.fs.fed.us/r2/nebraska/maps/>.
- Many system roads and unauthorized routes on the Buffalo Gap National Grassland would be designated as motorized trails open to all vehicles. These routes are not maintained for passenger car traffic and receive most use from high clearance vehicles and OHVs. The trails would be permissible for vehicles and drivers that are prohibited from using public roads in South Dakota by motor vehicle laws, primarily unregistered ATVs and unlicensed motor vehicle operators.
- Unauthorized routes that are added to the designated system would be pre-existing routes and would not require road or trail construction, with some exceptions. The Pine Ridge Ranger District (ONG and PRU) includes some designated motorized trails in the action alternatives that would require trail construction. The routes requiring construction are displayed on the alternative maps and in Appendix C. Site-specific NEPA analysis and route construction would need to be completed before those routes would be added to the MVUM.
- User education and information would be emphasized as management tools to inform the public of appropriate uses, ethics, and interactions with other users.
- Some routes would be included in the system but not open to public motorized use. These would be “Closed to Public” roads (such as roads to private land or for exclusive administrative use) which receive use regularly or “Closed” routes (ML 1) which are barricaded until needed.
- Signs informing the public that motorized use is restricted to designated roads and trails would be erected at major entry points into the Forests and Grasslands. Access routes available for administrative or permitted uses, but closed to general public motorized use, would be signed according to Forest Service guidelines or policy.
- All routes designated as part of the NNF transportation system would be given a system number.
- All routes not designated as part of the National Forest System Roads (NFSRs) or Trails (NFSTs) would be administratively closed and allowed to naturally rehabilitate. Rehabilitation success has been achieved in the past by removing traffic from the routes and allowing natural seeding from adjoining vegetation. This type of natural rehabilitation would likely be successful in the future as well. If this method is not successful, more stringent methods would be initiated.
- Motorized routes would not be designated in the Soldier Creek Wilderness, Recommended Wilderness areas, and other areas specified in the NNF Forest Plan and Forest Plan ROD.

- Routes on private land within the National Forests and Grasslands would be open to public use only through rights-of-way, easements, or written permission obtained for the purposes of public access. Travel management analysis considered in this document relates only to NFS lands.
- Emergency activities (e.g. fire response vehicles) would continue to be exempt from travel restrictions.
- Any federal, state, tribal, or local office, in the performance of an official duty, could receive permission to use motorized vehicles off the designated route system.
- Forest Service personnel would be allowed administrative use off the designated route system for protection and management of resources and for managing authorized permits.
- Access for permitted activities (i.e. livestock management, maintaining water developments, recreation events, research, and other uses under permit) on NFS lands is independent of general public access. Individuals or groups with special permits (called permittees) would be allowed to conduct their business according to their permits; however, the Forest Service reserves the right to manage when and how access is achieved through the approval of annual operating plans. It is the responsibility of all permittees to follow the terms of their permits. Specific access requests for business not covered under a particular permit could be authorized by permit issued by the District Ranger.
- The Forest Supervisor can implement special orders to restrict public use of roads, trails, and/or areas as warranted to protect resources, health and safety. This may include seasonal restrictions on an annual basis (e.g. for grouse leks or active raptor nests) as well as temporary restrictions for short-term conditions (e.g. wet conditions following rain or snow, etc.). Part of Federal Regulation 36 CFR Part 261 prohibits damage to the land, wildlife, or vegetative resources even if traveling on a designated route.
- Motorized travel off designated roads and trails would be allowed as needed (but not exceeding 33 feet from road centerline) to turn around vehicles and safely park off of roadways, provided travel or parking off road does not cause damage to structures or resources.
- Motorized travel off designated roads, and trails open to all vehicles (not including motorized trails for vehicles less than 50 inches or single track trails) would be allowed up to 300 feet off of most roadways through National Forest land for dispersed camping and game retrieval, provided travel does not cause damage to structures or resources or enter a motorized restricted area such as Recommended Wilderness or Research Natural Area. In other words, travel off designated roads or trails for dispersed camping or game retrieval may occur up to 300 feet from the roadway (33-foot limit for some roads) but only if such travel does not cross fences, steep embankments, streams or other obstacle, and does not enter a motor vehicle restricted area. Several roads are limited to off-road travel of no more than 33 feet from the centerline of the road. Those roads with 33-foot limits are displayed on maps and in road summaries.
- All routes added to the designated system through this process would be evaluated prior to implementation to assess effects to significant historic resources and Traditional Cultural Properties by the Forest Archaeologist in compliance with 36 CFR 800.11. This evaluation would take place prior to listing of any previously unauthorized route on the MVUM. If

significant cultural resources are located within the proposed or existing official system road or right of way, adverse effects to the resource would be mitigated through a variety of measures, including: 1) monitor impacts to the resource caused by motorized travel, 2) re-route the road around the archaeological site, 3) close the existing route and identify an alternate route that does not impact a significant cultural resource, or 4) fully excavate the site in order to recover important information. All mitigation measures would require consultation with the South Dakota or Nebraska State Historic Preservation Officer, Cheyenne River Sioux Tribe Preservation Program, and other interested tribes.

- Any travel management decision that results from this analysis would be made with the understanding that individuals may have valid existing rights as documented in a conveyance document, such as a Warranty Deed, when the land they owned was conveyed to the United States; and public road authorities may have valid existing rights under existing state laws and county resolutions. While the courts have established that the Forest Service has the authority and duty to manage these rights, the Forest Service would recognize the validity of such rights when right holders provide adequate evidence as to their existence (see *Washington County v. United States*, 903 F. Supp. 40 (D. Utah, 1995)). Forest Service regulation of any occupancy occurring under these valid rights would be adjusted to a level consistent with the full protection and recognition of R.S. 2477 rights and consistent with current applicable law once those roads are identified, proposed, and validated. This may entail an amendment or modification of the travel management decision at that time.
- Over-snow motor vehicles (those designed for over-snow travel with tracks and/or skis rather than wheels) would be allowed off the designated system provided snow cover is adequate for total travel over snow (i.e. no travel over snow-less bare patches or over thin snow where the tracks penetrate to earth) and subject to special orders restricting motorized travel in certain areas (i.e. Proposed Wilderness Areas). Wheeled vehicles are not over-snow vehicles, even when operating over snow (36 CFR 212.1). Wheeled vehicles may operate only on designated roads, trails, and areas regardless of snow cover.
- The final rule recognizes that the designations of roads, trails, and areas for motorized vehicle use are not permanent and that environmental impacts, administrative needs, changes in demand, route construction, and monitoring conducted under the final rule may lead land managers to consider revising designations (36 CFR 212.54, 212.57). Nothing in this plan precludes future project-specific environmental analysis from proposing construction of new system roads and trails or annual changes, including closure of roads, trails and areas as conditions might warrant.
- The decision would establish a 96 DB(A) sound emission limit for OHVs on Nebraska National Forest roads and trails. This limit is common to all action alternatives. Limiting the allowable sound level for OHVs to a level of 96 DB(A) would very likely help mitigate some impacts of sound created by OHVs. The 96 DB(A) sound level was selected because it is the maximum level currently mandated by at least five states and is regarded as an adequate limit by the EPA and motorcycle manufacturers (American Motorcyclist Association 2005). This sound level would be measured based on the Society of Automotive Engineers (SAE) stationary test standard J1287. These measurements can be made in the field with a portable, calibrated, sound level measurement instrument.

Alternative 2: Proposed Action

The Proposed Action was originally developed prior to December 2007 and incorporated those roads, motorized trails, and areas considered necessary and appropriate for each administrative unit to have as open, designated routes and areas. The current Proposed Action varies from the Proposed Action as sent to the public in December 2007. Some changes were required to fix errors that occurred with the original Proposed Action, such as correcting jurisdictional issues, assuring that the Proposed Action is consistent with conditions on the ground, is consistent with existing management direction, and incorporates all direction outlined in the TMR. The Proposed Action is mostly consistent in intent with the original Proposed Action; however some allowance for change has been made to respond to public input. In general, additional motorized routes have been added to most administrative units in response to public interest.

In addition to the factors common to all action alternatives, the intent of this proposal is to provide a balance of designated roads, trails, and areas consistent with the purpose and need that would provide for diverse motorized recreation opportunities. This alternative would limit effects to natural resources and minimize conflicts with other uses within the analysis area. This alternative would add additional motorized road and trail mileage to the designated route system while greatly reducing acreage open to motorized use compared to the existing condition.

Alternative 3: Additional Motorized Access

This alternative has more motorized access than the Proposed Action. Additional roads or trails beyond the Proposed Action include many currently unauthorized routes that are considered less important/needed than the routes included in the Proposed Action. Many of these routes appear on current versions of the Forest Visitor Maps but have not been considered National Forest System Roads (NFSRs) or Trails (NFSTs). Some may be in the NNFs Geographic Information System (GIS), or they may be user created routes mapped with Global Positioning System (GPS), or they may be other roads or trails identified by the public. In general, the roads or motorized trails considered for this alternative:

- can be readily identified on the ground or with aerial photographs,
- are not impassible, that is not washed out or blocked by an un-gated fence,
- are outside of areas with year-round motor vehicle restrictions from the Forest Plan or Forest Order,
- are not parallel and duplicative with another road, and
- are primarily on federal land

The intent of this alternative is to allow consideration for use of those routes and areas that have historically received use while staying consistent with existing restrictions (Forest Orders) and Forest Plan direction. This includes some short spurs (less than 0.1 mile) if the spur provides access needed for dispersed camping or other public use. It does not include, with a few exceptions, barely visible tracks and other indications of some minor past use, possible new routes that currently do not exist, and routes primarily through private land that may provide access to federal land.

This alternative includes additional designated motorized use areas beyond those considered in the Proposed Action. Specifically this includes two motorized use areas, one on the Wall Ranger District near Badlands National Park locally referred to as the Baja area, and the other on the Oglala National Grassland referred to as the Benedict Buttes area. This alternative also includes an area larger than in the Proposed Action as a Designated Motorized Use Area in the Railroad Buttes area.

This alternative contains a similar allowance of limited off-road travel for turning around, parking, dispersed camping, and game retrieval as the Proposed Action, but with more designated routes overall, this alternative contains more acreage of allowable off-road use.

Alternative 4: Reduced Motorized Access

This alternative reduces motorized route and allowable off-road access from the Proposed Action to reduce potential effects on resources, and to reduce potential conflicts between motorized and non-motorized use. This means excluding motor vehicle use from some road segments, motorized trails, and areas that are included in the Proposed Action. Route segments and areas are excluded in this alternative for various reasons specific to the route or area, reasons such as eliminating erosive stream crossings, reducing impacts to elk calving, or reducing road and motorized trail density where motorized access is not essential.

This alternative contains a similar allowance of limited off-road travel for turning around, parking, dispersed camping, and game retrieval as the Proposed Action, but with fewer designated routes overall, this alternative contains less acreage of allowable off-road use.

Comparison of Alternatives

Table 2-4 Comparison of Alternatives by Issue.

Issue	Alternative 1 current*	Alternative 2 proposed*	Alternative 3 additional*	Alternative 4 reduced*
Motorized Recreation - miles of open road, miles of trail, acres open to off-road use	590 miles** 8 miles 833,260 acres	376 miles 427 miles ~1,818 acres	646 miles 687 miles 7,528 acres	294 miles 295 miles ~1,813 acres
Motorized Hunting Access – miles of road or trail open for game retrieval	590 miles**	672 miles	1206 miles	546 miles
Agate Collecting – secondary access routes to agate beds	14 miles**	29 miles	53 miles	18 miles
Social and Economic Impact - Labor income	\$46,593	\$37,422	\$39,751	\$28,322
Sound Level – routes in sound sensitive areas	34 miles**	49 miles	63 miles	23 miles
Soils – routes by impact rating	High	8 miles**	9 miles	5 miles
	Moderate	322 miles**	431 miles	273 miles

Water Quality - routes by impact rating	High	39 miles**	39 miles	45 miles	36 miles
	Moderate	77 miles**	164 miles	213 miles	74 miles
Wildlife and Plant Species of Concern – routes in habitat for selected species					
Black-footed Ferret		62 miles**	63 miles	86 miles	49 miles
American Burying Beetle		222 miles**	250 miles	417 miles	187 miles
Blowout Penstemon		1.3 miles**	1.1 miles	1.5 miles	1.1 miles
Black-tailed Prairie Dog		50 miles**	58 miles	80 miles	45 miles
Swift Fox		0 miles**	8 miles	15 miles	8 miles
Rocky Mountain Bighorn Sheep		5 miles**	9 miles	15 miles	3 miles
Greater Prairie Chicken		3.9 miles**	3.3 miles	8.6 miles	3.3 miles
Greater Sage Grouse		15 miles**	28 miles	68 miles	18 miles
Barr’s Milkvetch		10 miles**	15 miles	24 miles	15 miles
Plains Sharp-tailed Grouse		439 miles**	543 miles	970 miles	421 miles
Pygmy Nuthatch		6 miles**	24 miles	27 miles	4 miles
Elk		5 miles**	15 miles	15 miles	3 miles
Forest Management – acres off-road use in plantations		328 acres	74 acres	74 acres	70 acres
Rangeland Management – routes in high OHV use allotments		64 miles**	102 miles	141 miles	40 miles
Noxious Weeds - miles of open road, miles of trail, acres open to off-road use		590 miles** 8 miles 833,260 acres	376 miles 427 miles ~1,818 acres	646 miles 687 miles 7,528 acres	294 miles 295 miles ~1,813 acres
Heritage - routes with potential impacts	High	0 mi**	14 mi	34 mi	6 mi
	Moderate	0 mi**	183 mi	640 mi	77 mi
Paleontological - routes proximal to fossil sites		47 mi **	80 mi	93 mi	59 mi
Costs of Construction and Maintenance – trails with new construction, trails 50” or less or single track, mixed use roads and trails open for all vehicles		0 miles new 8 miles trail 222 miles mixed**	40 miles new 97 miles trail 528 miles mixed	46 miles new 103 miles trail 1079 miles mixed	1 miles new 20 miles trail 286 miles mixed
Safety – mixed use ML 2 roads, mixed use ML 3, 4, or 5 roads, trails open to all vehicles		222 miles ML 2 24 miles ML 3, 4, 5 0 miles trail	199 miles ML 2 11 miles ML 3, 4, 5 329 miles trail	496 miles ML 2 14 miles ML 3, 4, 5 584 miles trail	11 miles ML 2 10 miles ML 3, 4, 5 275 miles trail

*Further details may be found in Chapter 4.

**This does not include roughly 2,800 miles of unauthorized routes.

Alternatives Considered but Eliminated from Detailed Study

Access Beyond the Existing Condition

One public group asked specifically for a maximum recreation alternative beyond the existing condition including roaded access into Recommended Wilderness Areas. This alternative was dismissed because it does not follow the intent of the TMR and would violate motorized use restrictions placed on areas in the Forest Plan. A large deviation from Forest Plan direction would require a significant Forest Plan amendment and be beyond the scope of this analysis.

Retaining Large (10 thousand acres or more) Areas as Designated Motorized Use Areas

Some individuals expressed a desire to leave large areas open to motorized travel. Comments expressed that if motorized use is dispersed over large areas, impacts would be less than if use is concentrated on relatively few trails and small designated motorized use areas.

This alternative was not studied in detail because the extent of off-road use recommended in the comments is not consistent with the intent of the TMR as discussed under Alternative 1 at the beginning of this chapter. While one or two passes with an ATV or other OHV over ground covered with grass or tree litter would become unnoticeable in a short time, experience shows that in places popular with OHV users an initial pass often becomes a very noticeable trail in a very short time. Also, relatively small play areas (areas devoid of vegetation because of OHV use) increase in size quickly if the boundaries of the play area are not controlled. Large areas open to off road motor vehicle traffic do not very effectively disperse effects; rather they allow spreading of resource impacts from motor vehicles to larger areas.

Implementation and Monitoring

Monitoring is on-going as Forest Service personnel travel the designated routes as part of the general administration of the National Forest.

It is likely that the transportation system resulting from this decision will require numerous changes to the existing system. Implementation of a fully developed motorized trail system will by necessity have to be a staged process. Roads and trails whose existing condition are adequate to hold up under the designated traffic could be shown on the first edition of the MVUM and be available for use immediately. The MVUM maps would be reviewed on an annual basis for possible changes based on monitoring of access needs and resource damage. The maps would also be reviewed for accuracy to correctly show the NNF designated route system, route specific travel regulations, other public routes, and land ownership.

Trails that need to be constructed or reconstructed from roads should not be opened until resources are available and construction / reconstruction and signing are complete. The timetable for implementing this part of the system will depend directly on the rate at which resources become available.

Funding is not currently available for the construction of new OHV trails; however opportunities exist to pursue the necessary funds. Forest Service capital improvement programs, public and private grant programs, volunteer and partnership programs and user fees are possibilities

Current motorized trail maintenance funds have been barely sufficient (using volunteers) to maintain the current trail system to standard. If miles of ML 2 roads are designated as “trails open to all vehicles”, the responsibility to provide maintenance funding for those new trails will switch from the road maintenance program to the trails program. Motorized trails also compete with non-motorized trails for funding. Motorized trail maintenance budgets may increase if new trails are designated in the long term, however the level of any increase would be difficult to predict. Maintenance of a larger motorized trail system would be difficult without an appropriate increase in trail construction and maintenance resources. Maintenance funds could also be augmented by grants, volunteers, partnerships with motorized groups, and potential user fees

Any future road and trail system will have to be monitored on a continuing basis to evaluate how each section is holding up to the designated use. Maintenance schedules will be set based on wear related to use, location, soils, etc. Some routes that do are not sustainable will have to be re-routed or closed. Any conditions that result in significant user conflicts will also have to be monitored and modified as necessary.

Activities are ongoing towards identifying addition resources of different kinds to implement and maintain a system outlined in the upcoming final decision. The success of those efforts will determine in large part the rate at which such a system could be implemented and its long term size.

Surveys for sensitive species will be conducted during implementation. If additional sensitive species are encountered during monitoring, a biologist would be notified and protection measures would be used.

Although heritage surveys have been completed for some parts of the project area, the Nebraska and South Dakota State Historic Preservation Offices (SHPO) requests that the area be monitored for potential sites that may be encountered during project implementation.

Roads and trails not included in the route system and allowed to naturally rehabilitate would be monitored to determine if natural rehabilitation has been successful. If not, more stringent methods would be initiated. If those methods require ground disturbing activity, a complete cultural resources survey according to the guidelines of Section 106 of the National Historic Preservation Act would be completed prior to project implementation.

Forest Plan Direction

The Forest Plan defines a set of goals, objectives, standards, and guidelines that provide direction for managing the Forest and its resources. The law requires that individual project decisions be consistent with Forest Plan direction. If a project proposal is not consistent with that direction, the project may be modified to make it consistent; it may be dropped; or, the Plan may be amended to allow implementation of the project. The action alternatives presented in this document are designed, for the most part, to manage motorized travel consistent with plan direction. The one exception is the need for adapting the Forest Plan to be in compliance with the Travel Management Rule.

The Forest Plan for the Nebraska National Forest allows off-road motorized use over the majority of the Forest, with the exception of those management areas where motorized use is prohibited or in areas with travel restrictions from Forest Orders. This is an “open unless designated closed” policy for off-road motorized use in contrast with the Travel Management

Rule which is a “closed unless designated open” policy. The Forest Plan ROD allows off-road motorized use but recognizes that site-specific analysis and decision making processes would designate permanent transportation facilities (ROD, p. 43). The decision that results from this analysis completes a decision for designating permanent transportation facilities so is consistent with Forest Plan direction.

The transition language in the 2000 Planning Rule as amended at 36 CFR 219.35 allows the Forest Service to use the provisions of the planning regulations that were in effect before November 9, 2000. Because the Nebraska Forest Plan was completed under these earlier rules, we have chosen to use this transition language. The regulations in effect prior to November 9, 2000 require the Forest Service to consider whether a proposed amendment to a Forest Plan would be considered a significant change.

The Forest Service is authorized to implement amendments to Forest Plans in response to changing needs and opportunities, information identified during project analysis, or the results of monitoring and evaluation. The process to consider Forest Plan amendments, review them for significance, document the results, and reach a decision is contained in Forest Service Manual (FSM) 1926. An assessment of a proposed amendment’s significance in the context of the larger Forest Plan is a crucial part of this process. The National Forest Management Act (NFMA) requires that proposed Forest Plan amendments be evaluated for whether they would constitute a significant change in the long-term goods, outputs, and services projected for an entire National Forest. Amendments that are not significant may be adopted following disclosure and notification in an environmental document, such as an Environmental Assessment or Environmental Impact Statement. Amendments that are deemed significant must be processed under the more intensive requirements for developing and approving a Forest Plan, which includes preparation of an EIS.

Travel Management for the Nebraska National Forest requires an amendment to the Forest Plan, but for wording only. This amendment is not significant according to the criteria in FSM 1926.51, which states:

Changes to the land management plan that are not significant can result from:

1. Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.
2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.
3. Minor changes in standards and guidelines.
4. Opportunities for additional projects or activities that will contribute to achievement of the management prescription.

There would be no change in multiple-use goals and objectives that result from the decision, or adjustments of management area boundaries or management prescriptions. The necessary amendment is a minor change in standards and guidelines.

When completed, the Travel Management Record of Decision would amend the Forest Plan at Page I-30, Q. Infrastructure Use and Management, Guideline 1 as follows:

Old Guideline: 1. Do not restrict motorized vehicle use on existing roads and trails until a decision is made designating non-motorized areas and travelways, unless specifically prohibited in management area direction or existing orders. **Guideline**

Amendment: 1. Restrict motor vehicle use to designated roads, trails and areas and document in the annual Motorized Vehicle Use Map (MVUM). **Standard**

Otherwise, all alternatives are consistent with the Forest Plan. No roads or designated motorized areas are proposed where motorized use is restricted in the Forest Plan. Forest Plan direction is followed for specific roads where the road is adjacent to or within a motorized vehicle use restricted land allocation, such as Recommended Wilderness or Research Natural Area.

Chapter
3

Affected Environment

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Motorized Recreation
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Other Related Actions

CHAPTER 3 AFFECTED ENVIRONMENT

Introduction

Physiographic Setting

The project area is located in the hills and plains of southwestern South Dakota and northwestern Nebraska and the Sandhills of north-central Nebraska. Summers are hot and dry (except during thunderstorms) and winters are cold and fairly dry. Rainfall occurs mostly as spring and early summer thunderstorms. These climatic conditions result in short grass prairies over most of the area with naturally forested areas on hillslopes and draws on the Pine Ridge (south of Chadron), successful tree plantations in the Sandhills, and barren hills and badlands across parts of the Oglala and Buffalo Gap National Grasslands.

Geology

A description of the analysis area geology provides necessary background information for Travel Management effects on soils, hydrology, vegetation, and paleontology.

The majority of the Buffalo Gap and Oglala National Grasslands are underlain by White River Group deposits with extensive areas of late Cretaceous shales, predominately Pierre Shale. The Pine Ridge Unit is predominately underlain by the Arikaree Formation. The Samuel R McKelvie National Forest and Bessey Unit are within the Sandhills, an extensive area of north-central Nebraska where wind-blown sand deposits (grass covered stabilized sand dunes) cover underlying bedrock, primarily the Ogallala Group.

During the Cretaceous Period (from 144 to 65 million years ago), the project area was under a 600 meter deep interior seaway, stretching from the arctic to the Gulf of Mexico, depositing marine sediments ranging from the oldest to youngest: Belle Fourche Shale, Greenhorn Limestone, Carlile Shale, Niobrara Limestone and the Pierre Shale. Oldest to youngest corresponds with lowest to highest stratigraphic location, meaning that Pierre Shale has been deposited on top of Niobrara Limestone, which in turn is on top of Carlile Shale, etc.

The Belle Fourche Shale is grey nearshore marine shale up to 500 feet thick, with layers of ironstone concretions in the lower part, limy concretions near the top, and a thick bentonite bed near the bottom. The Belle Fourche is exposed in south-central and southeastern Montana, western South Dakota, and eastern Wyoming. The Belle Fourche crops out on the northwestern portion of the Buffalo Gap National Grassland, Fall River Ranger District.

The Greenhorn Limestone is a system of near-shore marine limestones and shales up to 40 feet thick. The Greenhorn Limestone is exposed around the Black Hills in South Dakota and Wyoming, and in Nebraska and Montana. The Greenhorn Limestone crops out along Highway 18 in South Dakota, between Edgemont and the Wyoming state line.

Carlile Shale is a system of near-shore marine shales up to 200 feet thick, usually grey but with purple shale or yellowish sandstone near the top. The Carlile Shale is mapped in several regions of the Northern Great Plains area, including the Hartville Uplift in eastern Wyoming, the Black Hills, and the Chadron Arch. The Carlile Shale crops out along Highway 18 between Edgemont

and the Wyoming state line and east of Cactus Flats Road in the Fiddle Creek area of Fall River Ranger District.

The Niobrara Limestone, in the Northern Great Plains area, represents mostly near-shore marine shales deposited along the western margin of the epicontinental seaway. Farther south and east, it is a thick, yellowish limestone or chalk that was deposited far from the shoreline. The Niobrara Formation is widely distributed in the region, although its outcrop area is limited because the unit is thin. It crops out primarily around the Black Hills and along the Missouri River in South Dakota, but also in Montana, North Dakota, and Nebraska. The Niobrara Limestone crops out where County Road 8 turns due west at Coffee Creek in southwestern Fall River County, South Dakota.

The Pierre Shale is largely dark grey to black marine shales; the Pierre Shale also contains stringers of bentonite and layers of nodules that are recognizable over long distances. The Pierre Shale is very widely distributed in the Northern Great Plains. It also occurs in Nebraska, North Dakota, Montana, and Wyoming. It is mapped over a wider area of South Dakota than any other unit. The Pierre Shale crops out at the extreme southwestern corner of Fall River County, SD, northern portion of Oglala NG, and throughout eastern Buffalo Gap National Grassland, including the Railroad Buttes area, the area around the town of Scenic, the Indian Creek Recommended Wilderness Area, and around the Badlands National Monument.

