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Service

Southwestern
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Environmental Assessment for Travel Management on the Jicarilla Ranger District, Carson National Forest



Jicarilla Ranger District
Carson National Forest



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Environmental Assessment for Travel Management

Jicarilla Ranger District, Carson National Forest



Table of Contents

Chapter 1 – Purpose and Need	1
Purpose of this Document.....	1
Background	1
Purpose and Need for Action.....	5
Proposed Action.....	5
Decision Framework	6
Public Involvement.....	6
Tribal Consultation.....	8
Issues	9
Chapter 2 - Alternatives	13
Alternatives Considered but Eliminated from Detailed Study.....	13
Alternatives Analyzed in Detail	17
Chapter 3 - Affected Environment and Environmental Consequences	25
Cumulative Impacts	25
Air Quality	26
Soils.....	27
Water Quality and Beneficial Uses	32
Vegetation.....	33
Wildlife	36
Cultural Resources	50
Contemporary Tribal Uses or Issues.....	53
Noise	54
Special Designations	55
Social and Economic Environment	59
Environmental Justice	63
Recreation.....	65
Law Enforcement	67
Implementation.....	68
Rationale for a Non-Significant Forest Plan Amendment.....	68
Chapter 4 – Agencies and Persons Consulted.....	71
Literature Cited	73
Glossary	79

Acronyms

CEQ - Council on Environmental Quality	NMED – New Mexico Environment Department
CFR – Code of Federal Regulations	NMHPA – New Mexico Habitat Protection Act
CHU – critical habitat unit	NMPIF – New Mexico Partners in Flight
dB - decibel	NRHP – National Register of Historic Places
EA – environmental assessment	OHV – off-highway vehicle
EIS - environmental impact statement	PAC – protected activity area
ESA – Endangered Species Act	PFA – post-fledgling area
FEIS – final environmental impact statement	P.L. – Public Law
FR – Federal Register	QCEW - Bureau of Labor Statistics Quarterly Census of Employment and Wages
FSH – Forest Service Handbook	RD – ranger district
FSM – Forest Service Manual	ROD – record of decision
FWS - Fish and Wildlife Service	ROS – recreation opportunity system
JICRAP – Roads Analysis Plan for the Jicarilla Ranger District	RVD – recreation visitor day
JIWCA – Jicarilla Watershed Condition Assessment	SHPO – State Historic Preservation Officer
MA – management area	TAP – transportation analysis process
MIS – management indicator species	TCP – traditional cultural property
MSO – Mexican spotted owl	TES – terrestrial ecosystem survey
MVUM – motor vehicle use map	TMDL – total maximum daily load
NEPA – National Environmental Policy Act	USBEA – U.S. Bureau of Economic Analysis
NF – national forest	U.S.C. – United States Code
NFMA – National Forest Management Act	USCB – U.S. Census Bureau
NFS – National Forest System	USDA – U.S. Department of Agriculture
NHPA – National Historic Preservation Act	USDI – U.S. Department of Interior
NMDGF – New Mexico Department of Game and Fish	

Chapter 1 – Purpose and Need

Purpose of this Document

This environmental assessment (EA) analyzes the effects of proposed changes to the designated transportation system on the Jicarilla Ranger District, Carson National Forest. This site-specific analysis is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Carson National Forest Land and Resource Management Plan (forest plan) and is consistent with the forest plan.

This document is being distributed to interested and affected individuals, organizations, government agencies, and Native American tribes to fulfill the intent of the Forest Service's administrative responsibilities for notice, comment, and appeal of National Forest System projects (36 CFR 215). A 30-day notice and comment period will provide the public opportunity to comment on the effects of the proposed action and alternatives.