Deposition of Pierre Shale ended about 70 million years ago when the interior seaway drained away. For about the next 30 million years Pierre Shale was exposed to weathering and periodic flooding from ancient riverbeds across a gentle landscape. The weathering of the top portion of the Pierre Shale resulted in yellow and red bands of shale (as opposed to most Pierre Shale which is dark grey) that is exposed in places on the Buffalo Gap and Oglala National Grasslands and Badlands National Park. As the Black Hills rose higher, rivers and streams transported eroded cobbles and gravels onto the land surface. The remnant cobbles and gravels survive to the present day at exposed surfaces of Pierre Shale where younger deposits have eroded away. Most notable of the remnant cobbles and gravels are the Fairburn and Prairie agates which can be found at several locations on the Buffalo Gap and Oglala National Grasslands.

Deposited on the Pierre Shale across most of the project area are younger, terrestrial deposits known as the White River Group. The White River Group can be readily distinguished from Pierre Shale based on color; Pierre Shale is mostly dark grey while the White River Group deposits are buff colored to nearly white. The White River Group is relatively lacking in essential nutrients for plants whereas Pierre Shale is rich in phosphorus, potassium, and iron. As a consequence, Pierre Shale is generally thickly covered in grass and forbs except along stream cut banks. In contrast, the White River Group often forms steep, frequently barren hillsides, the notable feature of the Badlands (Stoffer, 2003). However, with enough precipitation and soil development, White River Group soils would support pine trees (as along the Pine Ridge) and dense cover of grass and forbs.

Deposition of the White River Group began approximately 40 million years ago and ended about 20 million years ago. The White River Group deposits are from a large amount of windblown ash from volcanoes to the west. Most of these deposits are siltstones and clays. Between the volcanic eruptions and the blanketing of the project area with volcanic ash, streams would sort and redeposit the volcanic gravels and form sandstone layers. The sandstones generally resist

erosion but siltstones and clays erode easily, allowing creation of interesting landforms called toadstools (large sandstone blocks balanced on small clay/siltstone pedestals).

The majority of badlands landscape (gentle to very steep hills nearly devoid of vegetation) is in White River Group deposits as are prominent features such as the Toadstools and Railroad Buttes. The White River Group is divided up into Formations, which are further divided into members. Going from oldest to youngest the formations of the White River Group includes: Chamberlain Pass Formation, Chadron Formation, and Brule Formation. Most prominent of the White River Group is the Chadron Formation; it is easily identified by its haystack shaped erosion as seen around Railroad Buttes, Indian Creek, and Toadstool Geologic Park.

The Arikaree Formation is deposited stratigraphically on top of the White River Group and forms the steepest cliffs in the project area. The Arikaree is most visible in the Cliffs area on the Pine Ridge Ranger District. It is characterized by fine-grained, pinkish tan volcanoclastic siltstones and mudstones, sometimes including greenish channel sands and conglomerates. The Arikaree Formation is widespread in western South Dakota and Nebraska and has high potential for fossils wherever it crops out. However, the most consistently fossil productive areas are relatively small centered near the intersection of Wyoming, Nebraska, and South Dakota. In other areas, fossils tend to be more widely distributed; their occurrence is unpredictable but not unexpected.

The Ogallala Group is Late Miocene to Pliocene deposited approximately 6 to 2 million years ago, younger and stratigraphically higher than the White River Group and Arikaree Formation. This complex unit includes many locally-recognized formations and members. Sediments pouring eastward from renewed uplift of the Rocky Mountains tended to be coarse grained and discontinuous in their areas of deposition on the Great Plains. The Ogallala Group is distributed throughout northwestern Nebraska, southwestern South Dakota, and eastern Wyoming. The Ogallala Group has high potential to produce significant fossils throughout its area of outcrop.

Within the project area, the Ogallala Formation is mostly covered by a vast area of grass-covered sand dunes, the Sandhills. The Sandhills begin south and east of the Pine Ridge and extend to the Bessey Ranger District and beyond. The sand is very deep in many locations and outcrops of bedrock are not present, as occurs in the Bessey Unit. The Samuel R. McKelvie National Forest is also covered with windblown sand but to a lesser depth than the Bessey area. The canyons of the Snake and Niobrara Rivers adjacent to the McKelvie display exposures of the underlying Ogallala Formation.

Motorized Recreation

Motorized use on the Nebraska National Forest has increased in the last few years. The popularity of off-highway vehicles (OHV), motorcycles and four-wheel-drive vehicles has contributed to the increase. The following excerpt from the Forest Recreation Strategy (USDA 2004, page 8) provides a general description of motorized recreation on the NNF.

The majority of visitors come to Nebraska National Forest units to enjoy relatively unrestrained travel across a large area. All modes of ground-based transportation are used and enjoyed by visitors across the Forest. It should be noted that on the NNF, the majority of ATV traffic has been associated with other activities such as hunting, ranching, fishing etc. ATV use for pleasure riding occurs to a lesser degree and varies

across the NNF. The Bessey Unit and Railroad Buttes area receive more of this type of use, with occasional pleasure riding occurring on the Pine Ridge Unit and other areas.

As described in the Forest Plan (page 1-18) user preferences vary widely over available recreational opportunities. Some users desire primitive recreation experiences with restricted motorized travel, while others, such as OHV users, prefer motorized access. Uses of ATVs have been associated with activities such as ranching, hunting, and fishing but have also become popular for recreational riding. Because recreation use on these public lands has increased, conflicts between non-motorized and motorized use has increased. Some commenters on this project expressed the opinion that restrictions to access would enhance the hunting and fishing experience but most commenters wanted to retain current road and off-road motorized access.

Recreation Opportunity Spectrum (ROS)

To provide a variety of recreational experiences for the visitor, the Forest utilizes a classification system referred to as Recreation Opportunity Spectrum (ROS). ROS is a planning and management tool that categorizes recreation opportunities into six settings, ranging from semi-primitive to urban (see Glossary). A breakdown of acres and percent of National Forest or Grassland within each of the ROS classifications is displayed in **Table 3-1**.

Table 3-1 Recreation Opportunity Spectrum Acres by Unit

Unit	Urban	Rural	Roaded Natural	Roaded Natural Non-motorized	Semi-primitive Motorized	Semi-primitive Non-motorized
Fall River RD	0	9,473	249,213	1,616	47,299	14,800
Wall	0	30,611	144,188	1,030	52,129	38,402
Oglala	0	5,041	45,324	0	44,115	0
Pine Ridge	241	1,426	32,504	0	0	16,210
Samuel R. McKelvie	0	0	14,280	118	99,143	2,498
Bessey	66	2,689	30,337	504	56,864	0
Totals	307 (<1%)	49,240 (5%)	515,846 (55%)	3,268 (<1%)	299,550 (32%)	71,910 (8%)

Trends

The following excerpts from the Northern Great Plains Management Plans Revision Final Environmental Impacts Statement (FEIS) describe future trends associated with recreation uses:

Recreation on public lands in the prairie ecosystem is increasing dramatically. Contributing factors are: 1) national grasslands have been recognized for hunting opportunities; 2) the public has increased appreciation for the beauty of the prairie; 3) more people are taking short vacations to the closest public lands; and 4) there has been a loss of solitude in mountain areas (FEIS, page 1-18).

Most activities for which survey information has been collected are projected to continue long-term moderate growth, while more rapid growth is expected for technology-driven activities, such as mountain biking. Fastest growing activities include bird watching, hiking, backpacking, primitive area camping, and off-highway driving (FEIS, page 3-309).

Fishing participation is expected to increase nationally by 36 percent over the next 55 years with the Rocky Mountain/Great Plains Region seeing as much as a 55 percent increase. Fishing currently accounts for twice as many "primary purpose trips" as non-consumptive wildlife activities and nearly three times as many as all forms of hunting combined. Nationally, hunting is projected to continue to decline over time. Some of this decline may be attributed to fewer acres open to hunting. A large increase in the "pay for hunting/access" has lessened the desire of some hunters to pursue access. This has made the NNF even more important as an area producing excellent wildlife cover and habitat for recreational public hunting. However, the 12 Rocky Mountain/Great Plains states (from Nevada east to Kansas) are projected to see a 20 percent increase in hunting participation. Participation in non-consumptive wildlife activities is expected to increase 64 percent over the next 55 years, while days spent participating are projected to double. The most prominent factor contributing to this increase appears to be the increasing age of the population (FEIS, page 3-309).

Desired Condition

The desired condition for recreation as described in the Forest Plan and Recreation Strategy is to provide the public a cost effective range of recreational experiences that are within the land's capability, and commensurate with current and future demands. Based on public input, the Forest Plan recognizes the need for the Forest to address resource impacts and recreational desires for solitude in relation to motorized access and provide improved direction on access and travel management. The desired condition is also to implement the TMR by designating roads, trails, and areas open to motor vehicle use and prohibiting use of motor vehicles off designated routes.

With 55% of the project area classified as roaded natural ROS, desired conditions are characterized by predominantly natural-appearing environments with moderate evidence of sights and sounds of people. In the 32% of area which is semi-primitive motorized ROS, concentration of users is low, but there is often evidence of other users.

Motorized Hunting Access

Big game and game bird hunting is a seasonal niche market. Most hunters are from the Midwestern area of the U.S. They come to Nebraska National Forest units for large areas of accessible public land that is within a reasonable driving distance of their homes. The Forest begins to receive calls about the potential of the fall hunting seasons in July and these calls are received from throughout the country. The same can be said for the interest in opportunities to shoot prairie dogs.

Species hunted and hunting seasons are shown in **Table 3-2**.

Table 3-2 Species Hunted on the NNF in South Dakota and Hunting Seasons.

Species	South Dakota Season*	Nebraska Season*
Antelope	Archery – August to October Rifle – October	Archery – August to December Rifle – October Muzzleloader – September to October
Deer	Archery – September to January Rifle – November to December	Archery – September to December Rifle – November Muzzleloader – December
Elk	not applicable to the BGNG	September to December
Grouse	September to January	September to December
Pheasant	October to January	October to January
Prairie Dog	June to February	Year Round
Coyote, Raccoon	Year Round	Year Round for Coyote, September to February for Raccoon

*see State hunting regulations for specific dates

Some commenters expressed an opinion that restricting motorized access would enhance the hunting experience, but most commenters want to retain currently allowed motorized access. This assessment focuses on the desire of many hunters to have motorized access to game areas and the ability to use motor vehicles to retrieve game.

Agate Collecting

Fairburn and Prairie agates are part of remnant cobbles and gravels deposited on Pierre Shale. They can be found at exposed surfaces of Pierre Shale where younger deposits have eroded away. Agate hunters and collectors, many of whom are affiliated with groups such as the Sioux Empire Gem and Mineral Society, come to southwest South Dakota and northwest Nebraska to hunt for these agates. Much of the agate hunting and collecting occurs on lands administered by the NNF. There are approximately 21,000 acres of land on the Buffalo Gap and Oglala National Grasslands where collectable agates may occur. Most of the agate collecting areas are currently permissible for off-road motor vehicle travel, except for about 1300 acres in the Red Shirt Recommended Wilderness Area in which motorized access is not allowed.

Agate collectors drive to agate beds via motorized vehicles on county or other public road, National Forest System Roads (NFSRs), unauthorized roads, or in some cases off-road. Some roads are considered primary access roads for agate collecting (rated as “high” need) while others are considered secondary access (rated as “moderate” need). The “high” need roads are necessary to get near the agate beds via motor vehicle while the “moderate” need roads are shorter spurs or connecting roads that provide additional access in or adjacent to the agate beds. Roads that do not provide access to agate beds are rated “low” for agate collecting.

Economic Impact on Local Communities

Public and internal comments expressed concerns about potential economic effects of implementing the Travel Management Rule in general and the Proposed Action in particular. The concern has been raised that restrictions on motorized recreation would decrease the number of visitors to the project area to such an extent that local communities would be hurt economically. There is also the concern that lack of visitors to the National Forests and Grasslands would decrease income to the project area decreasing the Forest's ability to properly manage the Forests and Grasslands.

This assessment of economic impacts attempts to identify potential effects that Forest Service management may have on local, county, and regional economic systems and on people using the natural resources that the Nebraska National Forest provides. In particular, would changes in the use of the National Forest for recreation and the amount of change in the designation of Forest roads and trails be large enough or significant enough to cause measurable economic changes? Is the economy of the local area diverse enough and robust enough that the proposed changes would be insignificant or would they be felt in very specific segments of the local economy?

Definition of the Economic and Social Area

The economic area that surrounds the Nebraska National Forest consists of the following 9 counties: Fall River, Custer, Pennington, and Jackson Counties in South Dakota; and Sioux, Dawes, Cherry, Thomas, and Blaine Counties in Nebraska. The estimated economic impacts to be discussed in the environmental consequences section would be based on this 9 county area.

The social area corresponds to the economic area, although social issues such as the value of an area being open for motorized use or not are often not limited to geographic boundaries.

Population

Several communities are adjacent to the NNF, including Wall, South Dakota, and Chadron, Crawford, and Halsey, Nebraska. The populations of these towns range from less than 100 in Halsey to approximately 6,000 in Chadron.

Demographics for counties that make up the Economic Impact Area (EIA) for the NNF are shown in **Table 3-3**.

Table 3-3 Demographics for Counties in EIA

County/State	1990 Population ^{1/}	2000 Population ^{1/}	% Difference ^{1/}	Average Age ^{2/}
Custer/SD	6,179	7,275	17.7	43.2
Fall River/SD	7,353	7,453	1.4	45.5
Jackson/SD	2,811	2,930	4.2	30.6
Pennington/SD	81,343	88,565	8.9	35.0
South Dakota	696,004	755,164	8.5	35.5
Dawes/NE	9,021	9,060	0.4	30.6
Sioux/NE	1,549	1,475	-4.8	41.5
Blaine/NE	675	583	-13.6	39.8
Cherry/NE	6,307	6,148	-2.5	39.4
Thomas/NE	851	729	-14.3	44.2
Nebraska	1,578,385	1,710,969	8.4	35.7
National	248,709,873	281,421,906	11.0	35.3

^{1/} Nebraska Recreation Strategy (2004)

^{2/} U.S. Census Bureau (2000)

As shown in Table 3-3 there is wide variety in population and growth in the EIA. High population growth in Custer County is likely due to proximity of the Black Hills, South Dakota.

Economy

The dominant industries in the area in terms of total employment are agriculture and the service sector. Median household income varied substantially for the 9 county economic areas. With respect to unemployment, higher rates are experienced as you move away from the population centers. **Tables 3-4 and 3-5** show unemployment rates and income by county.

Table 3-4 Unemployment Rates by County in EIA

County/State	November, 2007	November, 2008	Change
Custer/SD	3.2	3.7	+0.5
Fall River/SD	3.4	3.9	+0.5
Jackson/SD	6.3	9.2	+2.9
Pennington/SD	2.7	3.3	+0.6
South Dakota	3.0	3.2	+0.2
Dawes/NE	2.4	2.9	+0.5
Sioux/NE	3.1	3.2	+0.1
Blaine/NE	4.3	6.1	+1.8
Cherry/NE	2.3	2.5	+0.2
Thomas/NE	3.1	4.0	+0.9
Nebraska	3.2	3.4	+0.2
National	4.7	6.7	+2.0

Table 3-5 Income by County in EIA

County/State	Median Household Income ^{1/}
Custer/SD	36,303
Fall River/SD	29,631
Jackson/SD	23,945
Pennington/SD	37,485
South Dakota	35,282
Dawes/NE	29,476
Sioux/NE	29,851
Blaine/NE	25,278
Cherry/NE	29,269
Thomas/NE	27,292
Nebraska	39,250
National	37,005

^{1/} US Census Bureau (2000)

Motorized and Non-motorized Use

Nationally, visitors whose primary activity is a motorized activity spend more money overall (on items such as gas and oil) than visitors whose primary activity is non-motorized. The national spending average for local day trips is \$33 of which \$12 is for gas. Spending by local OHV users on day trips is not significantly different than the overall average (Stynes and White, 2005).

Motorized recreational use on the nation's public lands has increased substantially in recent years, and continues to increase on an annual basis. By some industry estimates, more than 80% of all off-highway vehicle (OHV) and mountain bike trail opportunities in the west are on federal lands. The OHV and motorcycle industry conservatively estimates that there are four to five times more OHVs in the west than there were a decade ago. This has resulted in a significant increase in demand for utilization and access opportunities and has presented land management challenges in providing motorized users with public land access while minimizing user conflicts, protecting resources, and safeguarding visitor safety (Shepard, 2005).

Various sources of information are used to display use and trends in motorized and non-motorized use. The Forest Service National Visitor Use Monitoring survey (NVUM) was used to understand total forest-level use (visits) and visits by various motorized and non-motorized activities.

National Visitor Use Monitoring (NVUM)

The NVUM survey process was implemented as a response to the need to better understand recreation use occurring on National Forest system lands. Examples of information provided in the report include: 1) total number of visits; 2) participation rates; and 3) user satisfaction. The survey also collected information regarding user spending within 50 miles of the National Forest boundary. Users reported expenditures for various spending categories, such as groceries, restaurants, gas/oil, and lodging. The specific spending profiles and expenditures are found in Stynes and White (May 2005, February 2006).

The final report indicates that 135,087 visits occurred on the Nebraska National Forest during the survey period (October 2001 through September 2002). **Table 3-6** presents participation rates by activity for the Nebraska National Forest during the NVUM survey period (Kocis et al, 2003).

The **% Participation** column of the table presents the participation rates by activity.

Participation rates may exceed 100% since visitors can participate in multiple activities. The **% as Main Activity** column presents the participation rates in terms of primary activity. **Table 3-6** indicates that the top five most popular primary activities were: 1) relaxing (29.1% percent); 2) hunting (20.5%); 3) camping in developed sites (17.6%); 4) hiking / walking (13.9%); and 5) OHV travel (10.3%).

Table 3-6 Nebraska NF activity participation and primary activity

Activity	Percent participation	Percent who said it was their primary activity*
Snowmobiling	0.0	0.0
Driving for Pleasure	20.3	0.3
OHV Use	12.7	5.0
Other Motorized Activity	0.3	0.0
Total Motorized (trail and road use)		5.3
Hiking / Walking	45.9	11.6
Bicycling	0.9	0.4
Other Non-motorized	6.1	2.4
Cross-country Skiing	0.3	0.3
Backpacking	0.5	0.3
Horseback Riding	7.1	6.5
Total Non-Motorized (trail and road use)		21.5
Downhill Skiing	0.0	0.0
Fishing	4.7	3.6
Viewing Natural Features	47.3	10.1
Relaxing	43.1	15.4
Motorized Water Activities	0.0	0.0
Hunting	12.6	8.9
Non-motorized Water	0.7	0.0
Developed Camping	13.1	6.5
Primitive Camping	7.4	6.2
Picnicking	23.6	11.5
Viewing Wildlife	42.4	1.5
Sightseeing	0.0	0.0
No Activity Reported	22.4	27.4
Resort Use	0.2	0.0
Visiting Historic Sites	8.4	2.5
Nature Study	2.2	0.0
Gathering Forest Products	6.5	0.2
Nature Center Activities	10.9	3.1
Total Other		96.9

* Some respondents selected more than one primary activity, so this column adds up to more than 100%

The primary activity participation rates (**% as Main Activity** in Table 3-7) were used to estimate use by activity. For this analysis, OHV use, snowmobiling, driving for pleasure, and other

motorized activities were considered motorized use, while backpacking, hiking / walking, horseback riding, bicycling, and cross-country skiing were considered non-motorized use.

Table 3-7 displays the number of visits for these activities. The number of visits by activity is based on the primary purpose (% as **Main Activity**) displayed in Table 3-8 and the total number of visits reported in the NVUM report. Users were determined to be either local or non-local based on the miles from the user's residence to the forest boundary. If the user reported living within 50 miles of the forest boundary, they are considered local; if over 50 miles, they are considered non-local. The table indicates that the most popular non-motorized activity is hiking/walking, and the most popular motorized activity OHV use. Of the non-motorized activities, non-local cross-country skiers spend the most per visit (\$15 for locals and \$19 for non-locals). From the standpoint of motorized activities, local and non-local OHV users spend the most per visit (\$19 for locals and \$29 for non-locals).

Table 3-7 Number of Visits and Expenditures by Activity Type

Activity	Use (Visits) ¹	Expenditures (\$ per Visit) ²	
		Local	Non-local
Non-motorized			
Horseback Riding ³	7,146	\$11	\$18
Backpacking ³	372	\$11	\$18
Hiking / Walking ³	12,719	\$11	\$18
Bicycling ³	426	\$11	\$18
Cross-country Skiing	372	\$15	\$19
Motorized			
OHV	5,431	\$19	\$29
Driving for Pleasure	306	\$13	\$18

1. Nebraska National Forest, National Visitor Use Monitoring Results;

2. Stynes Daniel J.; White Eric M. 2006. Spending Profiles for National Forest Recreation Visitors by Activity.

3. These activities share the same spending profile.

Trends in Motorized Use

Figure 3-1 shows the trend in registered motorcycles in South Dakota and Nebraska (South Dakota and Nebraska DMV records). The majority of ATV's are not registered so ATV statistics are more difficult to obtain. This information is useful in gauging the popularity of outdoor activities that use this equipment since other trend information is difficult to obtain for these types of dispersed activities. The data indicates an upward trend in motorcycle ownership.

Figure 3-1 Number of Registered Motorcycles, 2001-2007

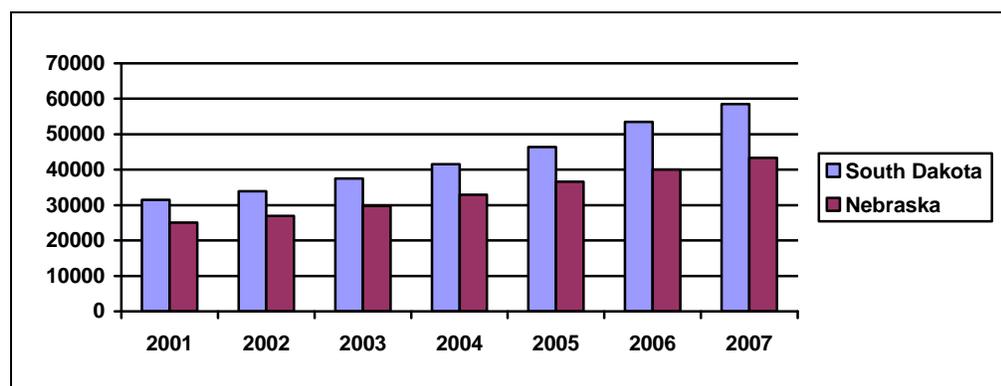
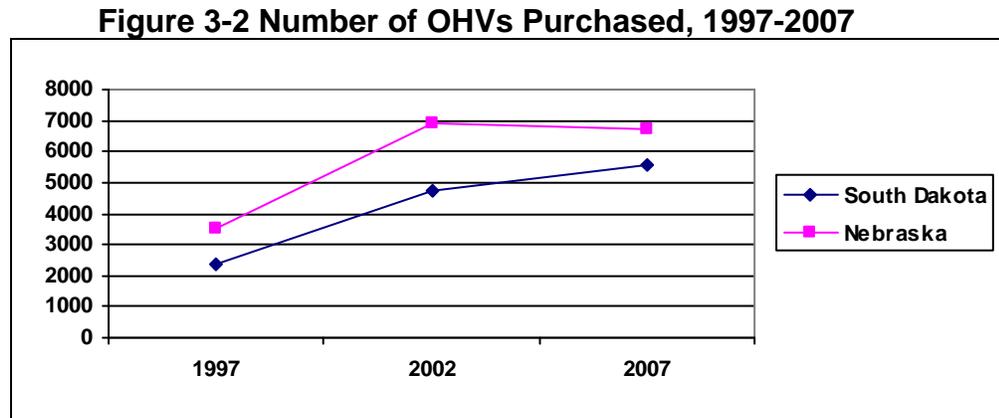


Figure 3-2 shows the trend in OHVs purchased in South Dakota and Nebraska (Motor Industry Council). In general, the data indicates an upward trend in ownership over the last 10 years.



Sound Level

Operation of motor vehicles creates sound, interpreted as noise by some Forest users and adjacent landowners. Even with decibel limits on vehicles (as discussed in the Features Common to All Action Alternatives section of Chapter 2), sound emanating from motor vehicles, especially OHVs, can be considered a nuisance.

On the NNF there are three areas where motorized OHV use creates sound levels that are a noted concern by some commenters: the area around Chadron State Park south of Chadron on the Pine Ridge Unit, the Bessey Unit campground areas, and the Railroad Buttes area. Other parts of the NNF receive too little use, or are too remote, so have not been identified as having a sound level concern.

The Chadron State Park area has several campgrounds, Camp Norwesca, and several private residences in an area that receives off-road motor vehicle use. Campers and residents may find the sound of OHV use in the area an unpleasant distraction from an otherwise quiet area. The Bessey and Whitetail campground areas on the Bessey Unit receive heavy use from off-road vehicle enthusiasts who use the campgrounds as staging areas for ATV riding. This creates a situation where campers who are looking for a quiet experience may go elsewhere rather than stay at these campgrounds. Heavy OHV use in the Railroad Buttes area may be a distraction for adjacent landowners.

Soils

The soils across the project area have been mapped using national standards and have a digitized Soil Survey Geographic (SSURGO) database. The mapping scale for each is 1:24,000 and is designed for use by landowners and government (township, county, state, and federal) natural resource planning and management. Soil Data Mart <http://soildatamart.nrcs.usda.gov/> provides current online soil tabular and spatial data. Surveys are generally available by county, with some

exceptions such as Pennington and Custer counties in South Dakota combined but split by Prairie Parts and Black Hills Parts.