Background

Over the past few decades, the availability and capability of off-highway vehicles (OHVs) has increased tremendously. More Americans are enjoying access and recreational opportunities on their national forests and grasslands, in keeping with the Forest Service's multiple use mandate. However, the increase in OHV use also affects soil, water, wildlife habitat, and other recreational visitors. Today unmanaged recreation, including impacts from off-highway vehicles, represents one of four key issues facing the nation's forests and grasslands.

On November 9, 2005, the Forest Service published final travel management rule¹ (or regulations) for use of motor vehicles on National Forest System (NFS) lands (70 FR 68264-68291). The rule requires each national forest and grassland to designate those roads, trails, and areas open to motor vehicle use. Designated routes and areas will be identified on a motor vehicle use map (MVUM) to be available free of charge to the public.

The travel management rule does not designate roads or areas for motor vehicles, but provides a framework for making those decisions at the local level, with public input and in coordination with state, local, and tribal governments. If changes to the forest transportation system are needed to comply with travel management regulations, these changes are subject to public involvement and environmental analysis under the National Environmental Policy Act (NEPA) and other environmental laws. Conversely, there is no need to initiate a NEPA process to designate NFS roads, NFS trails, and areas on NFS lands that are already managed for motor vehicle use, where that use will continue unchanged or existing restrictions on motor vehicle use are retained. A decision to construct, add, or remove a route to the forest transportation system or change authorization of or prohibitions on motor vehicle use on a route or in an area is subject to NEPA. The ministerial action of identifying a designated route or area on a MVUM is not subject to NEPA.

In designating routes, the responsible official may include in the designation the limited use of motor vehicles within a specific distance of certain designated routes, and if appropriate, within a

¹ The new regulations amended Title 36 of the Code of Federal Regulations (CFR), parts 212, 251, 261, and removed part 295.

specified time period, solely for the purposes of dispersed camping or retrieval of a downed big game animal by an individual who has legally taken the animal (36 CFR 212.51(b)).

Once roads, trails, and areas on the Jicarilla Ranger District have been designated and identified on the MVUM, motor vehicle use off of the designated system is prohibited. The following vehicles and uses are exempted from this prohibition: 1) aircraft; 2) watercraft; 3) over-snow vehicles; 4) limited administrative use by the Forest Service; 5) use of any fire, military, emergency, or law enforcement vehicle for emergency purposes; 6) authorized use of any combat or combat support vehicle for national defense purposes; 7) law enforcement response to violations of law, including pursuit; and 8) motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations (including the use authorized by a surface use plan of operations or a road or trail authorized by a legally documented right-of-way held by a State, county, or other local public road authority).

Moreover, the travel management rule states, “the responsible official may incorporate previous administrative decisions regarding travel management made under other authorities, including designations and prohibitions of motor vehicle use, in designating NFS roads, trails, and areas” (36 CFR 212.50 (b)). Alternatively, responsible officials may choose to reconsider past decisions, with public involvement, as necessary to achieve the purposes of the final rule (70 FR 68269). This means that all roads, trails, and areas that have been designated in the past for motor vehicle use do not have to be reconsidered, therefore this NEPA analysis concerns only changes to the system that are needed to meet the travel management rule. In 1990 and then again in 1993, the Carson forest plan was amended to address travel management issues on the forest, including the Jicarilla Ranger District. These previous decisions are not being reconsidered in this analysis.

Analysis Area Description

The Jicarilla Ranger District (district) is approximately 145,500 acres and is located in Rio Arriba County, about 50 miles east of Farmington, New Mexico (Figure 1). Prior to the 1940s, grazing was the primary activity on the district. Today, natural gas and oil production is the prevalent use of the district. For this reason, motor vehicle use on the district is primarily to access well pads for gas and operations; although the district is heavily used by the general public during the hunting seasons.