There are eight distinct soil surveys across the project area, three in South Dakota and five in Nebraska, with several hundred soil map units overall. A summary of soil types by analysis unit follows:

The Fall River Ranger District is dominantly Pierre and Samsil clays. These soils are shallow to moderately deep upland soils formed from residuum from clay shales (Pierre Shale). There are also large acreages of Hisle, Fairburn, Orella, and Minnequa in addition to smaller acreages of many other soils. Hisle is moderately deep formed from alluvium from Pierre Shale. Fairburn and Orella are shallow soils formed on slopes of White River Group deposits while Minnequa is moderately deep formed on uplands of White River Group deposits.

The Wall Ranger District contains large acreages of Bankard, Whitewater, Orella, Cedarpass, Interior, and Denby. It contains smaller amounts of Pierre, Samsil, and many other soils. Bankard is a deep soil sandy soil formed from alluvium on flood plains and terraces. Whitewater is a moderately deep soil formed on slopes of White River Group deposits while Cedarpass, Interior, and Denby are deep soils formed on uplands and alluvial fans of White River Group deposits.

The Oglala National Grassland is dominantly Pierre and Samsil clays. It also contains large acreages of Bufton clay loam, Kyle silty clay, and Orella. Bufton clay loam and Kyle silty clay are deep soils developed from alluvium or colluvium from Pierre Shale, similar to Pierre and Samsil clays except for soil depth. Orella is a shallow soil formed from White River Group deposits and is typically mixed with White River Group badlands over parts of the ONG. The slopes and hilltops near Toadstool Park contain Tassel and Ponderosa soils, each derived from sandstone layers of Arikaree Formation or White River Group deposits.

The Pine Ridge Unit is dominantly Tassel and Ponderosa intermixed with rock outcrops derived from sandstone layers of Arikaree Formation or White River Group deposits. Tassel is a shallow soil while Ponderosa is a deep soil. Most other soils on the Pine Ridge are also derived from Arikaree Formation sandstone layers with minor amounts of badlands or soils with higher clay content.

The Samuel R. McKelvie National Forest is dominantly Valentine sand, a very deep soil derived from eolian (wind-blown) sand. There is also a smaller amount of Ipage fine sand, a deep sandy soil with water periodically nearer to the surface than is typical with Valentine sand, and other periodically saturated sandy soils. Minor amounts of soils derived from sandstone occur within the Forest boundary.

The Bessey Unit is nearly all Valentine fine sand with over 1000 acres of blown-out land and very small amounts of ponded, occasionally flooded, or other wetter sandy soils different from Valentine fine sand.

The SSURGO database contains many interpretations of the various soils types and map units. Most relevant to the Travel Analysis process are reports titled “Hazard of Erosion and Suitability for Roads on Forestland”. These reports list “Hazard of off-road or off-trail erosion”, “Hazard of erosion on roads and trails”, and “Suitability for roads (natural surface)” for each component in

all soil mapping units. Soil hazards are ranked as “slight”, “moderate”, “severe”, or “very severe”. “Suitability for roads” is ranked as “well suited” or “poorly suited”.

Soil hazard and suitability ratings also include an explanation of limiting features. The primary limiting features across the analysis area are slope and factors affecting plant growth such as texture and soil depth. Steeper slopes generally cause higher hazard and lower suitability than gentle or flat slopes. Deep soils with a loamy texture generally support greater vegetation growth and pose less of an erosion hazard than shallow soils with texture on the extreme end of either sand or clay (such as Valentine sand or Pierre clay).

The SSURGO database erosion hazard and road suitability ratings are useful tools for evaluating road, motorized trail, and motorized use area impacts on the soil resource. The SSURGO ratings are used, along with other site-specific road or motorized use area characteristics, to evaluate alternatives in the Environmental Consequences section of this document.

Water Quality

The project area is drained by five large tributaries of the Missouri River, the Cheyenne River, the Bad River, the White River, the Niobrara River, and the Loup River.

Furthest to the north is the Cheyenne River which drains a large part of southwestern South Dakota (including the entire Black Hills) and smaller parts of Wyoming and Nebraska. Hat Creek, a large tributary to the Cheyenne River, originates almost as far south as Harrison NE and drains a large percentage of the Oglala National Grassland and part of the FRRD before flowing into the Cheyenne River upstream of Angostura Reservoir. Horsehead Creek drains another part of the FRRD before flowing into Angostura Reservoir. Rapid Creek, and its tributary Lindsey Draw, drain the northernmost part of the FRRD before joining the Cheyenne River. The Cheyenne River eventually drains into the Missouri River upstream of Oahe Dam. Most of the Fall River Ranger District of the drains to the Cheyenne River, as does a large percentage of the ONG and part of the Wall Ranger District.

The Bad River drains the north part of the Wall Ranger District before heading northeast to join the Missouri River at Fort Pierre.

The White River originates west of Crawford, NE and drains part of the Oglala National Grassland and nearly the entire Pine Ridge Unit before heading north into South Dakota. There it drains the southeast part of Fall River District and the south part of Wall Ranger District before heading east to join the Missouri River south of Chamberlain, SD.

The Niobrara River originates in Wyoming before flowing into Nebraska. It drains a very small part of the Pine Ridge Unit and, along with its tributary Snake River, the entire Samuel R. McKelvie National Forest before continuing east to join the Missouri River at Niobrara, NE.

The Loup River (more specifically the Middle Loup River) originates in the Sandhills of Nebraska and drains (along with its tributary Dismal River) the Bessey Ranger District. The Middle Loup River continues east to join the North and South Forks of the Loup River, then the Platte River, and eventually the Missouri River south of Omaha, NE.

Due to generally low annual precipitation, most rainfall is absorbed by the soil and either evaporates or is transpired by plants. For the majority of the project area (outside the Sandhills

and rocky hilltops of the PRU and ONG) low infiltration capacity of the bedrock causes excess rainfall (rainfall that exceeds evapotranspiration rates) to run off rapidly. Streams are generally flashy and ephemeral; they can have large flows in direct response to heavy rainfall but dry up soon after. Even larger streams, including the Cheyenne River, are reduced to a low volume of flow or isolated pools of water in a relatively short time following heavy rainfall. Water quality is naturally poor due to the high amount of colloidal clay that is washed off barren slopes and badlands and stays suspended in the water. Springs and clear-flowing perennial streams are uncommon although they do occur on the PRU and some higher elevation parts of the ONG, most notably at the Hudson-Meng Bison Bonebed site. Sandstone layers, deeper soils, and more winter precipitation at the higher elevation sites allow greater absorption of excess rainfall for slow release as springs.

The Sandhills, in contrast to most of the NNF, contain very few streams, ephemeral or otherwise. High infiltration rates of the sand allow most excess rainfall to be absorbed through the soil and contribute to groundwater. Very heavy rainfall can exceed the infiltration capacity of the soil and may cause surface runoff and create gullies if soil cover is inadequate, but surface flows typically travel only a short distance before being absorbed into the sand. The Bessey unit contains no streams or surface water outside of the Middle Loup and Dismal Rivers although ground water is abundant. The Samuel R. McKelvie National Forest does contain natural ponds, streams, and other surface waters although these are typically isolated, not connected by surface streams to the adjacent Niobrara and Snake Rivers. Steer Creek, the primary water feature on the McKelvie, is a continuous stream in places but disappears and reappears throughout its length. The relatively shallow depth of sand at McKelvie compared to Bessey causes some water exposure at the surface. However the general tendency of the McKelvie area is similar to Bessey with very few streams.

The Buffalo Gap and Oglala National Grasslands contain numerous impoundments (stock dams or larger reservoirs) primarily for purposes of stock watering. Dams across the flashy streams are effective at capturing infrequent runoff for later use. Stock ponds typically have fair to poor water quality due to the colloidal clays washed into them during runoff events although water quality is typically adequate for stock watering. Some reservoirs have good water quality and support fish populations. Bessey and McKelvie, and to a lesser extent Pine Ridge, have windmills for pumping ground water and stock tanks for livestock watering rather than impoundments because of the few streams and easy access to ground water.

The river systems in the project area, and various waterbodies within the river systems, have been evaluated by the states of South Dakota and Nebraska as required by sections 305(b) and 303(d) of the Clean Water Act. These evaluations are meant to determine if various waterbodies (streams, lakes, reservoirs, or other surface waters) are either suitable to meet designated beneficial uses or “impaired”, meaning some pollutant causes the water to not be fully suitable for designated beneficial uses. Once a water body is identified as “impaired”, the State is required to develop a Total Maximum Daily Load (TMDL), a load allocation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

The State of South Dakota considers Cheyenne River water quality to be generally poor due to both natural and agricultural sources (South Dakota 2008). Highly erosive and leachable marine shales and badlands in the basin are a natural source of suspended solids (soil particles that make the water cloudy) while cropland erosion and irrigation return flows contribute to water quality

concerns. Rapid Creek, a tributary to the Cheyenne River that originates in the Black Hills and flows across the north part of the Fall River Ranger District, has water quality that typically ranges from good to satisfactory in the upper reaches but fair to poor water quality below Rapid City.

The entire Cheyenne River in South Dakota, including Angostura Reservoir, is considered impaired due to total dissolved solids and suspended solids from natural sources, livestock grazing or feeding operations, and crop production. Hat Creek and Horsehead Creek are each considered impaired by the state of South Dakota due to specific conductance. The state of Nebraska (Nebraska 2008) lists Hat Creek and its tributaries as containing insufficient data for a determination though it lists Meng Reservoir and Agate Dam Reservoir as impaired due to nutrients. Hat Creek, Horsehead Creek, and other streams from FRRD and ONG contribute water to the Cheyenne River upstream of Angostura Reservoir.

Most tributaries to the Cheyenne River downstream from Angostura Reservoir draining from FRRD and WRD are not evaluated. Rapid Creek from Farmingdale to the mouth is considered water impaired due to fecal coliform from livestock grazing or feeding operations. Lindsey Draw, a tributary to Rapid Creek downstream from Farmingdale, drains the majority of the Railroad Buttes Off-Road-Vehicle Use Area. It is listed by the state of South Dakota as a water body with insufficient data for a water quality determination.

The Bad River from the Stanley County line to the mouth (well downstream from the Buffalo Gap National Grassland) is considered water impaired due to total dissolved solids from natural sources, crop production, and livestock. The South Fork Bad River, a branch of the Bad River which flows from the Wall Ranger District, is considered “some uses met but insufficient data to determine support for other uses”.

Parts of the White River in Nebraska are considered water quality impaired due to *E. coli* while other parts are considered to support all beneficial uses. Boardgate Reservoir (on a tributary to the White River in the ONG) is listed as impaired due to nutrients while Rock Bass Dam Lake (also on the ONG) is considered unimpaired. Chadron Creek, Bordeaux Creek, and Soldier Creek, all tributaries to the White River on the Pine Ridge unit, are listed as unimpaired. Other tributaries to the White River in Nebraska contain insufficient data for an evaluation. In South Dakota the White River is considered water quality impaired due to fecal coliform and total suspended solids from natural sources, crop production, and livestock. Tributaries to the White River from the FRRD and WRD are all small and unassessed.

The part of the Niobrara River that runs north of the Samuel R. McKelvie National Forest is listed by the State of Nebraska as supporting all beneficial uses while parts of the Snake River are listed as impaired due to *E. coli* and pH. Merritt Reservoir is considered impaired due to pH and chlorophyll *a*, and has a fish consumption advisory due to nutrients and mercury.

The Middle Loup River is considered unimpaired in the vicinity of the Bessey Unit while the Dismal River is considered impaired due to *E. coli*.

Potential impacts to 303(d) listed water bodies provide one basis for evaluating Travel Management impacts on water quality. The other basis is potential impacts to smaller streams and water bodies not on 303(d) lists. Site-specific road, motorized trail, and Designated Motorize Use Area analysis would be used to determine water quality impacts by alternative in the Environmental Consequences section of this document.

Wildlife and Plant Species of Concern

Wildlife and plant species of concern include Threatened, Endangered, Proposed, and Sensitive (TEPS) species as well as Management Indicator Species (MIS) and other species (such as elk) that are of concern to land managers. A full evaluation of TEPS wildlife and plant species is in the Biological Evaluation and Assessment (BE/BA) for Travel Management, a separate document required to meet the Endangered Species Act (ESA). This DEIS contains excerpts, summaries, and conclusions from the BE/BA for those TEPS species that may be impacted by the Travel Management decision, along with analysis of impacts on other species.

Section 7 of the ESA requires federal agencies to use their authorities to carry out programs to conserve endangered and threatened species, and to insure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of listed or proposed species, or result in the destruction or adverse modification of their designated critical habitats. A Biological Assessment (BA) must be prepared for federal actions that are “major construction activities” (defined under the National Environmental Policy Act (NEPA) as a project significantly affecting the quality of the human environment) to evaluate the potential effects of the proposal on listed or proposed species (listed as threatened or endangered, or proposed for listing under the ESA). The contents of the BA are at the discretion of the federal agency, and would depend on the nature of the federal action (50 CFR 402.12(f)).

Three species listed as endangered under the ESA are found within the project area and could be affected differently by different travel management alternatives. These are the black-footed ferret (*Mustela nigripes*), the American burying beetle (*Nicrophorus americanus*), and blowout penstemon (*Penstemon haydenii*). No species listed as threatened or proposed are potentially affected.

The Forest Service has established direction in Forest Service Manual 2670 to guide habitat management for Forest Service sensitive species. Preparation of a Biological Evaluation (BE) as part of the NEPA process ensures that sensitive species receive full consideration in the decision-making process. Of the Forest Service sensitive species, the species of greatest concern with regard to travel management are the black-tailed prairie dog (*Cynomys ludovicianus*), swift fox (*Vulpes velox*), Rocky Mountain bighorn sheep (*Ovis Canadensis*), greater prairie chicken (*Tympanuchus cupido*), greater sage grouse (*Centrocercus urophasianus*), and Barr’s milkvetch (*Astragalus barrii*).

Other wildlife and plant species of concern include Management Indicator Species (MIS). These are in the 2001 Forest Plan to aid in the planning process and to monitor the consequences of plan implementation. The criteria used for selection of MIS are listed and described in the Forest Plan FEIS Appendix B (USDA Forest Service 2001b). Those species selected under these criteria as MIS for the Nebraska National Forest Units are listed in the *Final Environmental Impact Statement for the Northern Great Plains Management Plans Revision* (2001 Forest Plan FEIS) (USDA Forest Service 2001b). These species are: 1) plains sharp-tailed grouse, 2) black-tailed prairie dog, 3) greater sage-grouse, 4) greater prairie chicken, and 5) pygmy nuthatch.

Elk are neither TEPS nor MIS species but have become a valuable natural resource on the Pine Ridge Ranger District in recent years. They are evaluated along with endangered, sensitive, and MIS species in this analysis.

Species analyzed in this document and their respective status is listed in **Table 3-8**.

Table 3-8 Wildlife and Plant Species Evaluated

Species	Status
Black-footed Ferret	Endangered
American Burying Beetle	Endangered
Blowout Penstemon	Endangered
Black-tailed Prairie Dog	Sensitive and MIS
Swift Fox	Sensitive
Rocky Mountain Bighorn Sheep	Sensitive
Greater Prairie Chicken	Sensitive and MIS
Greater Sage Grouse	Sensitive and MIS
Barr's Milkvetch	Sensitive
Plains Sharp-tailed Grouse	MIS
Pygmy Nuthatch	MIS
Elk	not TEPS or MIS

The black-footed ferret (ferret) distribution in North America historically corresponded primarily with that of prairie dogs (Higgins et al. 2000). The ferret is considered to be one of the rarest mammals in North America and the world, and was listed as endangered in 1967. Endangerment of the ferret came about largely through, 1) reductions and fragmentation of prairie dog colonies through poisoning, cultivation, urbanization and plague, 2) unintentional poisoning of ferrets through prairie dog poisoning efforts, and 3) disease, specifically canine distemper and plague (USDA Forest Service 2000).

Once thought to be extinct, black-footed ferrets were "rediscovered" in 1981 in prairie dog colonies near Meeteetse, Wyoming. In 1985, sylvatic plague, a lethal disease to prairie dogs and ferrets, was confirmed in the prairie dogs at Meeteetse. The fear of plague was then overshadowed by the discovery of canine distemper in the Meeteetse prairie dog complex.

A plan was formulated to place animals from Meeteetse into captivity to protect them from distemper and to start a captive breeding program. In 1986, all remaining ferrets were removed from the wild, resulting in a captive population of 18 individuals. Captive breeding of ferrets eventually became very successful. Progress in captive breeding has produced over 5,000 ferrets. A goal of the breeding program is to retain as much genetic diversity as possible, but the only practical way to increase diversity is to find more wild ferrets. In spite of intensive searches of the remaining good ferret habitat and investigations of sighting reports, no wild ferrets have since been found.

The captive breeding program now is producing sufficient surplus ferrets for reintroduction into the wild. Initiated in 1991, ferrets have been reintroduced in 18 areas across eight western states including one site in Mexico. One reintroduction location is the Conata Basin/Badlands area between Scenic and Interior on the Buffalo Gap National Grassland, Wall Ranger District. The Conata Basin population is considered part of a non-essential experimental population in accordance with section 10(j) of the ESA. Such designation requires that future section 7 consultations shall consider the ferret population within the experimental population area on the Buffalo Gap National Grassland as a species proposed for listing.

The Conata Basin/Badlands area and another part of the BGNG on the Fall River Ranger District (in the Jim Wilson and First Black Canyon area northeast of Smithwick) are designated MA 3.63, Black-footed Ferret Reintroduction Habitat, in the Forest Plan. These designated areas contain black-tailed prairie dog colony complexes to be actively and intensively managed as reintroduction habitat for black-footed ferrets. The Conata Basin area (Wall Ranger District) has black-footed ferrets but MA 3.63 on FRRD has not yet had black-footed ferrets reintroduced.

Although relatively rare, ferrets have been run over by motorized vehicles. In almost all cases, these incidents were recorded along highways where there is high-speed traffic at night when ferrets are typically moving between prairie dog colonies. An indirect effect to the species is motorized routes to prairie dog colonies that allow hunters easy access. Ferrets can be negatively impacted through accidental take or reduction in prey base in heavily hunted colonies. Roads that can be easily accessed in known ferret areas also may attract tourists and subsequently their pets. Diseases that can be carried by pets and are ultimately lethal to ferrets include both plague and canine distemper.

The American burying beetle is listed as endangered throughout its range. Historically, the American burying beetle occurred in more than thirty eastern states and portions of eastern Canada. Currently, extant populations are only known from South Dakota, Nebraska, Oklahoma, Arkansas, Kansas, Rhode Island, and Texas. These beetles occur in eighteen counties in Nebraska including locations on the Samuel R. McKelvie National Forest and Bessey Unit. ABB (American burying beetles) have not been found on other units of the Nebraska National Forest. A population discovered in south central Nebraska in the mid-1990s meets the criterion to become the third self-sustaining population in the Midwest area (Peyton 1996, Bedick et al. 1999) outlined in the American Burying Beetle Recovery Plan (USFWS 1991). Two captive breeding facilities were established in the early 1990's, and reintroduction efforts are underway in Massachusetts and Ohio.

ABB live a single year, are nocturnal, non-migratory, and spend the winter dormant underground. They excavate the soil under a suitable carrion source, and create a nest chamber in the summer. The female deposits eggs near the carcass. Females, and sometimes males, will remain in the brood chamber caring for the young. This beetle is fairly mobile, and has been known to fly over 6 kilometers (about 3.7 miles) in one night, although most flights are likely considerably shorter (Bedick et al 1999, Natureserve 2009). There are two fairly distinct periods of peak seasonal activity for American burying beetles during the summer: 1) early June to early July and 2) early August to early September. During the first period, the beetles are mainly scavenging food and looking for a suitable brood chamber. During the second period the teneral beetles (new adults produced from the last breeding season) scavenge food and build up their fat reserves to go dormant for the winter.

Optimal breeding habitats are believed to consist primarily of deciduous forests having significant amounts of humus and deep, loose soils (Lomolino and Creighton 1996). However, habitats in Nebraska where these beetles have been found consist of grassland prairie, forest edge and scrubland. Currently specific habitat requirements are unknown (U.S. Fish and Wildlife Service 1991, Ratcliffe 1995), and recent surveys conducted on the Bessey Ranger District from 2003 to 2006 have found several beetles in and around forested habitats (this includes thinned and unthinned stands of both pine and eastern red cedar), in grassland environments, grass/pine mix, and near aquatic and wetland environments. Carrion availability may be the most important

factor of where beetles occur than the type of vegetational or soil structure (Ratcliffe 1996). Currently no critical habitat has been designated for the American burying beetle, and it is considered a habitat generalist across its range (Lomolino et al 1995).

In 2003, seven beetles were found as part of a survey effort during the Bessey I hazardous fuels reduction project. The trapping effort expanded in 2004 on the Bessey Unit, with the placement of 20 trap sites in a variety of habitat types. Four beetles were captured in 2004, with 2 recaptures. Also that fall 5 trap sites were established on the Samuel R. McKelvie National Forest at areas of interest. During a quick three-day trapping session, two beetles were captured, with one recapture noted (Dobesh et al 2004).

In 2005, the total number of trap locations was increased to 38. Four more beetles were captured with one recapture. No beetles were caught on the Nebraska National Forest during statewide trapping efforts late in 2005. Out of 19,773 total carrion beetles trapped from 2004 to 2005, 11 (plus 3 recaptures) were American burying beetles. These surveys yielded too few specimens to determine habitat preference (Dobesh et al 2005). During that summer the trap site on the McKelvie was run as part of the statewide survey efforts. In June 2 beetles were captured with no recaptures, and in the late summer statewide survey 16 beetles were captured with 2 recaptures. In total 20 ABB were captured on the McKelvie during the summer of 2005.

Twenty-four traps were monitored during the surveys conducted on the Bessey unit in 2006, including new traps placed in recently burned grassland habitat. This trapping effort resulted in six more American burying beetle captures plus two recaptures in the Bessey II project area (Dobesh et al 2006). Additional surveys conducted on the McKelvie that year yielded 11 new beetles with 3 recaptures. Surveys conducted on the Bessey Unit in 2007 and 2008 yield zero ABB captures, and no surveys were conducted on the McKelvie during that time frame.

Several factors confound predicting habitat preference in the project area. American burying beetles have a broad geographic range, and it is unlikely that soil types or vegetational structures are generally limiting factors for this beetle, although certain conditions are not suitable for carcass burial (e.g., very xeric, saturated, or loose sandy soils) (USFWS 1991). Creighton and Schnell (1998) trapped American burying beetles in a variety of habitat types within their study area. They also reported that 71 percent of recaptures were in different habitat than where the beetles were initially trapped. Based on the above factors, it is assumed that American burying beetles could occur almost anywhere within the McKelvie or Bessey Units. No areas were eliminated as unsuitable to American burying beetle. Soil types across these units are fairly homogenous and not useful in this case to delineate preferred habitat. The soils consist largely of Valentine series soils (82% sand content). W.W. Hoback (pers. comm.) considered the area marginal habitat for the American burying beetle.

Threats to this species are not well understood. Habitat loss and habitat fragmentation are widely implicated in the dramatic decline of this species. Habitat fragmentation and increases in edge habitat on private and state lands in Nebraska may have resulted in increases in raccoon, skunk, and other scavenger populations, possibly resulting in reduced carrion for beetles. Habitat fragmentation may also have contributed to the reduction in optimum sized carrion, especially greater prairie chickens. Declines in other prey species, pesticide (DDT) use, interspecific *Nicrophorus* competition, and overgrazing (alters suitable prey occurrence) are also listed as possible threats to American burying beetle (US Forest Service 2000, USFWS 1991).

Potential effects of travel management alternatives include the varying possibility of collision between ABB and motorized vehicles, or a motorized vehicle running over and destroying a brood chamber. ABB have been identified as being attracted to lights and driving at night carries the heaviest risk of take from motor vehicle use. Individuals or brood chambers could also be destroyed by equipment used to construct roads and trails.

Erosion resulting from motorized travel may impact American burying beetles underground in a variety of ways. With the soil removed, the beetles and/or their brood chambers may either become partially or completely exposed or their burial depth may be decreased. Under these conditions the beetles face a number of risks. They could become prey for birds, small mammals or other animals including other insects. In the winter while dormant they will most likely freeze to death whether they are exposed or even if their burial depth is decreased which will decrease the isolative layer that they are utilizing to survive the winter months. Also recent studies on closely related species of *Nicrophorus* have shown a very low tolerance to water loss and tend to desiccate very rapidly (Bedick et al 2006). Another effect of motorized travel would be increased soil compaction, which may lead to the death of individuals buried, or to the destruction of buried brood chambers.

The disturbance of the prey base from motorized activity, habitat fragmentation, or even road or trail densities may lead to changes in species compositions in those areas, and could negatively impact the beetle because of reduced available carrion due to motorized activity levels across the project area. Limiting cross-country travel would reduce disturbance of prey species. Road or trail kill may also impact this species by attracting the beetle to areas of higher vehicle traffic thus increasing mortality.

Blowout penstemon is a perennial forb of the figwort family that buds in early May and flowers from mid-May through late June. This species was once common in active sand hill blowouts. Many historic locations do not support this species today because of elimination of the habitat due to stabilization of the sand dunes. Improved range management practices, which stabilize the sand dunes, are a major cause of the species decline. Insects and periods of drought may be the greatest natural threats to the survival of this species (U.S. Fish and Wildlife Service 1992).

Blowout penstemon requires blowouts that are devoid or nearly devoid of vegetation, sites usually created by a combination of disturbance processes and characterized by active wind erosion. Blowout penstemon is usually found on the leeward side of craters within blowouts.

The project area does contain habitat capable of supporting blowout penstemon. Surveys for suitable habitat were conducted from 1991 to 1994 and 58 acres were identified (Appendix H, NGP EIS). No naturally occurring populations are known to exist on the project area; however, reintroductions have taken place on both the Bessey Unit and at McKelvie as recently as 2008. Eight populations currently exist between the two areas with a combined population of 5255 plants. The goals and objectives for this species are outlined in Appendix H of the NGP EIS and the Blowout penstemon conservation plan.

There is the potential for the species to be negatively impacted by motorized vehicles running over individual plants or in some cases, entire sites with many plants being impacted if that area is heavily used, such as ATV "play areas." Hill climbing and associated OHV activities may insure continued disturbance and erosion in the area, but driving over plants would cause a

severe negative impact to the population. Off-road vehicle use has been observed within one of the largest and most remote blowout penstemon populations, with many plants being damaged.

OHV cross-country use could create new blowouts that may become suitable habitat for blowout penstemon. New blowouts created by OHV use would have to be protected from further traffic to allow a population of blowout penstemon to become established and remain as a viable population.

Black-tailed prairie dogs are Forest Service sensitive species as well as Management Indicator Species (MIS) in the Nebraska Forest Plan. Prairie dogs are found mostly in the Buffalo Gap or Oglala National Grasslands. Several small prairie dog towns are found on the Bessey Unit, one small town is located on the Pine Ridge Unit, but no prairie dog towns are found on the Samuel R. McKelvie National Forest.

Prairie dogs are subject to poison by both private individuals and government agencies. Plague is present on the Buffalo Gap National Grassland and has killed many prairie dogs. Shooting is allowed year around on private lands and from June 15 –February 28 on the National Grasslands in South Dakota with no limits imposed. Shooting is allowed all year in Nebraska on both public and private land. Being at the bottom of the food chain, prairie dogs are killed and eaten by various predators including the endangered black-footed ferret.

Prairie dog management objectives are described in the LRMP and in Amendments 2 (2005) & 3 (2008) of the LRMP. Population trends for the black-tailed prairie dog in the NNF are addressed in detail in these documents.

Proposed roads in the project area are adjacent to and go through prairie dog colonies. Although there is certainly the possibility of a prairie dog being hit by a vehicle, roads in and of themselves have little effect on prairie dog habitat. If there is any affect it may be positive because habitat created by a road would be considered low structure habitat which is preferred by prairie dogs. Prairie dogs will use roads as travel corridors while migrating between colonies. This fact may result in a greater chance of being hit by a vehicle while using a road.

The largest effect that roads have on prairie dog populations is access for prairie dog shooters to get to colonies. Prairie dog shooting has a profound effect on prairie dog colonies both through direct killing of prairie dogs and indirect stress on the prairie dogs as they attempt to avoid being shot (Pauli 2005).

Swift foxes are known to occupy an area east of Ardmore on the FRRD. This area has been designated MA 3.64, Special Plant and Wildlife Habitat, in the Forest Plan. Swift foxes have also been sighted on the east half of the BGNG, likely the result of a reintroduction effort initiated by Badlands National Park. On the ONG there have been incidental sightings of swift fox but there is no evidence of a resident population. Swift foxes are more likely to use areas closer to roads because of availability of carrion cause by animal vehicle collisions and to avoid predation by coyotes that avoid roads with elevated human use (Russel 2006).

Rocky Mountain bighorn sheep occur in several areas across the NNF. Two areas on the Pine Ridge Unit are designated MA 3.51, Bighorn Sheep Habitat, in the Forest Plan. This management area has guidelines specific to travel management which are: (1) Limit recreational activity if it would disturb bighorn sheep breeding and lambing, and (2) restrict motorized travel, as needed, to protect sheep concentrations during lambing, breeding, and winter use, except as

authorized and permitted. Two other areas also contain Rocky Mountain bighorn sheep, the pinnacles area just north of Badlands National Park on the Wall Ranger District and the Roundtop/Eagle Eye area of the ONG.

Greater prairie chicken may be found on the Bessey Unit and the Samuel R. McKelvie National Forest. Before European settlement, greater prairie chicken generally inhabited tall grass prairies (Johnsgard 1983) in the central and northeast United States. Today they occupy less than 10 percent of this maximum historic range (Johnsgard 1983).

This grouse is a management indicator species for the Bessey Ranger District, and a Region 2 sensitive species. Prairie chickens are game birds in Nebraska.

Greater sage grouse may be found in the northwestern most part of the Fall River Ranger District. The area inhabited by greater sage grouse has been designated MA 3.64, Special Plant and Wildlife Habitat, in the Forest Plan. The sage grouse is identified as a Management Indicator Species (MIS) in that area and a Forest Service sensitive species. Sagebrush shrubland is the habitat of the sage grouse. Sagebrush is the primary food during the summer and is almost the exclusive diet during winter. Almost all sage grouse activity occurs in sagebrush or in meadows or openings adjacent to sagebrush.

One sage grouse display ground has been monitored in the area since 1991. Though as many as 17 birds have been observed in earlier years, no birds have been seen on the display ground since 2002. In the spring of 2005 one male sage grouse was observed displaying in the northwest portion of the sage grouse area. On subsequent visits to that area in 2005 and 2006 no birds were seen indicating that the sighting was a wandering male. In the spring of 2006 five males and three females were observed exhibiting courtship behavior approximately one mile southeast of the spot of the 2005 sighting. When the site was visited later that spring no birds were observed. This area was surveyed again in the spring of 2007 and 2008 and no birds were found.

Barr's milkvetch is a low growing, densely tufted or mounded perennial that becomes cushion-like and elevated above the soil surface in eroding habitats. The plants rarely exceed 10 cm (3.9 inches) in height, but the mats may reach approximately 45 cm (17.7 inches) across. It grows on dry badlands and semi-barren slopes with low vegetation cover. Populations most likely to be impacted by travel management alternatives occur in the Railroad Buttes area and have been impacted in the past by off-road motor vehicle use. In the Railroad Buttes area Barr's milkvetch is limited to the upper slopes on soils derived from White River Group strata. It has not been found on darker soils derived from Pierre Shale.

Plains sharp-tailed grouse are found throughout the NNF. It is an MIS species but is not considered Forest Service sensitive. It is found in association with grasslands with diverse structural stages and areas of high-structure grasslands. Habitat for sharp-tailed grouse has been delineated based on ecological units derived from soil mapping. In general, better soils (not shallow or clayey) provide potential habitat for sharp-tailed grouse. The Bessey and McKelvie units are nearly all potential habitat, the Pine Ridge unit little more than half potential habitat, and the other units are in between.

Pygmy nuthatch is an MIS species found on the Pine Ridge Unit. This species prefers heterogeneous stands of ponderosa pines with a mixture of well-distributed old pines and vigorous trees of intermediate age (Ghalambor and Dobbs 2006, Appendix H of the NGP EIS

(USDA 2001a)). Pygmy nuthatch abundance correlates strongly with foliage volume (Kingery and Ghalambor 2001). Larger trees and snags with cavities are preferred for roosting and nesting (Appendix H of the NGP EIS (USDA 2001a)). All forested habitat currently in the Pine Ridge Ranger District is considered potential pygmy nuthatch habitat.

Elk are neither TEPS nor MIS species but have become a valuable natural resource on the Pine Ridge Ranger District in recent years. Published information (Stillings 1999 and Cover 2000) indicates that the Bordeaux Creek and Soldier Creek on the Pine Ridge Unit and Roundtop on the ONG provide important habitat for elk calving, summer, and winter needs. Current populations in the Pine Ridge area tend to be increasing, with the majority of elk residing on private land. It is estimated that the entire Pine Ridge area could probably support around 2000 individuals. However, a herd size limited to 600 elk is probably more acceptable to the public due to damage caused by elk to fences and crops (Hygnstrom and Ress 2004).

Forest and Rangeland Management

Forest Management

The Pine Ridge Unit contains forests actively managed for forest products. The Oglala National Grassland also contains small timbered areas and the Samuel R. McKelvie National Forest and Bessey Unit contain planted forests.

Forest management relies on NFSRs for primary access, but frequently additional “temporary” roads are constructed to access specific locations. These temporary roads are intended to provide access for a specific operation, i.e. a timber sale, and then be decommissioned; however temporary roads often remain passable for OHVs or other high clearance vehicles long after the specific operation has been completed. In many forested areas, temporary roads become part of a system of user-created routes.

Temporary roads provide needed access to forested areas over many years in many cases. They typically are not included in the Forest road system because they are short and not designed for public use. The travel management process will include consideration of temporary roads that are necessary for forest management into the Forest road system.

In late July through early August of 2006 two large wildfires occurred on the Pine Ridge Unit. One started on the northern edge of the Pine Ridge National Recreation Area (Roberts Tract fire) and burned south to the Table Road between NFSR 702 and East Ash Road. The second wildfire started north of NFSR 719 and burned north to Highway 20 (Spotted-tail fire) between Bordeaux Road on the east and Kings Canyon/Highway 385 on the west. Approximately 8,000 acres of ponderosa pine were killed in the 2006 wildfires. Replanting of fire-burned areas was started in 2008 in the Spotted-tail vicinity and also near the junction of NFSR 719 and NFSR 718. Additional acres east of Kings Canyon were planted in 2009 for a total of approximately 328 acres. Following additional planning, planting is expected to continue at some level primarily in the Spotted-tail area and north and east of the Pine Ridge National Recreation Area.

An active tree thinning program has been ongoing on the Pine Ridge Unit since 2002 in order to reduce fuel loading, maintain forest health, and improve wildlife habitat. Thinning activities are approved to continue in unburned areas south of NFSR 719 and north of NFSR 726.

Off-road travel that occurs in plantations can result in severe damage to above ground stems and tops of planted trees, which would likely affect long-term survival or health of individual seedlings. The travel management process will consider potential damage to planted trees that may occur with allowed off-road motor vehicle use.

Rangeland Management

The Forest and Grasslands support numerous viable livestock operations. Approximately 98 percent of the lands managed by the Nebraska National Forest are within active allotments, including areas that have become popular for motorized recreation.

Under the terms and conditions of the permitting system, permittees (persons holding a term or association grazing permit for a given area, the allotment) are required to maintain all the improvements within the grazing allotment in which they are authorized to graze livestock. This includes fence lines, pipelines, tanks, windmills, solar pumping systems, and livestock holding facilities. Travel to improvements is traditionally done by vehicle (ATV or pick-up). In addition animal husbandry practices are conducted on the allotment such as salting, herding, and overall health inspections. The grazing permittee, along with other permit holders, are not bound to designated roads and trails by the TMR, rather the permit specifies what types of off-road travel are allowed while implementing the permitted activity. In other words, a grazing permittee may use a motor vehicle off-road to place salt or repair a fence, but the permittee may not go off-road riding within the allotment for hunting or recreational riding.

Some conflict occurs between rangeland management and motorized travel, particularly in those areas with high recreational OHV use. The presence of motorized recreation can disturb livestock by upsetting grazing patterns (particularly dispersed camping around watering sites) and unintentional herding. Also, gates are sometimes left open and rangeland improvements vandalized, making livestock management difficult for the range permittee.

Many roads and trails that are used for recreation are also used to facilitate management of livestock and forage resources. Heavy OHV use can damage these roads and trails making the nearly impassible for larger vehicles, especially on the Bessey Unit where some designated roads have become passable only with an ATV or other vehicle designed for travel in loose sand.

Conflicts between permitted livestock grazing and motorized use can occur in most locations across the project area; however most areas have light motorized use and conflicts are minimal. The greatest concern for rangeland management with respect to travel management is on Mixed Use roads and motorized trails in areas with heavy recreational OHV use. This includes six allotments on the Bessey Unit adjacent to the Dismal River trail, two allotments in the Railroad Buttes area (West Railroad Buttes and Bennet-Scism allotments), two pastures in the Roundtop/Eagle Eye Rock area of the ONG, and several pastures on the Pine Ridge Unit in the Spotted Tail, Strong Canyon, Bordeaux Creek, and Coffee Mill Butte areas.

Noxious Weeds

Presently it is estimated that 4,800 acres of the Nebraska National Forest are infested with invasive species (excluding Ft. Pierre National Grassland).

Invasive plant species can be expected to occur in higher densities along roadways, in areas disturbed by timber harvests, campgrounds, recreation trails, trailheads, livestock, utility corridors, gas lines, and ditches; however, they are also known to invade otherwise healthy, undisturbed plant communities.

A invasive plant species is an exotic plant designated at the Federal, state or county level, that if established or introduced, may render lands unfit for agriculture, forestry, livestock, wildlife or other beneficial uses. When so designated, property owners/managers have a legal responsibility to prevent the propagation and spread of that weed or manage it in accordance with a weed management plan. Many plants can be invasive but are not legally designated as noxious, thus the term invasive exotic is often used as a broader, more inclusive term referring to problematic plants.

The invasion of native plant communities by exotic, weedy species has been called “the greatest permanent land degradation” in recorded history (Asher and Spurrier 1998). Invasive plants have the potential to out compete and displace native species, reduce soil quality and change the workings of ecosystems, along with other negative effects. These weeds spread in a variety of ways, including animals (wildlife, pets and livestock), hikers, bikers, wind, water and motorized equipment. Each weed has unique characteristics that make seed transport by some methods more significant than others. OHVs have a huge potential for weed spread. Vehicles driving through populations of invasive plants often get seed entrapped in tire tread or undercarriages, move to another area and then drop seeds into a previously un-infested area. A study performed by Trunkle and Fay (1991) determined that an average of 1,644 knapweed seeds became attached to a pickup truck after backing 40 feet through an infested area and then pulling back out. After driving 1 mile, 14 percent of seeds were still attached, and after 10 miles, only 8 percent remained attached.

Invasive species can become established in areas of soil disturbance. Soil disturbance can result from heavily grazed areas, off-highway vehicle use, fire and/or flooding. Once established, noxious weeds compete with and can displace native plant species and also affect the quality of wildlife habitat.

On the Fall River District, approximately 500 acres (Fall River District weed shapefile – 1997-1998) of Canada Thistle (*Cirsium arvense*) occur through out the District, generally in wetter regimes such as drainages and stock dams, but it also occurs where ever soil disturbance occurs such as in prairie dog towns. Approximately 40 acres of Hoary Cress (*Cardaria draba*) exist around the Oelrichs and Ardmore area, generally in small scattered patches. Approximately 100 acres of Russian Knapweed (*Acroptilon repens*) exist north of Smithwick in the Bochert allotment and also west of Ardmore in the Cow Camp allotment. 10 acres of Leafy Spurge (*Euphorbia esula*) exist on Moss Agate Creek west of Edgemont and on Horsehead Creek, in the Werner Allotment, west of the Pioneer Rest Stop. Approximately 50 acres of Tamarix (*Tamarix spp*), or Salt Cedar, exist mainly along the Cheyenne River, with the largest concentration up river from the intersection of the Cheyenne River and SD Hwy 44 in Pennington County. It is estimated that 1 acre of Scotch Thistle (*Onopordum acanthium*) is scattered through out the District. All of the above invasive species, except Scotch Thistle, are designated as South Dakota noxious weeds.

Presently on the Wall Ranger District there is an estimated 2,880 acres infested with six noxious weeds (invasive plant species). The species are Canada thistle, Russian knapweed (*Centaurea*

repens), hoary cress (*Cardia draba*), sickleweed (*Falcaria vulgaris*), sulfur cinquefoil (*Potentilla rigida*), and salt cedar (*Tamarisk spp.*). Canada thistle occurs in scattered patches throughout the entire Wall Ranger District, primarily in intermittent drainages. Russian knapweed (*Centaurea repens*) occurs in the Whitewater drainage in Jackson County. Hoary cress (*Cardia draba*) is in Jackson County just north and west of Chamberlain Pass. Sickleweed occurs north of the Sage Creek tributary to the Cheyenne River and sulfur cinquefoil has been recently located in the Whitewater Creek drainage in Jackson County. Salt cedar has been found in isolated locations, on the shores of four livestock water impoundments.

On the Pine Ridge District, approximately 1200 acres of state listed noxious weeds exist including both the Oglala National Grassland and Pine Ridge Unit. Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*) exists in greatest acreages in the West Ash, Rock Canyon, and Lower Sawlog drainages. Canada thistle (*Cirsium arvense*) also occurs on the majority of major drainages, reservoirs and stock dams on the Oglala National Grassland. Hounds tongue (*Cynoglossum officinale*) is rapidly increasing and occurs in East Ash and Big Bordeaux Creek drainages. Field bindweed (*Convolvulus arvensis*) occurs within the Soldier Creek Wilderness and along roads in the Hudson-Meng Bonebed site, FSR 717, 718, 720 and 723. Another species that is becoming established along Dead Horse Road is Dalmatian toadflax (*Linaria genistifolia*) which is on the Nebraska weed watch list.

On the Bessey Ranger District 1-2 acres of leafy spurge (*Euphorbia esula*) and 3-5 acres of Canada thistle (*Cirsium arvense*) spread across the district. Samuel R. McKelvie has 25 acres of leafy spurge (*Euphorbia esula*) and 8-10 acres of Canada thistle (*Cirsium arvense*) spread across the district. Most of these acres occur in livestock enclosures.

It is common knowledge that invasive species are strongly associated with travel corridors such as roads and trails (USDA-FS 1998b, ODA 2001, Penner 1997, Penfold 2000, Brothers 1992). People, vehicles and animals function as vectors in seed transport as associated with the common use of such thoroughfares. Often roads and trails serve as the initial invasion corridors for weeds, which then spread outward from these locations. The perpetual disturbance in these areas creates a perfect environment for weeds to launch new populations.

While some weeds such as Canada thistle (the most common weed in the project area) prefer moister habitat along draw bottoms or near stock dams, other weeds such as leafy spurge (the second most common weed) can grow in dry uplands. In other words, weeds can be spread by motor vehicles on any road or trail across the project area. Therefore assessment of travel management impacts on noxious weeds considers all roads and trails and designated motorized use areas as potential sources for the spread of weeds.

Heritage Resources

Regulatory Framework

Forest Service Policy (FSM 2361.3) requires that all projects with the potential to affect cultural resources be considered an undertaking. All undertakings (as defined in 36 CFR part 800.16[y]) are conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). An action would be considered significant if it resulted in an "adverse effect" (as defined in 36 CFR Part 800.5) to a property that is listed on, eligible for, or potentially eligible for listing on the National Register of Historic Places (NRHP).

Potential adverse effects can usually be mitigated through site-specific measures. Any new and unforeseen ground-disturbing activities proposed as a result of this project such as road closure or rehabilitation activities will be treated as a separate and distinct undertaking, triggering its own Section 106 process. Other affected laws and regulations include the Archaeological Resources Protection Act of 1979, the National Environmental Policy Act (NEPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act of 1978.

Cultural Overview

Lands administered by the Nebraska National Forests and Grasslands lie within the Missouri Plateau section of the Great Plains province (Hunt 1967). Current evidence of cultural activity in this area reflects at least 12,000 years of continuous human use and occupation and the potential for past human activity spans the entire chronological sequence of the Great Plains culture area (Bleed and Flowerday 1998, Hannus and Winham 1999, Prentiss and Rosenberg 1996).

Cultural Tradition	Time Period
Paleoindian	12,000 – 7000 BP
Archaic	7000 – 2000 BP
Woodland	2000 – 1000 BP
Protohistoric	AD 1550 - 1750
Historic	AD 1750 - 1950

Native American occupation of the area begins with the Paleoindians who are typically characterized as big game hunters who practiced a communal hunting strategy. They occupied large territories, tracking and killing herd animals including bison, and now extinct camel, horse, and mammoth. 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 subsequent Archaic period. While bison hunting continued to be a major subsistence strategy, there was an increased reliance on plant and small game resources. This reliance on plants is seen in the increased use of grinding stones to process seeds and other vegetal matter. Temporally diagnostic projectile point styles changed from lanceolate to large side notched types. Site types typically exhibit short-term occupation and may include hearth features.

The Woodland and Late Prehistoric period is recognized for two major technological advances: the manufacture and use of ceramic vessels, and the shift from the atlatl and dart to the bow and arrow. Projectile points are predominately stemmed and corner-notched showing great variability in style and workmanship. Site types are similar to the Archaic period. Along the northern plains margin along the Middle Missouri, the most significant change is the emergence of semi-sedentary villages with a horticultural form of subsistence. Within the sandhills area and western Nebraska and South American, late prehistoric archaeological knowledge of the area is sparse and comes primarily from private artifact collections and sites such as Kelso (Woodland site excavated in the 1940s) and Elfgren (blowout) located on the eastern edge of the province in the Sandhills and in South Dakota. Large temporal gaps exist in the human occupation

particularly in the Sand Hill area and western arid portions of the project area, especially during the Archaic period. Reasons include, but are not limited to, climate change during the mid-early Holocene when sand dunes were active, sites buried under eolian sand, and a lack of long term systematic research.

The Protohistoric period is defined by “direct or indirect contact with European groups...(with)...the introduction of the horse and the gun” (Hannus and Winham 1999:37). The Northwestern Plains is characterized by a shifting pattern during this time of tribal dominance and we see indications of the introduction of possibly the Kiowa, Kiowa-Apache, Cheyenne, Arapaho, and Dakota.

The historic record of the resource area begins with the early travelers who traversed the area to explore and establish transportation routes and to extract resources – mainly fur trappers and traders and later mineral resources. It wasn't until the early 1900's that European Americans started to homestead in the area. The Homestead Act of 1909 and the Stock Raising Homestead Act of 1916 allowed settlers to file on 320 and 460 acres of public land. Small homesteads continued to spring up in the area through the 1920's and 1930's but the environment in the western portion of the resource area was so marginal that five years of consecutive drought in the early 1930's combined with the Great Depression forced many homesteaders to abandon their property. In 1934, the U.S. Government began repurchasing the homesteads under the Bankhead-Jones Farm Tenant Act. The Soil Conservation Service administered the public land in the area until 1954 when the Forest Service took over management.

Traditional Cultural Properties

There are no formally documented Traditional Cultural Properties (TCPs) in the Travel Management Project Area. However, proper consultation with the appropriate Tribal Historic Preservation Officers may identify TCPs and other sacred areas affected by the Travel Management Plan.

Paleontological Resources

The paleontological resource within the NNF spans a wide realm of depositional environments ranging from deep marine deposits to terrestrial volcanic deposits. The oldest exposed units are Late Cretaceous and the youngest units are Pleistocene deposits.

The Nebraska National Forest conducts formal unit-wide paleontological resource inventories. Like most forests/grasslands, paleontological permits have been issued to various universities, museums, and other groups to conduct paleontological research, excavation, or any other study through a permitting instrument such as a Special-Use Permit (SUP). The SUP requires a final report outlining the research to be conducted and the final results of the research once completed. Since 1991, all known paleontological work conducted on the Nebraska has been allowed through various permitting instruments such as Challenge Cost-Share and the SUP, and all have paleontological reports attached. Therefore, most of fossil localities have been documented since 1991 by the various partners and fossil permittees.

Illegal fossil activity was suspected to be occurring throughout the Forest, but until 1991, managers have not known to what extent. Since the fossil inventories, land managers on the Nebraska National Forest have an information base from which they can manage the

paleontological resource proactively. Fossil thefts occur on all of the units of the NNF except from the Bessey Unit and Samuel R. McKelvie National Forest. Fossil theft is the illegal removal of an entire fossil or any part thereof; whereas, fossil vandalism is the destruction of a fossil by unnatural means, such as pulverizing it or carving into the sandstone blocks containing paleontological resources. Several fossil theft cases have been adjudicated, and the civil fines have been given back to the Nebraska National Forest for fossil projects.

Roads, motorized trails, and off-road motorized use allow motorized access to fossil sites both for legitimate fossil collecting and for fossil theft and vandalism. Damage to fossils can also be inadvertent by motorized vehicles which unknowingly running-over sites.

Fossil theft and vandalism, and inadvertent fossil destruction, may be reduced by limiting motorized travel to designated routes and areas. Closing or re-routing roads that travel through or near fossil sites can also reduce theft, vandalism, and destruction. Designated motorized use areas should be designed to minimize potential destruction of fossils. However, permitted fossil collecting may allow motorized travel off the designated routes and outside of designated areas through an SUP.

More information on the kinds of fossils located on the NNF and in what types of areas these fossils can be found is in the Paleontological Resources Report in the project record.

Costs of Construction and Maintenance

Roads

The monetary costs associated with the road system in the Nebraska NF and Grasslands are substantial to the Forest Service, the Counties and the State & Federal Highway organizations. Road maintenance budgets are not expected to increase significantly over current levels in the short term. Road maintenance funds can be augmented by utilizing road agreements with counties to share maintenance funding on what are considered joint use roads. Federal Highway funding is also available on a yearly basis for maintenance and upgrading of Forest Roads that are in the Federal Forest Highway program. Non-routine Forest Service appropriated funding is occasionally available for accomplishing deferred maintenance or improvements on roads of special environmental or recreational importance.

National Forest System Roads (NFSRs) are classified in general by Maintenance Level (ML), which includes consideration for the level of comfort provided to users and the level of effort and resources needed to maintain them. A description of MLs is in Chapter 1 of this document under the Current Condition section. Miles of road by maintenance level is listed in **Table 3-9**.

Table 3-9 Miles of Road by Maintenance Level for NFSRs in the Project Area

Maintenance Level	Miles	Percentage of Total
1	3	>1%
2	514	84%
3	83	14%
4	12	2%
5	0	0%
Total	612	100%

The ML 1 roads, since they are closed to vehicle traffic, require very little maintenance funding. Any costs would be for monitoring or special maintenance to repair or prevent serious damage due to poor drainage issues.