Existing Transportation System

Carson forest plan amendment #6 (June 1990) determined where motorized and non-motorized travel was permissible on the Carson National Forest (forest). This amendment designated the existing motorized routes open to the general public on the district and restricted cross-country travel. Forest plan amendment #9 (February 1993) specifically addressed the southern portion (south of U.S. Highway 64) of the district in the same manner, with existing motorized routes open to the general public and restricted cross-country travel. This amendment closed unneeded roads, identified roads to be open under a special use permit, and allowed the future consideration of open areas as opportunities arose. Forest plan amendment #13 requires all new gas lease roads, over 300 feet in length, to be closed to public motorized access, except where other resource needs dictate that a road should be left open to the public.

The current forest visitor’s map and the forest’s transportation database show there are 232 miles of road open to public motor vehicle use. They do not reflect the 30 miles of formerly designated

road on the district that have been closed and gated since 1993. The designated transportation system on the Jicarilla Ranger District is made up of 202 miles of road open to public motor vehicle use (7 mi traverse private lands). This number will be used as the basis for this analysis.

The 202 miles of designated road are managed as a maintenance level 2, which means they are managed for use by high clearance vehicles. Traffic by the public is normally light, usually consisting of one or a combination of administrative, permitted, dispersed (scattered locations), recreational, or other specialized uses. Traffic management strategies have been to discourage passenger cars and to accept high clearance vehicles (FSH 7709.58, 12.3). There are no designated motorized trails or areas open to cross-country travel on the Jicarilla Ranger District.

Forest plan amendment #9 includes a 300-foot corridor (each side) along roads open to motor vehicle use² on the district. The corridor designation is consistent with the New Mexico Habitat Protection Act (NMHPA), which permits motor vehicle use within 300 feet of a designated open road or trail for the purpose of dispersed camping or big game animal³ retrieval. This has allowed the New Mexico Department of Game and Fish to assist the district in enforcing motor vehicle use on the entire district. The 300-foot corridor is fairly well accepted by the public and adhered to.

The dispersed camping areas on the Jicarilla Ranger District are immediately adjacent to roads open to public motor vehicle use or within existing 300-foot corridors. Over the past several years, district employees have traversed the current system roads and located dispersed sites on the ground by using one or more of the following criteria: 1) evidence of an unauthorized two-track road; 2) rock assembled into a fire ring; 3) burned wood in a fire ring; 4) game pole suspended above the ground; or 5) other evidence of use as a camping location. Approximately 218 sites, within 300 feet of an open road, have been inventoried on the district. Most of the areas are found in the northern part of the district (north of US 64) in ponderosa pine or piñon-juniper woodland. All of the dispersed sites are in dry areas, with no water available.

For the most part, motor vehicle use within 300-foot corridors is limited to when deer and elk hunting seasons occur on the district (August to January). Hunters pull off a designated road and camp from their vehicles. A hunter may subsequently retrieve an animal using a motor vehicle. Forest Road 310 and its corridor receive the most use. Portions of the southern part of the district are used in the later hunts, depending on snow conditions. Outside of hunting season, motorized use of corridors for dispersed camping rarely occurs, as gas development activities (well drilling, traffic, pipeline installation, and the sound of compressors) are not conducive to the conditions sought by recreational campers.

It is important to point out that the Jicarilla Ranger District has over 200 more miles of road than what is designated open to the public for motor vehicle use. These are single purpose lease roads constructed for only accessing gas leases and associated infrastructure. A new road segment (greater than 300 feet in length) developed to a gas well is gated near where it connects with a designated route and is not accessible by the general public for motor vehicle use (forest plan amendment #13). These roads would remain closed to public use and will not be discussed in this environmental assessment.

² For clarification, the corridor extends 300 feet from either side of a road's edge.

³ "Big game" retrieval in the context of motor vehicle use in corridors on the Jicarilla RD refers only to elk and deer.

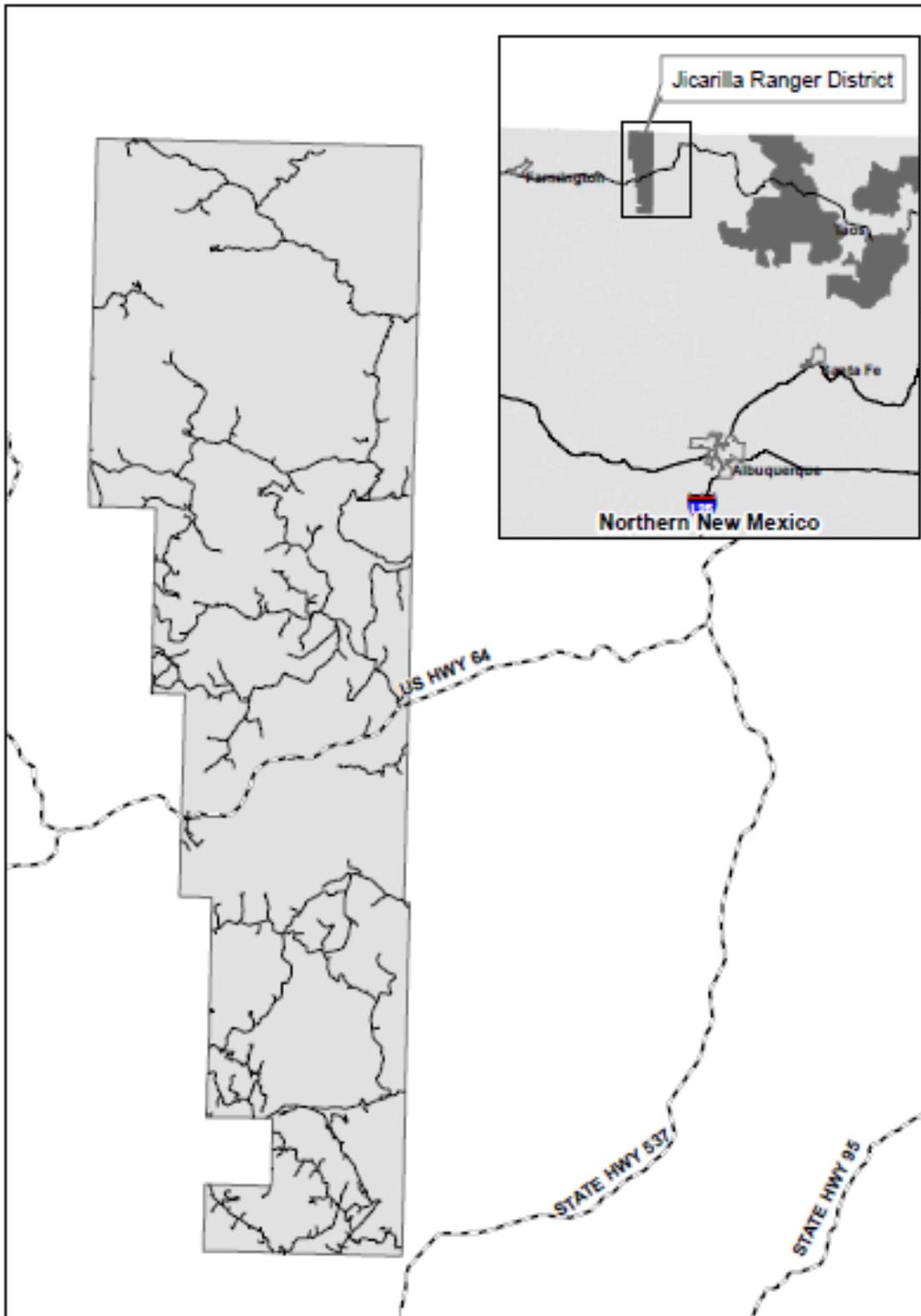


Figure 1. Jicarilla Ranger District, Carson National Forest and current system of roads open for public motor vehicle use

Purpose and Need for Action

There is a need for the Jicarilla Ranger District’s designated transportation system to be consistent with the primary purpose and intent of the travel management rule. This includes designating NFS roads, trails and areas on NFS lands for motor vehicle use, while considering effects on natural and cultural resources, public safety, recreational opportunities, access needs, and conflicts among the various users.