The majority of the roads under the jurisdiction of the Nebraska National Forest are Maintenance Level 2 roads. The maintenance needs for these roads vary widely based on the soil conditions, the topography, and the level of use. Many of these roads developed as two track paths that were not positioned or constructed from an engineering design. Roads with reasonable topography and low traffic levels hold up well with little or no maintenance. Roads through the sand hills hold up well if the center grass strip remains intact but often become impassible by full sized vehicles if the center strip is destroyed by heavy ATV use. Any roads in steep topography typically sustain significant erosion damage unless the soils are non-erosive. Historically, most of the ML 2 roads have held up well and have received little or no maintenance. Maintaining ML 2 roads that are two-tracks in appearance by blading can actually cause increased maintenance needs by destroying grass strips that helps hold the soil.

ML 2 roads are monitored and repaired as needed as the situation and funding allows. These roads receive OHV traffic to widely varying degrees from none in remote areas to heavy near recreation areas such as the Bessey Campground. Heavy use of some roads in the Sand Hills areas near Bessey has had a significant effect on their functionality and their maintenance needs. In this situation, as the center grass strips are destroyed, the running surface tends to narrow up and become soft making it difficult for full sized vehicles. Restoration methods could vary from closure of the roads to mechanical hardening of the running surface with new materials which can be expensive.

Maintenance Level 3 and 4 roads receive the majority of the routine maintenance funding on the Forest. These roads are generally one and two lane gravel roads that require routine blading, sign replacement, culvert cleaning, and occasional gravel replacement. Gravel replacement is an expensive process especially in remote areas like the Bessey Ranger District that are not in normal proximity to gravel sources. Some asphalt roads exist on the Forest which require little yearly routine maintenance; however maintenance costs increase when the pavement ages and overlay and replacement costs are very high. The asphalt roads are all located at the Bessey Ranger District, some of which are in the Bessey Campground. The asphalts on these roads are at the end of their useful service life and plans are to overlay or convert them to gravel as funding allows.

The 2,835 miles of non-system routes in the Forest are not maintained by the Forest Service except for occasional costs to repair or prevent erosion damage or to close the route to motorized use.

Motorized Trails

The current motorized trail system on the Forest is made up of an 8.5 mile trail on the Bessey Ranger District. This Dismal River trail is primarily in sand and historically has little routine maintenance other than brush removal and gate repairs. The trail has been self sustaining in the sand. Interestingly, there are some ill effects from the wind moving the sand in some areas when that section is not being used.

Signs

Clearly marking (signage) on roads and trails aid all users in knowing what to expect on the route ahead. Trails can be signed for user restrictions, difficulty levels, distance, connections, etc. Properly signed trails are important to the success of a trail system. Signs are especially important if roads are designated as open to all vehicles to inform the public of potential presence of non-highway legal OHVs on the road. The cost of purchasing and posting signs is an additional expense necessary to maintaining a road and trail system.

It is possible that vandalism of Forest signs will decrease after implementation of the Rule if Forest users recognize that destroying a sign that locates a route open to motorized travel will reduce the usability of the system overall. A road and trail system map will be available but the loss of signs will make it more difficult for users to determine where travel is legal. New or increased funding sources will likely be necessary to provide signs for a new trail system. The 2005 Travel Management Rule reduces reliance on signing on the ground somewhat with the requirement of the production and use of a Motor Vehicle Use Map (MVUM). The MVUM describes the vehicle types and time periods that are legal on designated roads and trails and places the burden on the user to know their location. With the availability of the MVUM to the Forest user, their presence on a route or in an area that is prohibited will be all that is required for a citation to be upheld, however a current and effective system of signs should be very helpful in reducing citations.

Safety

State Laws Concerning Vehicle and Operator Licensing

South Dakota and Nebraska State Laws describe the legal requirements for motorized vehicles and operators using public highways in the project area. These laws currently require that motorized vehicles operating on public highways be registered and licensed by the state and that operators have a valid state drivers license. Forest Service roads are considered public highways. The Travel Management Rule allows the Forest to make designations under 36CFR212.55 concerning motor vehicles that are not in accordance with state law under appropriate circumstances. State traffic laws do not apply to National Forest System Trails, therefore unlicensed vehicles and operators are allowed on designated Forest Service motorized trails unless prohibited by the Forest Service.

Mixed-Use Analysis

The term “mixed use” is from the Travel Management Rule. It is defined as the “mixing of highway legal with non-highway legal vehicles on the same road” or in other words, “roads open to all vehicles”. There are alternatives in this analysis that propose that some roads be “mixed use”.

Where necessary, a decision on whether to designate roads for motorized mixed traffic will be informed by a motorized mixed-use analysis performed by a qualified engineer. Depending on the complexity of the situation, the analysis may range from documenting engineering judgment to an engineering report that addresses many factors related to motorized mixed use. The analysis considers the safety risks in terms of crash potential and crash severity of designating highway legal and non-highway legal vehicles for concurrent use on the same roads.

In addition, several roadway factors and traffic uses will also be considered in the mixed use analysis, factors such as prudent driver expectations, traffic type, volume, speed and road conditions such as surfacing, sight distance, alignment, roadside conditions, etc. The motorized mixed use analysis will also identify management options that can be implemented to reduce the risk to a manageable level.

South Dakota State Law Considerations

South Dakota State Law permits properly outfitted OHVs to be licensed as highway legal and, when operated by a licensed driver with proof of insurance, they can be driven on public roads and highways (except for Interstate Highways).

Forest Service roads that are open to (not necessarily maintained for) passenger car traffic are considered public highways which includes NFSR maintenance level 2 - 5 roads. It is the opinion of the South Dakota Attorney General's Office that unlicensed (non highway legal) OHVs are prohibited from National Forest Service ML 2-5 roads, when passenger car travel is allowed (letter from the Assistant Attorney General of South Dakota, December 7, 2007). Allowing unlicensed (non highway legal) vehicles on National Forest System roads which allow for passenger car travel would not be in accordance with South Dakota state law.

All action alternatives (Alternatives 2, 3, and 4) contain routes that would be designated "trails open to all vehicles". Such a designation would allow mixing of highway legal and non-highway legal vehicles on designated routes while conforming to direction from the South Dakota Attorney General's office. Many current NFSRs and most current inventoried, unauthorized routes on the BGNG would receive this designation in the action alternatives. Other roads would be designated "roads open to highway legal vehicles only" and be permissible for passenger cars and highway legal OHVs.

Nebraska State Law Considerations

Nebraska State Law does not allow for licensing of ATVs as highway legal vehicles and does not allow them on public highways with some exceptions related to municipalities and agricultural use. All action alternatives (Alternatives 2, 3, and 4) contain routes that would be designated "roads open to all vehicles (motorized mixed use)". Designating National Forest System Roads as open "mixed use" would not be in accordance with state law related to ATVs but is allowed under the Travel Management Rule. National Forest System roads in Nebraska designated for mixed use would require a valid Class "O" operator's license or farm permit and all other provisions of state law, including at least 60-6,355 thru 60-6,362 shall be in effect.

Summary of State Law Requirements

	South Dakota	Nebraska
Roads – ML 2,3,4,5	Hwy Legal Machine Drivers License (16) Insurance Min Age 14 (Restricted) Ditches – Min 12 years	Non-Highway Legal Vehicles not allowed.
Mixed Use Roads (if designated by Forest Service)	Everything required by SD State Law except a Hwy Legal Machine (Includes a Drivers License)	Everything required by Nebraska State Law except a Hwy Legal Machine (Includes a Drivers License)
Trails	Non Hwy Legal Machine No Age Limit Forest Service Sticker (Being Explored)	Non Hwy Legal Machine No Age Limit Forest Service Sticker (Being Explored)

Other Related Actions

Other Public Roads

Many roads in the area are administered by state highway departments, counties, or other public entities. These roads will be administered and maintained as deemed appropriate by the administering agency. Although other public roads often provide needed access to National Forest System lands, travel analysis decisions have little effect on management of these roads. However other public roads do contribute to road density in areas administered by the National Forests and contribute to resource impacts.

Livestock Grazing

Livestock grazing is permitted across the majority of the project area. Livestock grazing is implemented through an allotment management plan, where livestock numbers and season of use are allocated. Livestock grazing is then authorized through a 10 year term grazing permit system to individuals or grazing associations. These permits are stable for that period. The Forest Service, however, makes annual adjustments to livestock numbers and season of use as necessary for droughts, fires, water system problems, etc.

Livestock grazing is expected to continue to be permitted for the foreseeable future. Allotment management plans would be revised as 10 year term permits expire. All revisions would evaluate current conditions against Forest Plan vegetation condition and structure goals and objectives, and may be altered in response to changing resource conditions.

Although the designated system of roads and trails should satisfy most needs for livestock management, grazing permits may allow motorized travel off of the designated system and out of designated areas. Grazing permittees may be allowed to use motor vehicles off of the designated system in order to mend or construct fences, check stock dams or windmills, or for other needs that are included in the permit. Impacts from livestock grazing, and from motor vehicle use for purposes of administering permitted grazing, are considered in addition to impacts of the Travel Management decision.

Oil and Gas Production and Exploration

About 30,000 acres of federal minerals are currently leased in the western part of the Fall River Ranger District. There are two historical producing sites with less than one acre of surface disturbance and six previous exploration well pads, less than six acres total, which have been re-contoured and are in various stages of reclamation (Fall River District project records).

A Surface Use Plan of Operations for an Application for Permit to Drill was approved by the Forest Service for the western part of the FRRD in September 2007. Exploration has not occurred for three years. Fluctuating crude oil prices make it difficult to predict how much exploration may occur in coming years.

Oil and gas exploration may occur off of the designated road system. Impacts from motorized use off of the route system for oil and gas exploration or production will be in addition to impacts of the Travel Management decision.

Electric, Natural Gas, and Water Transmission Lines

Several electric, natural gas, and water transmission lines traverse the project area. These are under special use permit and are mostly accessed by motor vehicles off of the designated route system. Although impacts from motor vehicles accessing the transmission lines are minor, they will be in addition to impacts of the Travel Management decision.

Forest Management

Routes other than the primary system roads will be used periodically to access forested lands for harvest, thinning, or planting. Most forested areas in the analysis area are already adequately roaded but some off-road motor vehicle use will be necessary for plantation management. Effects of this use will be minor and in addition to impacts from the Travel Management decision. High impact timber management activities, such as a timber sale requiring new road construction, will be evaluated in a separate NEPA analysis.

Special Events

Special events occur periodically which permit motorized use off of the designated system. A local motorcycle club hosts a motorcycle endurance race under a special use permit which includes off-road riding on the ONG and private lands north of the Crawford area, and two routes on the PRU. The ride is rotated between these routes from year to year. Other special events also occur in the project area and may require a permit for off-road motor vehicle use. Effects of these special events will be minor and in addition to impacts from the Travel Management decision.

Administration, including Wildfire Suppression

Administration of the National Forests and Grasslands will require periodic off-road motor vehicle travel for activities such as wildlife monitoring and management, rangeland utilization surveys, stock pond maintenance, and fire suppression. Effects from this administrative use will be mostly minor, with the possible exception of fire suppression. If a wildfire is occurring on National Forest managed land, or lands adjacent to the National Forests or Grasslands, allowance will be made for off-road vehicle travel as determined necessary to manage the wildfire. Resource impacts could be high from the wildfire and suppression efforts but these will be mitigated as appropriate during the suppression and post-fire rehabilitation efforts.

Intermixed Other Ownership (including Private) Lands

The analysis area is intermixed with or bordered by Badlands National Park, Pine Ridge Indian Reservation, various state parks, wildlife areas or other state lands, and private land. Management of parklands and wildlife areas is determined by various park or wildlife area management plans and objectives. There is little likelihood that these areas will have changes in management direction, such as allowing increased OHV use, in the near future.

Lands outside of parks and wildlife areas are primarily agricultural with numerous small communities, the largest of which is Chadron, Nebraska with a population of about 5,500. Agriculture in the analysis area consists primarily of livestock grazing over large parcels of rangeland. Management of these lands is determined by the wants and needs of the individual landowners in accordance with applicable laws and ordinances. There is the possibility that some landowners will open parts of their lands to OHV use or “pay for hunting/access”.

Chapter

4

Environmental Consequences

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CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

Introduction

The regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA, 40 CFR Parts 1500-1508) state that Environmental Consequences form the scientific and analytic basis for the comparison of alternatives. It includes discussion of effects, including direct and indirect effects. Direct effects are caused by the action and occur at the same time and place as the action while indirect effects are later in time or farther removed in distance from the action. Since this project is designating motorized use routes and areas rather than analyzing for new construction, all effects are indirect. The routes considered in this analysis that require new construction would require a subsequent analysis on the direct effects of construction before that aspect of this analysis could be done.

Environmental consequences must also consider cumulative impacts, impacts that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts are discussed for each alternative for each issue in the following sections.

Environmental consequences must also include adverse environmental effects which cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented, and possible conflicts between the proposal and objectives of Federal, regional, State, and local land use plans, policies, and controls for the area. These will be discussed for all issues in a section at the end of this chapter.

Motorized Recreation

Opportunities for motorized recreation are an integral part of alternative development for this project. Miles of open road and motorized trail and acreage open to off-road motorized use as displayed in Tables 2-1 to 2-3 in Chapter 2 are the units of measure for this issue.

Alternative 1 (No Action)

The NNF currently has about 590 miles of road and 8.5 miles of motorized trail designated open for motorized public access. But most importantly, the NNF currently has about 833,260 acres open to off-road motorized use. Alternative 1 would allow the greatest opportunities for motorized recreation; however it does not meet national direction provided by the TMR.

Alternative 2 (Proposed Action)

This alternative decreases the current designated road system by about 215 miles compared to the current condition, to about 378 miles. The decrease is because most routes on the BGNG will be managed as trails open to all vehicles rather than as roads. On the other hand, motorized trail mileage increases by about 418 miles compared to the existing condition, to about 427

miles. This increase is mostly due to the BGNG routes being considered as trails but also from new motorized trails that would be added to the system. Overall, open motorized routes (both roads and trails) would increase from about 599 miles of designated route in the current condition to about 802 miles with this alternative.

Many of the motorized routes in this alternative are either “trails open to all vehicles” or “mixed use roads”. Unlicensed OHVs can use these routes for recreational riding. See the “Safety” issue for mileages of “trails open to all vehicles” and “mixed use roads” by alternative.

The biggest difference between the Proposed Action and the current condition is the shift from an “open unless designated closed” policy for off-road motor vehicle use to a “closed unless designated open” policy. The result is the vast majority of the NNF closed to off-road motor vehicle use with this alternative.

Designated motorized use areas would be open to off-road motor vehicle use with this alternative totaling about 1,818 acres. These include about 1,800 acres in three separate blocks in the Railroad Buttes area, the “Hill Climb” area on the Bessey Unit (about 5 acres), and the Dismal River Play Area on the Bessey Unit (about 13 acres).

Alternative 3

Alternative 3 would add about 270 miles of open road to the designated route system compared to Alternative 2, for a total of about 645 miles. Most of these added roads would be on the Samuel R. McKelvie National Forest and Bessey Unit. Alternative 3 would also add about 260 miles of motorized trail to the designated system compared to Alternative 2, for a total of about 687 miles. Most of the added motorized trails would be “trails open to all vehicles” on the BGNG. Overall open motorized route mileage would increase from about 802 miles in Alternative 2 to about 1332 with this alternative.

This alternative also has a greater allowance for “mixed use roads”, routes that can be used by unlicensed OHVs riders for recreational riding, greatly expanding the potential for OHV recreation compared to Alternative 2. See the “Safety” issue for mileages of “trails open to all vehicles” and “mixed use roads” by alternative.

This alternative would use the “closed unless designated open” policy for off-road motor vehicle use the same as Alternative 2, but would include greater acreage of designated motorized use area. Alternative 3 would include a large (4,870 acre) contiguous motorized use area around Railroad Buttes, include the two play areas on the Bessey Unit (18 acres total), and add designated motorized use areas at the “Baja” area on the Wall Ranger District (480 acres) and Benedict Buttes area of the ONG. This would provide a total of about 7,528 acres open to off-road motorized use, much greater than the approximately 1,818 acres that would be provided in Alternative 2.

Alternative 4

This alternative would reduce open road mileage to about 294 miles, about 81 miles less than in Alternative 2. Most of this reduction would be from the ONG, the Pine Ridge Unit, and the SMNF. Alternative 4 would also decrease motorized trail mileage to about 295 miles, 132 miles less than Alternative 2. This reduction would result in 0 miles of motorized trail on the ONG

(compared to 8.5 miles in Alternative 2) and greatly reduced motorized trail systems on the Pine Ridge and Bessey Units.

This alternative also has less allowance for “mixed use roads”, routes that can be used by unlicensed OHVs riders for recreational riding, greatly decreasing the potential for OHV recreation compared to Alternative 2. See the “Safety” issue for mileages of “trails open to all vehicles” and “mixed use roads” by alternative.

This alternative would use the “closed unless designated open” policy for off-road motor vehicle use the same as Alternative 2, but would include slightly less acreage of designated motorized use area. Alternative 2 would not include the “Hill Climb” area on the Bessey Unit (about 5 acres). This alternative would provide a total of about 1,813 acres open to off-road motorized use, slightly less than the approximately 1,818 acres that would be provided in Alternative 2.

Other Motorized Recreation Considerations

Alternatives 2, 3, and 4 meet desired conditions of implementing the TMR and maintaining ROS classifications. Action alternatives do not add roads to the existing Urban ROS class, or to the Roded Natural Non-Motorized or Semi Primitive Non-Motorized areas. The following table displays road densities (miles/square mile) by ROS classification for Rural, Roded Natural and Semi-Primitive Motorized ROS classes.

Table 4-1 Road/Motorized Trail Densities (mi/sq mi) by ROS and Alternative

ROS	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Rural	1.8	1.9	2.1	1.8
Roded Natural	0.8	1.0	1.3	0.8
Semi Primitive Motorized	0.3	0.4	1.0	0.3

Although the acreage of ROS classifications do not change by alternative, Alternative 3 may have road and motorized trail densities near the upper limit of the semi-primitive motorized ROS class with an average density of 1.0 miles per square mile.

Cumulative Impact

The travel management decision could have impacts to motorized recreation outside of the analysis area and off of National Forest System lands. Fewer opportunities for motorized recreation on National Forest lands across the United States as a result of the TMR could reverse recent trends of increasing OHV sales. Some OHV enthusiasts may lose interest in motorized recreation. On the other hand, landowners or business interests may see an opportunity to provide OHV riding areas on private land. It is difficult to predict larger-scale ramifications of the NNF travel management decision on motorized recreation.

All action alternatives provide much less motorized recreation opportunity than the existing condition. Of the action alternatives, Alternative 3 provides the greatest motorized recreation opportunity, Alternative 4 the least. Selection of Alternative 3 may help maintain interest in

motorized recreation in the analysis area. Selection of Alternative 4 would decrease interest in motorized recreation and selection of Alternative 2 would be somewhere in between.

Motorized Hunting Access

Hunting opportunities are affected by both the quality of habitat and hunter access. Some hunters prefer non-motorized areas for hunting to lessen the likelihood of being disturbed by other hunters on motor vehicles. But many hunters prefer to access favorite hunting sites and retrieve game with motor vehicles. This analysis focuses on motorized hunting access by displaying the miles of motorized routes with an allowance of 300 feet off-road travel for game retrieval.

Motorized travel up to 300 feet off designated routes would be allowed for game retrieval in all action alternatives, although off-road travel is allowed only if it does not cause damage to structures or resources or enters a motorized restricted area such as Recommended Wilderness or Research Natural Area. Routes with 300 foot game retrieval allowance include open NFSRs and “trails open to all vehicles”, but not trails for vehicles less than 50 inches in width and single-track trails. Also, some routes travel through motorized restricted areas and off-road travel for game retrieval is limited to 33 feet. Routes with a 33 foot limit are displayed on the alternative maps and in Appendix C.

The following table displays the mileage of motorized routes with 300 feet game retrieval by alternative. Alternative 1 is not included since the NNF is currently open to motorized game retrieval without any defined distance off roads.

Table 4-2 Game Retrieval (300 feet each side of road) Motorized Route Mileage

Administrative Units		Alt 2 proposed	Alt 3 additional	Alt 4 reduced
Fall River Ranger District	Buffalo Gap National Grassland	247	459	202
Wall Ranger District	Buffalo Gap National Grassland	99	145	93
Pine Ridge Ranger District	Oglala National Grassland	107	117	59
	Pine Ridge Unit	51	66	40
Bessey Ranger District	Samuel R. McKelvie NF	72	212	56
	Bessey Unit	96	207	96
Total		672	1206	546

Alternative 1 (No Action)

Currently there is little restriction on motorized access for hunting except in designated non-motorized areas. This alternative provides the most opportunities for hunters who prefer motorized access to hunt and retrieve game.

Alternative 2

This alternative lies between the other action alternatives in the amount of motorized access for hunting and game retrieval.

Alternative 3

With the highest road mileage for game retrieval of the action alternatives, this would be the action alternative most liked by those who prefer motorized access to retrieve game. This alternative provides nearly double the mileage of 300 foot game retrieval route compared to Alternative 2. Much of this difference comes from the McKelvie and Bessey Units where the mileage is nearly triple compared to Alternative 2. The Oglala and Pine Ridge Units have a modest increase with this alternative compared with Alternative 2.

Alternative 4

With the lowest road mileage for game retrieval of the action alternatives, this would be the action alternative least liked by hunters prefer motorized access to retrieve game. This alternative provides less than half the mileage of 300 foot game retrieval route compared to Alternative 3 and somewhat less than Alternative 2. Route mileage is similar but less than Alternative 2 in most units with the greatest difference between Alternative 2 and Alternative 4 on the ONG.

Cumulative Impact

The travel management decision could have impacts on hunters who prefer motorized access outside of the analysis area and off of National Forest System lands. Fewer motorized hunting opportunities may cause some hunters to lose interest in hunting or seek other places (such as private land) to hunt. Landowners or business interests may see an opportunity to provide motorized hunting access on private land, a “pay for hunting/access” opportunity. It is difficult to predict larger-scale ramifications of the NNF travel management decision on motorized hunting access.

All action alternatives provide much less motorized hunting access than the existing condition. Of the action alternatives, Alternative 3 provides the greatest motorized hunting access, Alternative 4 the least. Selection of Alternative 3 may satisfy the needs of many hunters who prefer motorized hunting access, and those hunters would not lose interest in hunting or seek other hunting locations. Selection of Alternative 4 would be the greatest benefit for those hunters who prefer walk-in hunting access, and would be most likely to cause many hunters to seek hunting opportunities elsewhere or lose interest in hunting. Selection of Alternative 2 would be somewhere in between.

Agate Collecting

There are approximately 21,000 acres in the analysis area where collectible agates may be found. Most of this area may be legally accessed with motor vehicles under the current condition. Restricting motorized travel to designated routes and areas may hamper agate collectors’ ability to reach agate beds. The existing condition (Alternative 1) allows off-road motor vehicle travel through many of the agate beds, except for those closed by Forest Plan land allocation and Forest Order. The Red Shirt Recommended Wilderness Area contains about 1300 acres of agate beds and is closed to motor vehicles by Forest Plan allocation. The action alternatives restrict motorized travel to designated routes and areas. The Baja and the large Railroad Buttes Designated Motorized Use Areas considered in Alternative 3 allow off-road motorized access to

some agate beds; otherwise motorized access to agate beds is limited to designated routes for each of the action alternatives.

Table 4-3 displays the acreage open to off-road travel in the agate beds and miles of secondary access route to or near the agate beds. The mileage of primary access road (about 50 miles of NFSR along with uncounted mileage of state highway and other public road) does not change by alternative. Table 4-3 also displays an approximate average walking distance from the furthest reaches of agate beds to an open road or motorized trail, not including those agate beds in the Red Shirt RWA which would be a long walk under all alternatives.

Table 4-3 Access to Agate Beds

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Agate Bed Area Open to Off-Road Motorized Travel	19,700 ac	0 ac	700 ac	0 ac
Miles of Secondary Access Routes	14 mi *	29 mi	53 mi	18 mi
Average Walking Distance to Furthest Reaches of Agate Beds	N/A	1.0 mi	0.5 mi	1.5 mi

* Alternative 1 contains 13.5 miles of system road that provide secondary access to agate beds. However since unauthorized roads can be used with this alternative the actual mileage of open road is much higher.

Alternative 1 (No Action)

This alternative provides the greatest motorized access to agate beds. Some parts of the agate beds in the Red Shirt Recommended Wilderness Area (RWA) are about 2 miles from the nearest road, but the current condition allows motorized access to all parts of most agate beds.

Alternative 2

This alternative would provide nearly 30 miles of secondary motorized access into the agate beds. An average walk to the furthest extent of the agate beds would be about one mile for this alternative.

Alternative 3

This alternative includes over 50 miles of secondary motorized access into the agate beds, far more than Alternative 2. It would also allow off-road motor vehicle use in about 700 acres of potential agate collecting areas. An average walk to the furthest extent of the agate beds would be about ½ mile for this alternative.

Alternative 4

This alternative includes about 18 miles of secondary motorized access into the agate beds, somewhat less than Alternative 2. An average walk to the furthest extent of the agate beds would be about 1.5 miles for this alternative.

Cumulative Impact

The travel management decision could have impacts on agate collecting outside of the analysis area and off of National Forest System lands. Longer walks to agate beds may discourage some agate collectors, and may cause some to seek other places (such as private land) to find agates. Interest in agate collecting may wane. On the other hand, since agates are a limited resource, longer walks to good agate locations may increase the chances of finding agates for those willing to walk the longer distances. It is difficult to predict larger-scale ramifications of the NNF travel management decision on agate collecting.

All action alternatives would result in less motorized access to agate beds than the existing condition. Of the action alternatives, Alternative 3 provides the greatest motorized access to agate beds, Alternative 4 the least and Alternative 2 somewhere in between. Overall interest in agate collecting is not likely to vary based on which action alternative is selected.

Economic Impact on Local Communities

The employment and labor income effects stemming from current motorized and non-motorized activities occurring on the NNF were estimated. Economic effects tied to motorized and non-motorized activities were estimated to address the economic impact issue tied directly to travel planning.

Estimated economic effects (full and part-time jobs and labor income) are presented. Estimated economic effects are displayed in the following ways:

- 1) Estimated employment and labor income based on all local and non-local recreation visitation occurring on the NNF;
- 2) Direct, indirect and induced employment by activity type; and
- 3) Estimated employment and labor income by motorized and non-motorized activity types.

Alternative 1 (No Action)

All Local and Non-local Recreation Use

Table 4-4 displays the estimated employment and labor income effects for motorized and non-motorized recreation visitation to the NNF. There were a total of 135,087 visits to the NNF during the sampling period. Approximately 67 percent of the visits to the Forest were attributable to local users. The results indicate that there were 10 total jobs and \$161,791 of total labor income attributable to non-local visitation. There were approximately 4 total jobs and \$77,538 of total labor income attributable to local users.

Table 4-4 Estimated Employment and Labor Income Effects for Motorized and Non-Motorized Use Reported by NVUM

Economic Effects Based on Local Use (90,981 visits)			
	Direct Effects	Indirect & Induced Effects	Total Effects
Jobs	3	1	4
Labor Income (M \$)	58,281	19,257	77,538
Economic Effects Based on Non-local Use (44,106 visits)			
	Direct Effects	Indirect & Induced Effects	Total Effects
Jobs	8	2	10
Labor Income (M \$)	122,824	38,967	161,791

Note: Dollars are for 2008

In the 9 county economic area, the total employment in the economy in 2006 was 14 jobs with \$239,329 in labor income (IMPLAN 2006). All employment and labor income activities attributable to recreation activities on the NNF account for less than 1 percent of the total employment and total labor income in the economic area.

Motorized and Non-motorized Use

Table 4-5 displays the estimated employment and labor income effects for current use levels reported by NVUM for local and non-local non-motorized and motorized activities. In general, the estimated economic effects are a function of the number of visits and the dollars spent by the visitors. For example, non-local users typically spend more money per visit than local users. Also, activities that draw more users would be responsible for more economic activity in comparison to activities that draw fewer users, holding constant spending per visit. Given the analysis is dependent on visitation and expenditure estimates, any changes to these estimates affect the estimated jobs and labor income.

Table 4-5 indicates that approximately 11 total jobs (direct, indirect and induced) and \$192,736 total labor income (direct, indirect and induced) are attributable to non-motorized visitation on the NNF. The local and non-local hiking and walking activity is responsible for the largest portion of the economic effects - approximately 9 total jobs (81% of total jobs) and \$162,818 total labor income (84% of the total labor income).

Motorized activities were responsible for approximately 3 total jobs (direct, indirect and induced) and \$46,593 total labor income (direct, indirect and induced). Local and non-local OHV use accounted for approximately 3 total jobs and \$45,150 in total labor income (97% of the total). The remaining motorized activities account for approximately 3 percent of the economic activity.

Table 4-5 Employment and Labor Income Effects by Activity Type

	Employment Effects (full & part-time jobs)		Labor Income Effects	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Non-motorized Use				
Local Hiking/ Walking, Bicycling, and Horseback Riding	2	<1	\$35,195	\$11,803
Non-local Hiking/ Walking, Bicycling, and Horseback Riding	6	1	\$87,954	\$27,866
Local Backpacking	<1	<1	\$1,241	\$405
Non-local Backpacking	<1	<1	\$1,402	\$443
Local Cross-country Skiing	<1	<1	\$805	\$299
Non-local Cross-country Skiing	<1	<1	\$3,128	\$1,064
Local other non-motorized	<1	<1	\$4,568	\$1,532
Non-local other non-motorized	1	<1	\$11,415	\$3,616
Subtotals	9	2	\$145,708	\$47,028
Total Non-motorized	11		\$192,736	
Motorized Use				
Local OHV	1	<1	\$15,834	\$5,029
Non-local OHV	1	<1	\$18,457	\$5,830
Local Driving for Pleasure	<1	<1	\$638	\$189
Non-local Driving for Pleasure	<1	<1	\$468	\$148
Subtotals	2	1	\$35,397	\$11,196
Total Motorized	3		\$46,593	

Note: Dollars are for 2008 \$

Alternative 2, 3, and 4

A decrease in motorized use may be expected with action alternatives reducing motorized area from the existing condition. Although it is impossible to predict the exact effects, an estimate was made for potential reductions based on the varying levels of motorized access by alternative. The following table displays the estimated drop in motorized use by alternative and type of motorized use. Effects vary by unit with Bessey Ranger District and Pine Ridge Ranger District having a greater decrease in motorized access (Chapter 2 of this EIS, Tables 2-1 and 2-2).

Table 4-6 Estimated Decrease in Motorized Use

	Driving for Pleasure	OHV use
Alternative 2	-10%	-20%
Alternative 3	-5%	-15%
Alternative 4	-15%	-40%

The following tables display the effects on jobs and labor income from the estimated decrease in motorized use. Effects for non-motorized use are not displayed, although an indirect effect may be an increase in this type of use.

Table 4-7 Alternative 2 Employment and Labor Income Effects by Activity Type

	Employment Effects (full & part-time jobs)		Labor Income Effects	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Motorized Use				
Local OHV	1	<1	\$12,669	\$4,024
Non-local OHV	1	<1	\$14,767	\$4,664
Local Driving for Pleasure	<1	<1	\$573	\$170
Non-local Driving for Pleasure	<1	<1	\$421	\$133
Subtotals	2	0	\$28,430	\$8,992
Total Motorized	2		\$37,422	

Note: Dollars are for 2008 \$

Table 4-8 Alternative 3 Employment and Labor Income Effects by Activity Type

	Employment Effects (full & part-time jobs)		Labor Income Effects	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Non-motorized Use				
Motorized Use				
Local OHV	1	<1	\$13,459	\$4,275
Non-local OHV	1	<1	\$15,688	\$4,955
Local Driving for Pleasure	<1	<1	\$607	\$180
Non-local Driving for Pleasure	<1	<1	\$446	\$141
Subtotals	2	0	\$30,200	\$9,551
Total Motorized	2		\$39,751	

Note: Dollars are for 2008 \$

Table 4-9 Alternative 4 Employment and Labor Income Effects by Activity Type

	Employment Effects (full & part-time jobs)		Labor Income Effects	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Motorized Use				
Local OHV	1	<1	\$9,502	\$3,018
Non-local OHV	1	<1	\$11,076	\$3,499
Local Driving for Pleasure	<1	<1	\$542	\$161
Non-local Driving for Pleasure	<1	<1	\$398	\$126
Subtotals	2	0	\$21,519	\$6,804
Total Motorized	2		\$28,322	

Note: Dollars are for 2008 \$

The following table summarizes the economic impact of motorized use by alternative. Alternative 4, with the lowest amount of motorized access, has the greatest effect on the local economy. Although not displayed in this analysis, it is possible that non-motorized use may

increase as motorized use decreases. An increase in non-motorized use may recover some or all of the jobs and labor income lost from a decrease in motorized access.

Table 4-10 Employment and Labor Income Effects by Alternative

	Jobs	Labor Income
Alternative 1	3	\$46,593
Alternative 2	2	\$37,422
Alternative 3	2	\$39,751
Alternative 4	2	\$28,322

Cumulative Impact

This travel management decision could have economic impacts outside of the analysis area and off of National Forest System lands. When combined with similar actions on National Forest lands across the United States, actions in this project area may contribute to a decrease in OHV sales. On the other hand, landowners or business interests may see an opportunity to provide OHV riding areas on private land. It is difficult to predict larger-scale ramifications of the NNF travel management decision on sales relative to motorized recreation.

All action alternatives provide much less motorized recreation opportunity than the existing condition, and therefore may lower income generated related to this activity in the area. Of the action alternatives, Alternative 3 provides the greatest economic opportunity related to motorized recreation, and Alternative 4 provides the least. Alternative 3 may help maintain income related to motorized recreation in the analysis area. Selection of Alternative 4 may decrease income related to motorized recreation and selection of Alternative 2 would be somewhere in between.

An increase in non-motorized recreation would be expected which may replace at least part of the revenue lost from less motorized recreation. Although non-motorized recreationists would not be purchasing OHVs, there would be revenue from their use of other services.

Sound Level

Excessive sound levels from motor vehicles negatively affect Forest visitors or adjacent landowners who look to public lands for quiet recreation. Even with decibel limits on individual vehicles, motor vehicle sound can be a distraction.

As described in the Affected Environment, excessive sound is of particular concern in a few areas, around Chadron State Park on the Pine Ridge Unit, around Bessey and Whitetail campgrounds on the Bessey Unit, and around Railroad Buttes on the Fall River Ranger District. Analysis areas have been created around each of these locations at approximate distances where excessive sound from ATVs or other OHVs could be a distraction. Miles of Mixed Use road and motorized trails in these analysis areas is listed in Table 4-11. The analysis area around Chadron State Park includes the National Forest land within about 3 miles of the park. The analysis area around Bessey and Whitetail campground is National Forest lands up to about 1.5 miles from the campgrounds. The analysis area around Railroad Buttes includes the NF land about 1 mile east and west from 160th Avenue.

Table 4-11 Mixed Use Road and Motorized Trail in Sound Sensitive Areas

Administrative Unit	Alternative 1 current*	Alternative 2 proposed*	Alternative 3 additional*	Alternative 4 reduced*
Chadron State Park Area	25	34	45	13
Bessey Campground	5	6	6	3
Whitetail Campground	4	4	7	2
Railroad Buttes Area	0	5	5	5
Total	34	49	63	23

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions. Alternatives 2 through 4 include designated roads and trails but do not include other trails within the Designated Motorized Use Areas.

Alternative 1 (No Action)

National Forest Lands in the Chadron State Park area are currently not restricted with regard to off-road vehicle travel. While there are currently no designated motorized trails in the area, excessive sound from off-road vehicles is noted by local residents. The Bessey and Whitetail campground areas receive heavy use from ATVs and other off-highway vehicles. The use creates sound levels that are a distraction for some camper who are looking for a quieter experience. The Railroad Buttes area receives heavy use from motorcycles and other off-highway vehicles that can be a distraction to local residents. Other parts of the project area receive relatively light use and generally do not have problems with excessive OHV sound levels.

Alternative 2

This alternative includes about 34 miles of motorized trails and mixed use roads in the Chadron State Park area. This would likely cause a similar level of motor vehicle sound as the current condition. It also includes about 10 miles of motorized trails and mixed use roads in the combined Bessey and Whitetail campground areas. There would likely be a similar level of motor vehicle sound from these areas as the existing condition. The Railroad Buttes area has more designated trails but much less area open to off-road motor vehicle use compared to the existing condition. However this alternative will likely attract about as many motor vehicles to the Railroad Buttes area, and have similar sound effects, as it does currently.

Alternative 3

Alternative 3 includes about 14 more miles of motorized trails or mixed use road in sound sensitive areas compared to Alternative 2. This would likely cause a slight increase in motor vehicle sound levels compared to Alternative 2, particularly in Chadron State Park area. Alternative 3 includes the same motorized trails in the Railroad Buttes area as Alternative 2 but has a larger area for off-road motor vehicle use. The number of visitors and levels of sound would probably be about the same as Alternative 2.

Alternative 4

Alternative 4 includes fewer mixed use roads and motorized trails compared with the other action alternatives. This alternative would be by far the quietest in the Chadron State Park area.

Likewise, Alternative 4 includes fewer motorized trails and mixed use roads in the Bessey and Whitetail campground areas than the other action alternatives. More importantly, the far fewer OHV riding opportunities across the Bessey Unit with this alternative would likely discourage many OHV enthusiasts, resulting in much quieter campgrounds. The Railroad Buttes area contains the same OHV riding opportunities as Alternative 2 so sound levels would be about the same with this alternative as with the other alternatives.

Cumulative Impact

There is little OHV use outside of National Forest lands that causes distracting levels of sound; therefore there is no cumulative impact for this issue.

Soils

Effects of the alternatives on soil resources are based on the mileage of road in each alternative in each erosion hazard class. It is also based on the potential for soil damage in the areas open for motor vehicle use.

All roads, road segments, and motorized trails considered in any alternative for inclusion into the permanent transportation system have been evaluated relative to effects on the soil resource. The evaluation is based on the soil type the road or trail travel modified by site-specific indicators of erosion hazard. Hazard for each road or trail segment is rated as High, Moderate, or Low. Roads with 50 percent or more of their length in severe or very severe “Hazard of erosion on roads and trails” soils from the SSURGO database receive a default rating of “Moderate”. All other roads receive a default rating of “Low”. Site-specific erosion concerns on a given segment of road or trail elevate the rating from “Moderate” to “High” or from “Low” to “Moderate” or “High”. Road surfacing on a road or trail segment may drop its rating from “Moderate” to “Low”.

Table 4-14 shows the total miles of open roads or motorized trails (does not include “Closed” or “Closed to Public” roads) that are rated either “High” or “Moderate” erosion hazard by alternative.

The SSURGO database “hazard of off-road or off-trail erosion” ratings are not very useful and somewhat misleading for evaluating soil impacts in Designated Motorized Use Areas. The intent of the SSURGO ratings is to show the ability of a soil to recover (i.e. re-grow grass) following light use from off-road motorized use. Designated Motorized Use Areas typically receive heavy use. Even the most resilient soils would be striped of vegetation with the amount of use some Designated Motorized Use Areas receive. The opposite approach is often better resource management, targeting those areas that are naturally barren or have become barren through motorized use as Designated Motorized Use Areas and exclude the areas with better soils and better soil cover.

Table 4-12 Open Road Mileage with High or Moderate Erosion Hazard

Administrative Unit	Soil Hazard Class	Alternative 1 current*	Alternative 2 proposed*	Alternative 3 additional*	Alternative 4 reduced*
Fall River Ranger District	High	0.0	1.2	1.2	1.2
	Moderate	119.2	139.5	259.2	102.4
Wall Ranger District	High	0.0	0.0	0.0	0.0
	Moderate	3.0	3.0	9.8	3.0
Oglala National Grassland	High	0.0	0.0	0.0	0.0
	Moderate	38.3	67.4	72.8	36.5
Pine Ridge Unit	High	2.5	0.0	0.0	0.0
	Moderate	46.9	95.9	111.8	38.9
Samuel R. McKelvie NF	High	0.7	0.7	0.7	0.7
	Moderate	56.5	61.8	178.3	47.4
Bessey Unit	High	6.6	6.6	6.6	3.0
	Moderate	55.3	63.3	171.4	44.9
Total	High	7.3	8.5	8.5	4.9
	Moderate	321.7	430.9	803.3	273.1

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the unauthorized roads and motorized trails that have no travel restrictions under current conditions. Alternatives 2 through 4 include all designated roads and motorized trails open to the public.

The Forest Plan provides standards and guidelines regarding soils. These are fairly general, such as “limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography and climate.” In general, Travel Management alternatives with the fewest miles of roads and least acreage of Designated Motorized Use Areas would be more consistent with the Forest Plan soils standards than alternatives with more designated road miles and larger designated areas, but there is not an established threshold for amount of allowable soil disturbance.

Alternative 1 (No Action)

The NNF is mostly not restricted with regard to off-road vehicle travel. Potential for soil damage from off-road motor vehicle travel is extensive but has traditionally been limited to those areas with heavy OHV use.

Some OHV enthusiasts assert that allowing off-road motor vehicle use over very large areas would be better for minimizing impacts to soils by dispersing use rather than concentrating off-road motorized use to small areas. To a certain extent this is true. The majority of the NNF has been open to off-road motorized use and soil damage from off-road motor vehicle use is minimal over most of the Forests and Grasslands. However recent history shows that as an area becomes popular with OHV enthusiasts, soil damage increases in the popular area and expands in extent over time regardless of the amount of land open for OHV use. The Railroad Buttes area of the Fall River District contains many thousands of acres open for OHV use, much of it relatively undisturbed. On the other hand, the number of trails and extent of soil damage close to 160th Avenue is very high and the extent of damaged area expands every year.

Also, on the Bessey Unit, the original design of one designated motorized trail of about 8.5 miles (the Dismal River Trail) has expanded to a network of nearly 30 miles of user-created trails and

two play areas in the vicinity of the Dismal River Trail. Much of the rest of the Bessey Unit remains relatively undisturbed. Motorized trails and play areas in the sands of the Bessey Unit have typically lost all vegetation, organic matter, or other features of a developed soil. The trails and play areas have become difficult to re-vegetate.

Many roads have been used extensively by ATVs, especially in the Bessey Unit. Roads through the Sand Hills hold up well if the center grass strip remains intact, but often become impassible if the center strip is destroyed by heavy ATV use. Several roads on the Bessey Unit have the center strip and appear to be ATV trails rather than roads. Allowing mixed use on roads can increase soil damage through the loss of the center grass strip.

This alternative would result in continued expansion of soil damage in the Railroad Buttes and Dismal River Trail areas, and may result in new areas of soil damage in places that become popular with OHV riders.

Alternative 2

This alternative includes more mileage of designated road or motorized trail rated high or moderate erosion hazard class than Alternative 1. However, most of the analysis area is open to off-road motor vehicle use in Alternative 1 (about 833,260 acres) and unauthorized roads receive motor vehicle use. A much smaller area is open to off-road motor vehicle use in Alternative 2 than Alternative 1, about 1,818 acres. Overall this alternative does a much better job of protecting soil resources than Alternative 1.

One road segment of about 1.2 miles on the Fall River Ranger District, labeled as Old 40, runs down a steep slope towards the Cheyenne River east of the current alignment of Highway 40. This road is not considered a system road in the current condition but is included in Alternative 2 and the other action alternatives. The road runs through steep and shallow Pierre and Samsil soils, which rate as severe “hazard of erosion on roads and trails” in the SSURGO database. In addition, the road is highly rutted as it runs down the bluffs to the floodplain of the Cheyenne River. This is the only road segment rated “High” erosion hazard class on the FRRD and should be repaired to fix drainage problems.

One road segment on the Pine Ridge Unit warrants a “high” soil erosion hazard class rating. This is the part of FSR 727 where the road repeatedly crosses Bordeaux Creek. This is a system road included in Alternative 1 but not included in Alternative 2 or any other action alternative.

The SMNF has 0.7 miles of road that warrants a “high” soil erosion hazard class rating. This is the part of NFSR 603 that runs toward Steer Creek east of the Steer Creek RNA that has been noted for erosion problems. This road is included in Alternative 2 and the other action alternatives.

The BU has 6.6 miles of road that warrant a “high” soil erosion hazard class rating. These are NFSR 201-2 (the seasonally closed road through the “circle”) and the part of NFSR 277 that leads from NFSR 203 (the Circle Road) to Whitetail Campground. NFSR 201-2 has notable gullies along much of its length while NFSR 277 contains many soft spots that motor vehicle operators have detoured around creating a multi-path or braided road. Each of these roads is included in Alternative 2.

Alternative 3

Alternative 3 includes more miles of designated road and motorized trail than Alternative 2; consequently more motorized route mileage rated “moderate” erosion hazard class although it includes the same “high” erosion hazard class routes as Alternative 2. Alternative 3 also includes a much larger area open to off-road motor vehicle use than Alternative 2, about 7,528 acres versus 1,818 acres, and contains more roads open to mixed use. Overall, Alternative 3 would allow a greater extent of soil damage than Alternative 2 but much less than Alternative 1.

Alternative 4

Alternative 4 includes fewer miles of designated road and motorized trail than Alternative 2; consequently less motorized route mileage rated “moderate” erosion hazard class. Alternative 4 includes many of the same “high” erosion hazard class routes as Alternative 2 but does not include the “high” rated NFSR 201-2 on the BU. Alternative 4 includes most of the designated motorized use areas that are part of Alternative 2 but would close the five-acre “Hill Climb” area on the Bessey Unit. Also, Alternative 4 includes fewer miles of mixed-use roads than the other alternatives. Overall, Alternative 4 would allow the least extent of soil damage of the alternatives.

Cumulative Impact

The Forest Plan contains the soil standards that are not numeric. Considering other soil disturbances such as livestock trailing, the standards would be met with all alternatives. Alternative 4 best meets the standards, followed by Alternative 2, then Alternative 3, and finally Alternative 1.

Water Quality

Effects of the alternatives on water quality are based on the mileage of road in each alternative in each water quality impact class. It is also based on the potential for water quality impacts in the areas open for motor vehicle use.

All roads, road segments, and motorized trails considered in any alternative for inclusion into the permanent transportation system have been evaluated relative to effects aquatic resources in the Travel Analyses (in the project record). The evaluation is based on the relative impact each road or trail potentially has on aquatic resources. These are grouped as High, Moderate, or Low. Table 4-13 shows the total miles of open roads or motorized trails (does not include “Closed” or “Closed to Public” roads, or non-motorized trails) that are rated either “High” or “Moderate” water quality impact class by alternative.

Areas open to motor vehicle use also potentially impact water quality, except for those in deep sandy soil far from streams such as the “Hill Climb” area on the Bessey Unit. Potential impacts to water quality for motorized use areas are discussed below.

The Forest Plan provides standards and guidelines regarding water quality. These are fairly general, such as “manage land treatments to conserve site moisture and to protect long-term stream health from damage by increased runoff” and “construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands”. In general, Forest roads,

motorized trails and Designated Motorized Use Areas should be designed to minimize impacts to aquatic resources so that motorized use on National Forest lands do not contribute to listing by sections 305(b) and 303(d) of the Clean Water Act. Currently no streams or water bodies are listed by the states of South Dakota and Nebraska as impaired because of motorized travel impacts (see Chapter 3 Affected Environment – Water Quality section in this document for more information).

Table 4-13 Open Road Mileage with High or Moderate Water Quality Impact

Administrative Unit	Water Quality Impact Class	Alternative 1 current*	Alternative 2 proposed*	Alternative 3 additional*	Alternative 4 reduced*
Fall River Ranger District	High	0.0	0.0	3.0	0.0
	Moderate	29.7	36.7	61.4	29.2
Wall Ranger District	High	33.2	33.2	36.7	33.2
	Moderate	10.2	11.4	17.3	10.8
Oglala National Grassland	High	0.2	0.2	0.2	0.0
	Moderate	3.8	35.4	42.0	3.4
Pine Ridge Unit	High	2.5	2.1	2.1	0.0
	Moderate	12.0	57.7	64.1	9.9
Samuel R. McKelvie NF	High	3.0	3.0	3.0	3.0
	Moderate	13.2	14.6	20.1	12.5
Bessey Unit	High	0.0	0.0	0.0	0.0
	Moderate	8.1	8.3	8.3	8.3
Total	High	38.9	38.5	45.0	36.2
	Moderate	77.0	164.1	213.2	74.1

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions. Alternatives 2 through 4 include all the roads and motorized trails open to the public, except for the small number of undesignated trails within the Designated Motorized Use Areas.

Alternative 1 (No Action)

The NNF contains over 3,000 miles of designated and unauthorized motor vehicle routes. Since off-road travel is currently not restricted over most of the analysis area, potential for water quality impacts from motor vehicle use on the designated system, on unauthorized routes, and off-road is extensive. This alternative would result in the greatest risk for water quality impacts from motor vehicle use.

Alternative 2

This alternative includes slightly less mileage of designated road or motorized trail rated “high” water quality impact than Alternative 1. Part of NFSR 727, where the road repeatedly crosses Bordeaux Creek on the Pine Ridge Unit, is currently a system road included in Alternative 1 but not included in Alternative 2 or any other alternative.

Alternative 2 includes more mileage of designated road or motorized trail rated “moderate” water quality impact than Alternative 1. However, most of the analysis area is open to off-road

motor vehicle use in Alternative 1 and unauthorized roads receive motor vehicle use. Overall this alternative does a much better job of protecting water quality than Alternative 1.

Alternative 2 includes the Railroad Buttes Designated Motorized Use Area in three separate blocks totaling about 1,800 acres. In Alternative 1 the entire area is open to motorized use except those parts restricted by Forest Order No. 96-1. Motorized use in the area has created many draw crossings and other riparian area damage along Lindsey Draw (the primary stream that drains the Railroad Buttes area) and its tributaries. There is currently a high risk for water quality impacts to Lindsey Draw and other tributaries to Rapid Creek. Although the area contains a high proportion of naturally eroding badlands, motorized use has increased the extent of barren ground, and increased erosion rates and potential stream sedimentation in Lindsey Draw and Rapid Creek. Alternative 2 reduces potential impacts to Lindsey Draw by excluding larger draws from the designated motorized use area and designating stream crossings.

Alternative 3

Alternative 3 includes more miles of designated road and motorized trail than Alternative 2; consequently more motorized route mileage rated “moderate” water quality impact. Alternative 3 also includes several road segments, totaling 6.5 miles, rated “high” water quality impact beyond what is in Alternative 2.

Alternative 3 includes much larger acreage in the Railroad Buttes Designated Motorized Use Area than Alternative 2, and does not exclude the larger draws from motorized use. Alternative 3 also includes designated motorized use areas at the “Baja” area on the Wall Ranger District and at the Benedict Buttes area on the ONG. The “Baja” area is located in badlands soils that have naturally high erosion rates and drains to the nearby White River via unnamed tributaries. The Benedict Buttes area is also mostly in badlands soils that have naturally high erosion rates. It drains to Big Cottonwood Creek and eventually to the White River. Both of these areas have received off-road motor vehicle use in the past but do not show extensive soil damage and increased erosion rates from off-road use.

Overall, Alternative 3 does not protect water quality as much as Alternative 2 but is more protective of water quality than Alternative 1.

Alternative 4

Alternative 4 includes fewer miles of designated road and motorized trail than Alternative 2; consequently less motorized route mileage rated “moderate” water quality impact. Alternative 4 includes many of the same “high” water quality impact routes as Alternative 2 but does not include the “high” rated routes on the PRU or the unhardened stream crossing of Long Branch Creek (NFSR 922) on the ONG. Alternative 4 includes the designated motorized use area at Railroad Buttes the same as Alternative 2. Overall, Alternative 4 provides the greatest protection for water quality of the alternatives.

Cumulative Impact

The South Dakota and Nebraska Water Quality Control Boards do not provide numeric standards relating to motor vehicle use and water quality impacts. Many streams in the project area are

listed as “impaired waterbodies” by the states of South Dakota and Nebraska (see Chapter 3 Affected Environment – Water Quality section in this document); however no impaired waterbodies have roads or motorized trails listed as a source of impairment. Alternative 1 (current condition) poses the greatest risk of water quality impacts across the NNF since it allows motorized use across most of the Forest and Grasslands; all action alternatives pose less of a risk to water quality than the current condition. Alternative 3 poses less risk of water quality impacts than Alternative 1 but contains the greatest risk of the action alternatives. Alternative 2 poses less of a risk to water quality than Alternative 3 while Alternative 4 provides the greatest water quality protection of the alternatives.

Wildlife and Plant Species of Concern

The full evaluation for Threatened, Endangered, Proposed, and Sensitive (TEPS) wildlife and plant species is in the Biological Evaluation and Assessment (BE/BA) for Travel Management. This DEIS contains excerpts, summaries, and conclusions from that document.

The determination of effects on species under the Endangered Species Act (ESA) is categorized as one of the following:

NE = No effect-- where no effect is expected.

MA-NLAA = May affect, not likely to adversely affect -- where effects are expected to be insignificant (immeasurable) or discountable (extremely unlikely to occur).

MA-LAA = May affect, likely to adversely affect -- where effects are expected to be adverse or detrimental.

NLJ = Not likely to jeopardize continued existence -- where effects are expected to be beneficial, insignificant (immeasurable), or discountable (extremely unlikely to occur).

LJ = Likely to jeopardize continued existence -- where effects are expected to reduce appreciably the reproduction, numbers, or distribution of the species.

Table 4-14 lists the determination for each potentially affected endangered species listed in Chapter 3.

Table 4-14 Summary of Determinations of Effects for Federally Listed Species

Common Name	Alt 1	Alt 2	Alt 3	Alt 4
Black-footed ferret (within experimental population area)	NLJ	NLJ	NLJ	NLJ
American burying beetle	MA-NLAA	MA-NLAA	MA-NLAA	MA-NLAA
Blowout penstemon	MA-LAA	NE	NE	NE

As displayed in Table 4-14, the only difference in determination for the endangered species by alternative is a “*may effect, likely to adversely effect*” determination for blowout penstemon for Alternative 1 but “*no effect*” for the other alternatives. This and other differences between alternatives are discussed below.

The black-footed ferret reintroduction habitat land allocation (MA 3.63) occurs in two locations, the Conata Basin area on the Wall Ranger District, and the Jim Wilson/First Black

Canyon area on the Fall River Ranger District. The Conata Basin area contains a population of reintroduced black-footed ferrets. The Jim Wilson/First Black Canyon area does not currently contain black-footed ferrets but may in the future. Table 4-15 lists the miles of open road or motorized trail within each of these areas for each alternative.

The black-footed ferret has a determination of “*not likely to jeopardize the continued existence of the species*” for all alternatives, however the scope of negative effects would be greatest for Alternative 1 since motorized travel is not restricted through MA 3.63, allowing prairie dog shooters easy access to prairie dog colonies in ferret habitat. Alternative 3 would be next in terms of negative impacts because it has the most designated roads in ferret habitat. In particular, routes 7116.1 and 7116.1A provide access to prairie dog colonies in ferret habitat. Alternatives 2 and 4 would have the least impacts respectively.

Table 4-15 Roads and Motorized Trails within Black-Footed Ferret Reintroduction Habitat

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Conata Basin	36.3	34.8	46.2	31.1
Jim Wilson/First Black Canyon	25.8	28.2	39.5	18.2
Total	62.1	63.0	85.7	49.3

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

The American burying beetle (ABB) has been found on the Samuel R. McKelvie National Forest and on the Bessey Unit. More ABB captures have been made on the Bessey Unit than on the McKelvie though this is an artifact of extensive ABB trapping at Bessey rather than better habitat. In fact, the best habitat for long-term ABB occupancy is around Merritt Reservoir on the McKelvie.

Table 4-16 lists the miles of open road and motorized trail near (within two miles of) ABB capture locations for the Bessey and McKelvie units. A two mile radius around capture locations is selected because ABB individuals can travel approximately two miles in a night.

American burying beetle receives a determination of “*may affect, not likely to adversely affect*” for all alternatives since there would be no permanent habitat loss or habitat fragmentation with any alternative. Of greatest concern is the Merritt Reservoir area on the Samuel R. McKelvie National Forest. American burying beetles have been located in the area where Alternative 3 includes loop and reservoir access roads that could impact the American burying beetle.

Table 4-16 Roads and Motorized Trails near American Burying Beetle Locations

Area	Road or Trail Type	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Bessey	Open Road	191.5	178.4	321.4	157.6
	Motorized Trail	22.2	61.7	69.9	22.6
McKelvie	Open Road	8.2	9.5	25.9	7.2
	Motorized Trail	0.0	0.0	0.0	0.0
Total	Open Road	199.7	187.9	347.3	164.8
	Motorized Trail	22.2	61.7	69.9	22.6

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Blowout penstemon has been planted in several blowouts on the Bessey Unit and Samuel R. McKelvie National Forest. Table 4-17 lists the miles of open road and motorized trail within 500 feet of the blowout penstemon locations for the Bessey and McKelvie units.

Blowout penstemon has a determination of “*may effect, likely to adversely effect*” for Alternative 1 because of recent OHV use in blowout penstemon sites. All action alternatives receive a “*no effect*” determination because motor vehicles would be restricted to within 300 feet of roads, and all roads within 500 feet of plantings would be re-located to more than 500 feet from blowout penstemon sites.

Table 4-17 Roads and Motorized Trails near Blowout Penstemon Sites

Area	Road or Trail Type	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Bessey	Open Road	0.5	0.3	0.7	0.3
McKelvie	Open Road	0.8	0.8	0.8	0.8
Total	Open Road	1.3	1.1	1.5	1.1

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

The determinations of effects on Forest Service sensitive species are categorized differently from ESA listed species. The determinations are as follows:

NI - No impact -- where no effect is expected

BI - Beneficial impact -- where effects are expected to be beneficial and no negative effects are expected to occur

MAII - 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 would remain well distributed.

LRLV - 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 would not be maintained in sufficient numbers or distribution through time.

Table 4-18 displays the determination for each of the potentially affected sensitive species listed in Chapter 3. Additional sensitive species found in the analysis area but considered “*no impact*” in the BE/BA are not listed in Table 4-18.

Table 4-18 Summary of Determinations of Effects for Sensitive Species

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Black-tailed prairie dog	MAII	MAII	MAII	MAII
Swift fox	MAII	MAII	MAII	MAII
Rocky Mountain Bighorn Sheep	MAII	MAII	MAII	MAII
Greater prairie-chicken	MAII	MAII	MAII	MAII
Greater sage grouse	MAII	MAII	MAII	MAII
Barr’s milkvetch	LRLV	MAII	LRLV	MAII

All determinations for the sensitive species by alternative are “*may adversely impact individuals, but not likely to result in loss of viability in the planning area*” except for Barr’s milkvetch which warrants a “*likely to result in a loss of viability in the planning area*” for Alternatives 1 and 3. This and other differences between alternatives are discussed below for the selected sensitive species.

Black-tailed prairie dog towns occur across the NNF though mostly on the Buffalo Gap and Oglala National Grasslands. Roads and motorized trails traverse many of these prairie dog towns though no roads cross prairie dog towns in either the Pine Ridge Unit or Samuel R. McKelvie National Forest. Table 4-19 lists the miles of open road or motorized trails that cross prairie dog towns by administrative unit (excluding Pine Ridge and McKelvie) by alternative.

Considering other factors that effect prairie dog populations, most notable poison and plague, it is doubtful that the implementation of travel restrictions would have any effect on the prairie dog populations, so the determination is MAII (May Adversely Impact Individuals) for all alternatives. In general, the fewer roads that are open to the public the less effect there would be on individual prairie dogs. Alternative 1 therefore would have the most effect on prairie dogs, followed by Alternative 3, then Alternative 2, and with Alternative 4 having the least effect.

Table 4-19 Roads and Motorized Trails in Prairie Dog Towns

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Fall River	14.6	21.6	35.4	15.3
Wall	31.4	29.9	36.1	26.5
Oglala	2.9	6.2	6.2	2.9
Bessey	0.7	0.6	2.0	0.6
Total	49.6	58.3	79.7	45.3

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Swift foxes occur primarily in the Special Plant and Wildlife Habitat Management Area (MA 3.64) east of Ardmore on the FRRD. Table 4.20 lists the miles of open road or motorized trail by alternative in this management area.

Although the presence or absence of roads can have an effect, the roads that would be affected by this decision do not have enough traffic on them to attract or deter swift fox. The determination is MAII (May Adversely Impact Individuals) for all alternatives. Overall it is doubtful that the different alternatives would have any effect on swift fox populations.

Table 4-20 Roads and Motorized Trails in Swift Fox Area

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Swift Fox Area	0.0	7.9	15.0	7.9

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Rocky Mountain bighorn sheep occupy part of the Buffalo Gap National Grassland near the Pinnacles area of Badlands National Park (Wall Ranger District), Management Area 3.51 (Bighorn Sheep Habitat) on the Pine Ridge Unit, and the Roundtop/Eagle Eye Rock area of the ONG. Table 4-21 lists the miles of open road and motorized trail for each of these areas by alternative.

The determination is MAII (May Adversely Impact Individuals) for bighorn sheep for all alternatives. However, the scope of negative effects would be greatest for Alternative 1 since motorized travel is not restricted in the bighorn sheep areas. Alternative 3 would be next in terms of negative impacts because it has the most designated roads or motorized trails in bighorn

sheep areas, followed by Alternative 2 then Alternative 4. In particular, NFSR 7170 and routes 240.2 and 240.3 (displayed on buffalo east3.pdf) may affect bighorn sheep in the Pinnacles sub-herd. On the Pine Ridge Unit, two roads enter or cross the Forest Plan Management Area 3.51 Bighorn Sheep Habitat in the Spotted Tail area, NFSR 725 and route 22000. On the ONG there is a proposed motorized trail in alternatives 2 and 3 in the Roundtop/Eagle Eye Rock area. Bighorn sheep could be negatively impacted by disturbance associated with OHV use in that area.

Table 4-21 Roads and Motorized Trails in Bighorn Sheep Habitat

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Pinnacles	0.7	0.7	4.5	0.7
Pine Ridge	4.2	2.7	5.0	2.1
Roundtop/Eagle Eye Rock	0.0	5.2	5.2	0.0
Total	4.9	8.6	14.7	2.8

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Greater prairie chicken may be found on the Samuel R. McKelvie National Forest and the Bessey Unit. Potential impacts to prairie chickens are best defined by proximity to leks (areas where male prairie chickens perform a dance to attract a mate); any road or motorized trail within about 500 meters of a prairie chicken lek has the potential to disturb the mating practices of these birds. Table 4-22 lists the miles of motorized route that are within 500 meters of mapped prairie chicken leks by alternative.

The determination for greater prairie chicken is MAII (May Adversely Impact Individuals) for all alternatives. There is always a possibility of an individual greater prairie chicken being killed by a motor vehicle on a designated road or trail, or in a designated motorized use area. This project restricts the number of roads, trails, and open areas available to the public in every action alternative compared to the existing condition. Travel restrictions would reduce the places that vehicles can go but likely would not reduce the number of motor vehicles present in the project area. This action may or may not result in reduction in the chance for a greater prairie chicken to be killed by a motor vehicle.

Another effect of the decision is that as road densities decrease there would be more area available for animals to avoid roads altogether. Alternatives with the least designated roads would have the least amount of impact. This is especially important during the breeding and nesting period. Alternatives with the least designated roads would have the least amount of impact. Alternative 4 would have the least effect followed by Alternative 2, then Alternative 3, with Alternative 1 having the greatest potential impact on greater prairie chicken.

Table 4-22 Roads and Motorized Trails near Greater Prairie Chicken Leks

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Bessey	1.6	1.6	4.6	1.6
McKelvie	2.3	1.7	4.0	1.7
Total	3.9	3.3	8.6	3.3

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Greater sage grouse have been found on the most northwestern part of the Buffalo Gap National Grassland. This area has been designated MA 3.64, Special Plant and Wildlife Habitat, to protect sage grouse habitat. Table 4-23 lists the miles of open road or motorized trail by alternative in this management area.

The determination for greater sage grouse is MAII (May Adversely Impact Individuals) for all alternatives. It is highly unlikely that implementation of any of the alternatives would have any significant effects on sagebrush habitats in this area over the next 10 years, or on sage grouse populations and their viability that could eventually re-establish in the area. The sage grouse management objectives for the sage grouse habitat would be met; however, given the decline in sage grouse numbers, meeting population objectives under any alternative would seem unlikely. This alternative would not inhibit quality sagebrush habitat and would lend to positive habitat conditions for sage-grouse populations.

Another effect of the decision is that as road densities decrease there would be more area available for animals to avoid roads altogether. Alternatives with the least designated roads would have the least amount of impact. This is especially important during the breeding and nesting period. Alternatives with the least designated roads would have the least amount of impact. Alternative 4 would have the least effect followed by Alternative 2, then Alternative 3, with Alternative 1 having the greatest potential impact on greater sage grouse.

Table 4-23 Roads and Motorized Trails in Greater Sage Grouse Area

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Sage Grouse Area	14.8	27.8	68.4	17.7

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesigned roads and motorized trails that have no travel restrictions under current conditions.

Barr's milkvetch occurs on dry badlands and semi-barren slopes with low vegetation cover on soils derived from White River Group strata. Mapped populations occur on eastern parts of the Fall River Ranger District, particularly in the Railroad Buttes area, and across the Wall Ranger District. Table 4-24 lists the miles of open road and motorized trail within 2000 feet of the center of mapped populations by alternative.

Alternatives 1 and 3 allow unrestricted motorized use in the parts of the Railroad Buttes area that contains Barr's milkvetch. The loss of these populations could be important to the survival of the species as a whole but most certainly would effect the survival of the species in the planning area. For this reason Alternatives 1 and 3 receive a determination of LRLV (Likely to Result in a Loss of Viability) for Barr's milkvetch. Alternatives 2 and 4 have greater restrictions on off-road motorized travel in the Railroad Buttes area so receive a MAII (May Adversely Impact Individuals) determination. Some individual Barr's milkvetch plants may be within the Designated Motorized Use Areas when these are officially designated, but the majority of the population would be protected from off-road motor vehicle use.

Table 4-24 Roads and Motorized Trails near Barr's Milkvetch Sites

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Total	10.1	15.3	24.0	15.2

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesigned roads and motorized trails that have no travel restrictions under current conditions.

Plains sharp-tailed grouse is a Management Indicator Species (MIS). It occurs across the planning area in suitable habitat. Table 4-25 lists the miles of open road and motorized trail within suitable sharp-tailed grouse habitat by alternative.

It is doubtful that the implementation of the TMR would have any effect on grouse populations, especially considering that no new roads would be constructed. There is always a possibility of an individual sharp-tailed grouse being killed by a motor vehicle on a designated road, trail, or designated motorize use area. The different alternatives would vary the places that vehicles can go but likely would not reduce the number of motor vehicles present in the project area. This action may or may not result in reduction in the chance for sharp-tailed grouse to be killed by a motor vehicle.

Another effect of the alternatives is that decreased road densities would provide more area available for the birds to avoid roads altogether. This is especially important during the breeding and nesting period. Alternatives with the fewest designated roads and least area open to motor vehicle use would have the least amount of impact. Alternative 4 would have the least effect on sharp-tailed grouse followed by Alternative 2, then Alternative 3, and finally Alternative 1.

Table 4-25 Roads and Motorized Trails in Plains Sharp-tailed Grouse Habitat

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Fall River	119.9	160.4	307.4	135.0
Wall	54.3	60.9	83.7	53.0
Oglala	48.4	81.6	86.2	48.8
Pine Ridge	30.7	41.8	51.0	21.8
McKelvie	69.2	74.1	209.6	58.2
Bessey	116.1	123.9	231.6	103.7
Total	438.6	542.7	969.5	420.5

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesigned roads and motorized trails that have no travel restrictions under current conditions.

Pygmy nuthatch is a Management Indicator Species found in ponderosa pine stands on the Pine Ridge Unit. Table 4-26 lists the miles of open road and motorized trail within suitable pygmy nuthatch habitat by alternative.

Road and trail densities appear to have a negative effect on the abundance of pygmy nuthatch in a given area. A study conducted by Miller et. al. (1998) found that both the grasshopper sparrow and pygmy nuthatch were significantly more abundant along control transects than along recreational trails. Further, both species tended to increase in abundance with increasing distance from the trails.

Based on trail densities Alternative 4 would be the most beneficial for pygmy nuthatch given the reduced amount of trails and the banning of cross country travel. Alternatives 2 and 3 have a fairly similar trail density, but Alternative 2 would be slightly better than Alternative 3. Alternative 1 would likely be the least beneficial to the pygmy nuthatch given that cross country travel is allowed and motorized traffic can go anywhere. However, trail densities may have a greater effect on the presence of pygmy nuthatch than cross-country travel, so alternatives 2 and 3 could be worse than Alternative 1 given the additional miles of motorized trail construction that is proposed on the Pygmy Nuthatch.

Table 4-26 Roads and Motorized Trails in Pygmy Nuthatch Habitat

Area	Road or Trail Type	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Pygmy Nuthatch Habitat	Open Road or Motorized Trail	6.0	24.2	26.7	4.1

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Elk have become a valuable natural resource on the Pine Ridge Ranger District in recent years. Two locations have been designated as elk calving areas, one in the Bordeaux Creek area of the Pine Ridge Unit and another in the Roundtop/Eagle Eye Rock area of the ONG. Table 4-27 lists the miles of open road and motorized trail within these elk calving areas by alternative.

Roads and associated human disturbance are universally accepted as significant factors influencing habitat selection by elk (Cover 2000, Lyon 1979, Thomas and Toweill 1982 (p 386), Stillings (1999) – Cover 2000 p 16-20). Hunting is the most significant recreational factor affecting elk population and structure, but other recreational activities may also disturb elk. High road densities have been significantly correlated with buck/bull mortality. Cross-country travel appears to have the most negative impacts for elk, as this activity is not as predictable as road and trail traffic. Repeated displacement of elk during the calving season has been shown to result in major declines in calf survival (Phillips and Alldredge 2000, Shively et. al. 2005). Cover (2000) reported that the elk herd wintering on private lands east of the Pine Ridge area shifts much of their home ranges during calving season southwestward onto public land south of Chadron. The Bordeaux Creek area has been identified as an important calving area for elk. Road densities and trails in this area are at higher levels than generally recommended for quality elk habitat.

The Alternatives proposed in this planning process would not likely affect populations of elk, as populations are continuing to rise under current management. Given the current alternatives the most beneficial for elk would be Alternative 4 because of the reduced road and trail densities, followed by 2 and 3 which eliminate cross country travel but still have a large number of motorized trails. Alternative 1 would be the least preferred alternative for elk management given that the entire District is open unless posted closed, making cross country travel legal.

Table 4-27 Roads and Motorized Trails in Elk Calving Areas

Area	Road or Trail Type	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Bordeaux Creek	Open Road	4.5	5.4	5.4	2.9
	Motorized Trail	0.0	4.1	4.1	0.0
Roundtop/Eagle Eye Rock	Open Road	0.0	0.0	0.0	0.0
	Motorized Trail	0.0	5.2	5.2	0.0
Total	Open Road	4.5	5.4	5.4	2.9
	Motorized Trail	0.0	9.3	9.3	0.0

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Other Wildlife Species

Any decision that restricts travel to designated roads and areas would have some beneficial effect on most wildlife species that occur in the planning area. The fewer roads that are open to the public the less effect there would be on wildlife in general.

Higher road and trail densities on Forest Service lands may increase wildlife to adjacent private lands. As the quality of habitat decreases for some species such as elk and bighorn sheep, the animals would tend to migrate off of federal lands and take up residence on private lands, increasing the potential for animal damage. Potential sources of damage include but are not limited to eating or tearing apart hay bails, breaking fences, competing with livestock for forage, and creating a browse line in a stand of trees. The extent of damage would depend on the number of animals displaced from public lands.

Cumulative Impact

Effects to wildlife and plants would be less overall both in the project area and the adjacent area, as motorized use is greatly decreased from the existing condition. When combined with similar actions on National Forest lands across the United States, actions in this project area would contribute to a decrease in effects on wildlife and plants. Determinations of Effects would be the same or less in all action alternatives. There are 3 federally listed species and one would move from ‘may affect, likely to adversely affect’ to ‘no effect’. Twenty one sensitive species with possible effects from travel management would have the same determinations of effects under all alternatives: ‘may adversely impact individuals (but not likely to result in loss of viability in the planning area)’. Overall, of the action alternatives, Alternative 3 would have the highest effects and Alternative 4 would have the least effects on wildlife and plants.

Forest and Rangeland Management

Forest Management

Vehicle travel off established roads adversely impacts vegetation. Root systems of mature trees are often damaged when repeated vehicle travel occurs adjacent to the tree. Prior to the wildfires of 2006 (discussed in Chapter 3) the combination of topography and trees limited access for larger vehicles. OHVs and motorcycles had fewer limits but riders had little impact on larger pine trees. Since the plantations are new, the trees are generally less than 6 inches tall and not yet easy to see. One or two users can damage substantial portions of plantations during dispersed camping or game retrieval activities. Off-road travel in plantations could result in severe damage to above ground stems and tops, which would likely affect long-term survival or health of individual seedlings.

The plantations near system roads are along NFSR 702, 711, 718, and 733 on the Pine Ridge Unit. Each of these roads is open in all alternatives with a 300-foot off-road allowance for dispersed camping and game retrieval. In addition, Alternatives 2 and 3 include the 718.2 route with a 300 foot off-road allowance and the 24-EM trail, both of which go through or adjacent to plantations allowing more potential damage to planted trees. Total acreage of potential plantation damage is displayed in **Table 4-28**.

Table 4-28 Acres of Plantation Potentially Impacted by Motor Vehicles

Area	Alternative 1 current	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Pine Ridge Unit	328	74	74	70

Alternative 1 allows motorized access throughout the planted areas, thus a risk of damage to all the plantations. All action alternatives restrict motorized access, but with a 300 foot off-road allowance for camping and game retrieval, 70 or more acres of plantation could still be damaged by off-road motor vehicle use.

Rangeland Management

Effects on permitted livestock grazing are determined based on the miles of roads and trails, and the acreage of Designated Motorized Use Areas, as displayed in tables 2-1 to 2-3. Table 4-29 displays a summary of these effects.

Table 4-29 Roads and Motorized Trails Impacting Grazing Allotments

Area	Alternative 1 current*	Alternative 2 proposed	Alternative 3 additional	Alternative 4 reduced
Bessey	32.1	32.8	65.1	9.3
Railroad Buttes	10.8	23.8	25.8	20.8
Roundtop/Eagle Eye Rock	0.0	5.5	5.5	0.0
Pine Ridge	21.2	39.4	44.7	10.0
Total	64.1	101.5	141.1	40.1

* Alternative 1 mileage includes only designated roads and motorized trails open to the public. It does not include the user-created/undesignated roads and motorized trails that have no travel restrictions under current conditions.

Noxious Weeds

This analysis uses road and motorized trail information in each alternative to assess the relative risk of spreading invasive species (Tables 2-1 to 2-3 in Chapter 2). For overall potential spread, this analysis bases that risk on the extent of public use of roads and trails: the more roads and trails that are open for use, the greater the potential for invasive species spread.

Alternative 1

This alternative has the greatest potential of all the alternatives for the continued spread of invasive species from a no-action or existing condition aspect. Even though the alternative does not recommend leaving 833,260 acres open to motorized vehicles, it is considered open for comparative purposes. Since no limitations exist, and all areas would be open, the historical expansion of motorized vehicles would continue into undisturbed areas and the potential spread of invasive species due to further disturbance would also continue. This risk of spread is greater in the wetter regimes such as riparian areas and wooded draws.

Alternative 2

This alternative has potential for the continued spread of invasive species, especially in the 4,040 acres that would remain open to motorized vehicles. There would be an increased risk of spread with in and from these areas because motorized use would now be concentrated. Local agency personnel would find it much easier to inventory, monitor, and spray new infestations in

concentrated areas versus having to monitor the whole Nebraska National Forest. The risk of spread would still be greatest in the wet regimes such as riparian areas and wooded draws; however the significant reduction in open roads and trails across these areas would significantly reduce the risk of spread. Because 830,000 acres would be closed to motorized vehicle use by the public, those areas have a significantly reduced risk of invasive species spread.

Alternative 3

This alternative has potential for the continued spread of invasive species in the 8,158 acres that would remain open to motorized vehicles. There would be an increased risk of spread with in and from these areas because motorized use would now be concentrated. Local agency personnel would find it much easier to inventory, monitor, and spray new infestations in concentrated areas versus having to monitor the whole Nebraska National Forest. The risk of spread would still be greatest in the wet regimes such as riparian areas and wooded draws; however the significant reduction in open roads and trails across these areas would significantly reduce the risk of spread. Because 825,000 acres would be closed to motorized vehicle use by the public, those areas have a significantly reduced risk of invasive species spread.

Alternative 4

Overall, this alternative has the least potential for the continued spread of invasive species, since only 1,786 acres would remain open to motorized vehicles. There would be an increased risk of spread with in and from these areas because motorized use would now be concentrated. However, local agency personnel would find it the easiest under this alternative to inventory, monitor, and spray new infestations in concentrated areas versus having to monitor the whole Nebraska National Forest. The risk of spread would still be greatest in the wet regimes such as riparian areas and wooded draws; however the significant reduction in open roads and trails across these areas would significantly reduce the risk of spread. Because 831,000 acres would be closed to motorized vehicle use by the public, this alternative has a significantly reduced risk of invasive species spread.

Cumulative Effects

The exiting transportation system and the off-road and trail use by recreation and other users provide a vector for dispersal of invasive species seed. This potential, in combination with other earth-disturbing activities, would continue to provide conditions that allow for invasive species infestations on the forest.

Alternative 1 has the greatest potential of all the alternatives for the increased spread of invasive species. The other 3 action alternatives would have no potential for increased risk, due mainly to the amount of acres being closed to motorized vehicles on the Nebraska National Forest.

Heritage Resources

Alternative 1

The No-Action alternative would result in continuing the current management of the designated road system and allowing use of undesignated roads and off-road motorized vehicle use in those areas not currently restricted.

If there is no federal action, then there is no undertaking, as defined in 36 CFR Part 800.16(y), for Section 106 of the National Historic Preservation Act (16 U.S.C. 470f). CEQ guidance clarifies that the No-Action Alternative be based on no change from current management. At this time there are 3,400 miles of existing designated and undesignated routes on the Forest. Under this alternative, current management plans would continue to guide project area management. Off-road motorized travel would continue to be allowed on approximately 89 percent (833,000 acres) of the forest consistent with the current Forest Plan.

At the current level of use there may be properties eligible for listing on the National Register of Historic Places (NRHP) being affected by use and maintenance of existing two-track roads which were originally user created or minimally constructed. Direct adverse effects include damage from motor vehicles, unauthorized collection and excavation, erosion, trampling, OHV use off-road, soil compaction and other mechanized surface disturbance. Indirect impacts may include subsequent erosion undermining sites in the vicinity, access to sites for vandalism, and access to sites for other recreational purposes.

Eighty nine percent of lands administered by the Nebraska National Forest would be open to cross country use and most roads and trails would be designated open to wheeled motorized vehicle travel; consequently, cross-country travel and route proliferation would still occur in areas of the Forest.

Currently, there are 354 cultural resources in or within 200 feet of existing Forest System Roads and user created trails. These cultural resource sites currently have no resource protection measures implemented to prevent site damage. The effects of soil compaction, rutting, erosion, structural damage, illegal artifact collecting, and vandalism would continue, and likely increase, under the current management plan. The No Action alternative would result in continued proliferation of user created routes and the degradation of cultural resource sites. Loss of site integrity, site artifacts, and site information would continue and likely increase as unauthorized motorized recreation use grows on the Forest. Archaeological resources are non-renewable and this alternative would likely have the greatest negative effect on these resources.

Alternative 2

Alternative 2 proposes to restrict motorized travel to the designated route system year-round (approximately 794 miles of designated route system encompassing 1818 acres). By eliminating non-permitted cross-country motorized travel, the potential for damage by this activity to cultural resources overall would be reduced. This alternative does allow game retrieval and dispersed parking and camping along a 300 foot right-of-way (ROW) on most of the designated routes. Direct and Indirect Effects under this alternative would be similar to the effects of Alternative 1, although to a lesser degree. However, the addition of the 300 foot ROW may result in more concentrated impact to cultural resources along that corridor. In that case, immediate, irreversible damage to the integrity of a cultural resource located along the ROW could result if a heavy or tracked vehicle were to drive across a shallow archaeological feature in wet conditions. Indirect effects include increasing erosion along routes and the ROW resulting in damage or increased exposure to adjacent archaeological sites.

It is possible that a long-term result of eliminating cross-country travel would be an increased and more intensive use of the designated system and associated right-of-ways. However, because of decreased access to cultural resources located off the designated system routes,

cumulative impacts such as vandalism, erosion and unintentional surface disturbance should significantly decrease. In accordance with the final travel management rule, 36 CFR Part 212.57, the Forest would monitor the effects of motor vehicle use to cultural resources located on the designated route system as appropriate and feasible.

Alternative 3

Alternative 3 proposes to increase the designated route system to approximately 1308 miles (7,528 acres of routes and open areas). This is nearly double the proposed system of Alternative 2 and more than triples the area of open areas for motor vehicle use. In this alternative the direct and indirect impacts identified in Alternatives 1 and 2 would significantly increase for the designated linear route system and in the open areas, the impact would be even greater. Presumably at least two times more cultural resource sites would be affected under this alternative. Direct and indirect effects include erosion, access to sites resulting in vandalism, motor vehicle damage, soil compaction, trampling and other mechanized surface damage.

All cumulative impacts would be increased under this alternative when compared with Alternatives 2 and 4 and are identical to those impacts already identified.

Alternative 4

Direct and indirect effects to cultural resources of Alternative 4 would be significantly less than any of the proposed Alternatives. All identified effects would be present, but to a lesser extent because fewer cultural resource sites would be directly affected by the routes and access to sites off-route would be fewer.

The long-term cumulative impacts to cultural resource sites already identified in the above alternatives would be fewer. However, activity in the designated route right-of-way may actually increase with the potential for more concentrated use. Therefore, in these specific areas cumulative impacts to cultural resources may increase.

The following table displays the miles of routes by alternative with potential for heritage impacts.

Table 4-30 Routes Proximal to Heritage Sites

Potential Heritage Impacts	Alternative 1	Alternative 2	Alternative 3	Alternative 4
High	0 mi*	14.4 mi	33.7 mi	6.2 mi
Moderate	0 mi*	183.1 mi	639.1 mi	76.8 mi

*Alternative 1 has 0 miles of designated road and motorized trail with high or moderate potential heritage impacts; since all currently designated roads and trails are considered low, sites are known, and mitigations (if needed) are in place. This excludes the approximate 2,800 miles of unauthorized routes which may have potential heritage impacts. The other alternatives have moderate potential impacts mostly do to lack of heritage surveys or high potential impacts because of known site proximity and lack of surveys and/or mitigations.

Paleontological Resources

Restricting motorized travel to designated routes and areas would likely reduce impacts to fossil sites. Closing roads and motorized trails that provide access to fossil sites may also reduce impacts. The majority of road and trail segments across the NNF are 200 meters or more distant

from any known fossil sites, but a number of roads segments are proximal to fossil sites (see Appendix A for cultural/paleontological ratings by road segment). The majority of open road or motorized trail segments proximal to known fossil sites are on the Fall River Ranger District with lesser mileage on the Oglala National Grassland, Pine Ridge Unit, and Wall Ranger District. Table 4-31 displays the mileage of open road or motorized trail segment proximal to fossil sites by alternative.

Table 4-31 Routes Proximal to Fossil Sites

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of Open Road or Motorized Trail Proximal to Known Fossil Sites	46.7 mi *	80.4 mi	93.0 mi	58.6 mi

* Alternative 1 contains 46.7 miles of system road that are proximal to known fossil sites. However since unauthorized roads can be used with this alternative the actual mileage of open road is much higher.

Areas open to off-road motorized travel also provide access to fossil sites, and leave these sites vulnerable to fossil theft, vandalism, and inadvertent damage. Much of the NNF is currently open to off-road motorized use. Notable exceptions with regard to fossil sites include the Special Interest Areas on the Oglala National Grassland that have limitations to motorized travel in the Forest Plan and Forest Order No. 2007-0207-NNF-01. The Forest Order allows continued use of FSRs 903, 903-C, 902, and 918 within the SIAs with an allowance for parking within a corridor 33 feet on either side of the midpoint of the roads.

The proposed Railroad Buttes Designated Motorized Use Area (FRRD) contains many known fossil sites. The smaller Railroad Buttes Designated Motorized Use Areas considered in Alternatives 2 and 4 are much more protective of fossil sites than the large Designated Motorized Use Area considered in Alternative 3. The Benedict Buttes Designated Motorized Use Area (ONG) proposed in Alternative 3 also contains many fossil sites. The Baja Designated Motorized Use Area (WRD) proposed in Alternative 3 does not contain known fossil sites though it may contain fossils not yet discovered.

Alternative 1

This alternative contains the greatest potential impacts to paleontological resources of all the alternatives. Motorized access to most fossil sites is not restricted. Of notable exception are the sites within the Toadstool Park and Hudson-Meng Bison Bonebed SIA which are protected from motorized travel by Forest Order. However the roads leading to these SIAs contain numerous unprotected sites. FSR 918 provides access to nearly 200 paleontological sites with 23 theft sites. The heavily motorized Railroad Buttes area also has many paleontological sites that receive damage from motorized use.

Alternative 2

This alternative contains protection of many fossil sites greater than what occurs with Alternative 1. Although there are 80.4 miles of open road proximal to fossil sites with this alternative (see Table 4-19), off-road motorized travel is greatly restricted compared to Alternative 1. This alternative adds road 918.1 (on the west edge of Toadstool Park SIA) to the system which provides more access to badland areas and possible negative impact on the fossil resource.

However this road has a long history of use even though it is currently an unauthorized route. Limitations to off-road travel in the Toadstool Park area provide important protection to fossil resources. Allowance for off-road travel (parking) for all roads in the area is 33 feet. Also, limiting off-road travel to smaller Designated Motorized Use Areas in the Railroad Butte area provides addition protection to fossil sites.

Alternative 3

This alternative contains fossil site protection greater than what occurs with Alternative 1 but less than Alternative 2. Alternative 3 contains more roads proximal to fossil sites (93.0 miles) than Alternative 2. Alternative 3 includes the addition of a Designated Motorized Use Area at Benedict Buttes which would greatly negatively impact fossil resources. There are over 25 sites in the general area and the location consistently produces significant vertebrate fossils. Also Alternative 3 includes a large Designated Motorized Use Area at Railroad Buttes with potential negative impacts to fossil resources.

Alternative 4

This alternative contains the greatest protection of fossil sites of the alternatives. It is similar to Alternative 2 except for less miles of road proximal to fossil sites (58.6). This includes closure of road 918.1 which provides access to fossil sites on the west boundary of Toadstool Park SIA.

Costs of Construction and Maintenance

The number of variables involved in estimating accurate costs makes that task very difficult and the answers approximate at best. The following information should be considered with that in mind.

The vast majority of the road maintenance expenditures in the project area go to maintaining ML 3, 4 and 5 (gravel and asphalt) roads. This proposal does not include changes to ML 3 and 4 roads from the current condition so there will not be any appreciable effect on the maintenance required for these roads.

There are numerous potential changes to the current road and trail system in the action alternatives. Of those changes, the ones likely to have the most cost impacts are the cost to construct new motorized trails, and the costs to maintain 50" (or less) and single-track trails. Changes likely to have less impact are costs to maintain other routes added to the system, especially mixed use roads and "trails open to all vehicles" that may have increased OHV use. The indicators in Table 4-32 represent the possible changes in these areas and are useful in providing a relative cost comparison between the alternatives.

Table 4-32 Miles of Various Roads and Trails by Alternative

Cost Indicator Measures	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Miles of New Trail Construction	0	40	46	1
Miles of Trails 50" or Less and Single Track	8	97	103	20
Miles of Mixed Use Roads and "Trails Open to All Vehicles"	222	528	1079	286

The cost of the new trails can vary widely depending on the amount of construction necessary. It could vary from no construction (designating a route to follow across relatively flat terrain), to full template construction in areas with steeper topography. Full template construction in mountainous areas can cost up to \$20,000 per mile. The actual costs for a newly designated OHV system would depend on the final miles designated and their position on the land.

The costs to maintain motorcycle (single track) and ATV (50" or less) trails can vary widely based on the topography, soils and amount of use. The only designated trail of this type currently on the Forest is the Dismal River Trail in the Sand Hills of the Bessey Unit. Other user-created trails are part of a trail system around the Dismal River Trail. These trails change slightly over time as the sand shifts. Little maintenance has been performed in the past. Gate repairs and brush removal has been performed by volunteer groups.

There are no historical trail maintenance figures for OHV trails on the erosive soils present in the Buffalo Gap and Oglala Grasslands and the Pine Ridge Unit. A well-designed and constructed OHV trail would likely need less maintenance than one that overlays a previously un-designed two-track route. Cost estimates from other Forests with large motorized trail systems and trail maintenance equipment and heavy use have varied from \$200 to \$500 per mile per year.

The different action alternatives contain various miles of previously ML 2 roads that are to be designated as "trails open to all vehicles" and previously unauthorized routes that will be put on the Forest System and maintained as ML 2 roads. The increased maintenance costs resulting from designating ML 2 roads as "trails open to all vehicles" could be little in the short term as the only physical change initially will be the signing. The long-term costs would again vary widely based on the soils, topography, and to the largest extent, the amount of usage. In general, maintaining ML 2 road templates with any significant ATV traffic can require higher maintenance costs because ATV riders tend to track follow and the aggressive tire tread designs increase rutting and erode rolling dip drainage structures. It is not known how many ML 2s will see increased OHV traffic based on the decision.

Because of the nature of the average ML 2 roads and unauthorized routes on the NNF, adding unauthorized routes to the system will result in little or no short-term costs other than signing. Unauthorized routes and ML 2 roads are very similar; both primarily two track routes that have not been designed and constructed. Long-term costs would again depend primarily on the level of usage, which may not change significantly.

The exact impact to ML 2 roads from closing the Forest to off road use and forcing more of the existing ATV traffic onto roads, especially old ML 2 roads designated as "trails open to all vehicles" and mixed-use roads, is hard to predict. It is predictable that the ATV traffic on designated roads and trails should increase maintenance costs, any increase varying based on the soils, the location of the road, and how the road connects with access points and the rest of the system. Increased traffic should increase the frequency of maintenance needed for these roads in general. It should be noted that the existing amount of maintenance provided to most ML 2 roads is limited and based primarily on priorities set by monitoring existing conditions.

In general, the costs in each alternative to maintain roads designated as "mixed use" and ML 2 roads designated as "trails open to all vehicles" will depend on the total number of miles of those two routes in each alternative.

Alternative 1 (No Action)

With the Forest remaining open to off-road travel, the creation of unauthorized routes will likely continue. The costs to close and repair damage caused by unauthorized routes will likely increase. The material condition of the current road and trail system will likely deteriorate over the long term as road and off-road use increases and cost to repair unauthorized routes pulls maintenance funds from system road and trail maintenance.

Alternative 2

Alternative 2 includes about 40 miles of new trail construction and would result in a trail network (including trails 50" or less and single track) of about 97 miles, compared to the existing designated trail network of a little over 8 miles. Depending on the actual costs of constructing and maintaining this network, this alternative could be considerably more expensive than the current condition. User group and volunteer efforts could help keep costs of constructing and maintaining the system relatively low.

Alternative 2 also includes over 500 miles of mixed use road and "trails open to all vehicles". The cost of maintaining this system may be fairly inexpensive considering that most of these routes are user-created and maintained. But erosion or other road maintenance problems with this network could increase costs.

Alternative 3

This alternative includes six more miles of newly constructed trails than Alternative 2, making this alternative slightly more expensive than Alternative 2. It also includes over 1,000 miles of mixed use road and "trails open to all vehicles", much more than Alternative 2. The cost of these extra miles is uncertain but could be high if there is additional erosion or other road maintenance problems.

Alternative 4

This alternative includes only one mile of new trail construction, a trail network of just 20 miles, and less than 300 miles of mixed use road and "trails open to all vehicles". Roads and trails with this alternative would be much less expensive to build and maintain compared to Alternatives 2 and 3.

Cumulative Impact

The successful implementation and financing of an appropriately sized OHV recreational system in the Nebraska National Forest could increase local involvement in the direct support of the system in the form of individual and user group volunteer efforts, partnerships, and coop programs. It could increase the level of voluntary compliance with the rules thus augmenting law enforcement efforts. A viable system could also have significant long-term economic benefit to local business and communities from steady or increased motorized recreation users from local areas and out of state. Successful implementation could also serve as an example that could be emulated statewide. The need for funding of a successful system may also have an influence on state legislation in the long term.

Safety

Some commenters on the Proposed Action expressed the concern that concentrating OHV use on designated routes and relatively small motorized use areas would increase the chance of accidents. This assertion is possible but speculative. While concentrating OHV use to designated routes and areas may increase the likelihood of collisions with other vehicles, riders would know that they are on a designated trail or area and are more likely to expect interaction with other users.

The primary safety concern with the Proposed Action, and the focus of this analysis, is mixed use, where highway legal vehicles may be on the same route as non-highway legal vehicles and/or riders. The risk of serious injury is highest from collisions between full-sized vehicles (i.e. a pick-up truck) and smaller trail-riding vehicles such as an ATV. This risk is highest on higher maintenance roads, ML 3, 4, or 5, where traffic and speed are generally higher. Maintenance Level 2 roads have relatively less risk because of slow speeds and less traffic.

All action alternatives in the administrative units in Nebraska (ONG, PRU, SMNF, and BU) have proposals that designate some roads as motorized mixed use, dominantly ML 2 roads but including some ML 3 and 4 roads. Operators of non-highway legal vehicles are required to be licensed. The difference between the alternatives is in the numbers of miles of roads that are proposed for motorized mixed-use. The Forest Service will need to complete the motorized mixed-use analysis, in some form, to be used to inform the decision maker of the safety risks prior to designation of motorized mixed-use.

The action alternatives in South Dakota (the BGNG) do not contain mixed use roads but propose designating numerous ML 2 roads as “trails open to all vehicles”. This designation allows non-highway legal vehicles and unlicensed operators on trails with full sized vehicles. A formal mixed-use analysis is not required by the Travel Management Rule however these trails should also undergo a safety review similar to the mixed use analysis prior to the designation decision.

Mileages of mixed use road or “trails open to all vehicles” by alternative are listed in Table 4-33.

Table 4-33 Miles of Mixed-Use Road and “Trails Open to All Vehicles” by Alternative

Indicator Measure	Alt. 1*	Alt. 2	Alt. 3	Alt. 4
Miles of Mixed-Use – ML 2 Roads	222	199	496	11
Miles of Mixed-Use – ML 3, 4 & 5 Roads	24	11	14	10
Miles of Trail Open to All Vehicles	0	329	584	275

*The current condition (Alternative 1) does not have a formal designation of “mixed use” for any roads. The mileages in this column are based on NFSRs in Nebraska that do not have a specific prohibition against ATV use, in other words all NFSRs in Nebraska except those mentioned in Forest Order No. BRD-01-99.

Alternative 1 (No Action)

This alternative will result in little change from the current situation. Mixed use and use of roads by unlicensed operators will likely continue on Forest roads in South Dakota and Nebraska. In the absence of any outside changes at the state and county level that would effect the operation

of non-highway legal vehicles, the overall risk to the safety of non-highway legal operators on the Forest could increase as use increases.

Alternative 2

In general, roads with motorized mixed use and “trails open to all vehicles” will likely have a higher safety risk than those without mixing because of the possibility and consequences of an accident between a highway legal vehicle and a non-highway legal vehicle. Implementation of Alternative 2, or any of the action alternatives, could reduce the risk of accidents involving non-highway legal vehicles and operators by effectively reducing that traffic on Forest roads. This assumes that enforcement of applicable state laws and the resultant Travel Management Decision are advertised and enforced at an adequate level.

Alternative 3

This alternative would increase safety risk compared to Alternative 2 because it would allow motorized mixed use on over twice as many miles of roads as Alternative 2. Many of these additional miles would be on newly designated roads on the SMNF or BU which receive very little use. Safety risk would generally be low on these roads. However Alternative 3 would allow motorized mixed use on 14 miles of ML 3, 4, or 5 roads, up from 11 miles in Alternative 2.

This alternative also adds over 250 miles of “trails open to all vehicles” compared to Alternative 2. Most of these additional miles would be on newly designated routes across the BGNG, low standard two-tracks that receive little use so safety risk would be low.

Alternative 4

This alternative decreases mileage of mixed use road dramatically, and mileage of “trails open to all vehicles” modestly, compared to Alternative 2. However this alternative would still have 10 miles of ML 3, 4, and 5 roads as mixed use. Alternative 4 would have a slightly reduced safety risk compared to Alternative 2.

Cumulative Impact

The travel management decision could have safety impacts outside of the analysis area and off of National Forest System lands. Fewer OHV riding opportunities on National Forest lands locally and across the United States as a result of the TMR could result in fewer riders. Some OHV enthusiasts may lose interest and do less riding resulting in fewer OHV accidents. It is difficult to predict larger-scale ramifications of the NNF travel management decision on safety.

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 alternatives and analysis described herein comply with the following laws, regulations, and executive orders, as is disclosed in this document or in supporting documentation.

- Multiple Use-Sustained Yield Act of 1960
- National Historic Preservation Act of 1969
- National Environmental Policy Act of 1969
- Clean Air Act of 1970
- Clean Water Act of 1970
- Endangered Species Act of 1973
- National Forest Management Act of 1976
- Executive Order 11593-Property of Historic, Archeological, or Architectural Significance
- Executive Order 11644-ORV Management
- Executive Order 11988; 10 CFR 1022-Floodplains
- Executive Order 11989-ORV Management
- Executive Order 11990-Protection of Wetlands
- Executive Order 12898-Environmental Justice
- Executive Order 12962-Recreational Fisheries
- Executive Order 13007-Native Americans' concerns

This project does not involve impounding or diverting water, or adverse impacts to Federally listed threatened or endangered species; therefore, formal consultation with the U.S. Fish and Wildlife Service is not required.

No ground-disturbing actions would occur in known eligible historic places. The Forest Service has complied with requirements of Section 106 of the National Historic Preservation Act.

A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice. Executive Order 12898 provides that, "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." No adverse effects from the Proposed Action or alternatives have been identified on minority or low-income populations.

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DISTRIBUTION OF THE ENVIRONMENTAL IMPACT STATEMENT

This environmental impact statement has been distributed to individuals who have submitted comments on the project and who specifically requested a copy of the document. Copies have been sent to the following agencies representing a wide range of views.

USDI Fish and Wildlife Service
U.S. Environmental Protection Agency
USDA Forest Service, Regional Office
Advisory Council on Historic Preservation
USDA APHIS
USDA Natural Resources Conservation Service
USDA National Agricultural Library
US Army Engineers
U.S. Department of the Interior
U.S. Coast Guard
Federal Aviation Administration
Federal Highway Administration
U.S. Department of Energy
South Dakota Department of Game, Fish and Parks
Nebraska Game and Parks Commission

In addition to those listed above, the DEIS has also been distributed to State and Local agencies, and approximately 400 landowners and interested parties. A complete listing of agencies and individuals may be found in the project file.

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GLOSSARY

All-Terrain Vehicle (ATV) – A type of off-highway vehicle that travels on three or more low-pressure tires, has handle-bar steering, is less than or equal to 50 inches in width, and has a seat designed to be straddled by the operator.

Closed Roads/Routes – Roads that are closed to public use but may be open for administrative or permitted use.

Decommission – Activities that result in the stabilization and restoration of unneeded roads or trails to a more natural state. The road or trail is permanently removed from the transportation system and closed to all motorized vehicles. Activities range from blocking the entrance, scattering boughs on the roadbed, revegetating and water barring, to removing fills and culverts, reestablishing drainage-ways, pulling back shoulders, and recontouring the slopes.

Designated Route/Road – A National Forest System Road that is designated for motor vehicle use pursuant to 36 CFR 212.51 in a use map.

Designated Motor Vehicle Use Area – An area open for off-road motor vehicle use. Designated areas should have natural resource characteristics that are suitable for cross-country motor vehicle use or should be so significantly altered by past actions that motor vehicle use might be appropriate. While there is no specific acreage limitation, areas should not be large or numerous. They are intended as specific designations covering small places with clear geographic boundaries, rather than entire landscapes.

Highway Legal Vehicle (HLV) – Vehicles which, according to state traffic laws, are authorized to travel on public roads. Vehicle types and requirements for accessories (such as safety equipment) vary by state.

Motor Vehicle – Any vehicle which is self-propelled, other than:

- (1) A vehicle operated on rails; and
- (2) Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area.

Motor Vehicle Use Map (MVUM) – A map reflecting designated motorized roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System.

Motorized Trail – A route of 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

Motorized Mixed Use - Designation of a NFS road for use by both highway-legal and non-highway-legal motor vehicles.

National Forest System Road (NFSR) – Any road over 50 inches wide that is wholly or partly within, or adjacent to, and serving the National Forest System. NFSRs are necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. These are also known as Forest Developed Roads.

Off-Highway Vehicle (OHV) – Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural

terrain. Examples of OHVs include motorcycles and All-Terrain Vehicles (ATVs). Generally, highway legal 4-wheel drive vehicles are not considered OHVs.

Off-Highway Vehicle (OHV) Trail – A motorized trail designed to accommodate vehicles 50 inches or less in width.

Recreation Opportunity Spectrum (ROS) – A nationally recognized classification system for identifying, describing, planning, and managing a range of recreation settings, opportunities, and experiences. ROS classes used for the NNF are:

- 1) Urban – characterized by substantially urbanized environment although the background may have natural-appearing elements,
- 2) Rural – characterized by substantially modified natural environment,
- 3) Roaded Natural – characterized by a predominantly natural-appearing environment with moderate evidence of the sights and sounds of other humans,
- 4) Roaded Natural Non-Motorized – non-motorized portions of areas otherwise considered Roaded Natural,
- 5) Semi-Primitive Motorized – characterized by predominantly natural or natural-appearing environment of moderate to large size (2,500 acres), and
- 6) Semi-Primitive Non-Motorized – non-motorized areas characterized as semi-primitive.

Unauthorized Route - Any routes on National Forest System lands that are not managed as part of the forest designated route system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been included in a forest transportation atlas.

Unauthorized Routes/Roads – Any routes on National Forest System lands that are not managed as part of the forest designated route system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as routes.

Utility Type Vehicle (UTV) – An OHV designed for two or more passengers sitting side by side, may be greater than 50 inches in width.