The Jicarilla Apache Nation shares the Jicarilla Ranger District’s eastern boundary. Approximately 2 miles of existing NFS open road segments (parts of FR 300A, 302, 303, 304, and 305) lead onto Jicarilla Apache Nation lands. Permission through the Jicarilla Apache Nation on these roads is through a permit from the Apache Nation. The general public does not have use of these roads, as they are not included in the Jicarilla Apache Nation resolution to allow public access. Moreover, some existing NFS roads open to public motor vehicle use cross through private lands, where the Forest Service does not have an easement. On the Jicarilla Ranger District, there is a need for preventing and discouraging inadvertent trespass by the public from NFS lands onto Jicarilla Apache Nation lands, as well as, private lands.

In addition, forest plan language needs to be consistent with the travel management rule. While motor vehicle use on the Jicarilla Ranger District is currently limited to designated open roads, Carson forest plan amendment #9 allows for future open motorized areas. To be consistent with the rule, the forest plan needs to be amended to state that areas must be designated open to motor vehicle use and general cross-country motor vehicle use is prohibited, except for motor vehicle uses approved through written authorization issued under Federal law or regulation by the authorized officer.

Proposed Action

Since release of the proposed action to the public during scoping in January 2009, modifications were made to respond to public comments related to impacts of roads and associated corridors going through federally listed or Forest Service species habitat. The second bullet proposing the removal of 4 miles of existing 300-foot corridor from the designated system was added.

In order to meet the purpose and need for travel management on the Jicarilla Ranger District, the Forest Service proposes to:

- Close to the public approximately 14 miles (7 mi traverses through private lands) of existing open road and associated corridors that access Jicarilla Apache Nation lands and private land from NFS lands. They include portions of Forest Road (FR) 300A, 302, 303, 304, 305, 309F, 310D, 310D2, 310J, and 310J2 (Figure 3 and Figure 4).
- Remove approximately 4 miles of existing 300-foot corridor,⁴ currently open to motor vehicles for dispersed camping and big game retrieval, along FR 218B, 218B3, 218B4, 218B5, 310, 310B1, 310C, 357, 357P, and 358, within portions of Mexican spotted owl and northern goshawk habitat on NFS lands (Figure 3 and Figure 4).

The Forest Service also proposes to amend the Carson forest plan to include the following management direction for the Jicarilla Ranger District:

⁴ Currently open to motor vehicle use for dispersed camping and big game retrieval.

- Designated corridors along designated roads extend 300 feet on each side from the road's running surface and are to be used solely for the purposes of dispersed camping or retrieval of a downed big game animal (elk and deer only) by an individual who has legally taken that animal.

NOTE: Current management on the Jicarilla Ranger District prohibits cross-country motor vehicle use. The proposed action does not change this management. The following would be added to the forest plan clarifying its direction relative to cross-country travel on the Jicarilla Ranger District.

- Motor vehicle use off the designated system of roads, trails, and areas is prohibited, except as identified on the Motor Vehicle Use Map (MVUM) or unless specifically authorized under a written authorization issued under Federal law or regulations by an authorized officer.

Decision Framework

The decision that results from this NEPA analysis *does not designate a transportation system* on the Jicarilla Ranger District, rather it *determines what changes will be made to the current designated system*. These changes can include constructing a route, adding or removing a route to the forest transportation system, or changing authorization of or prohibitions on motor vehicle use on a route or in an area. After a decision has been made, a motor vehicle use map will be published and will display the new designated transportation system, with the changes made in the NEPA decision.

The forest supervisor of the Carson National Forest is the official responsible for reviewing the proposed action, alternatives to the proposed action, and the environmental consequences. The analysis is both a site-specific level analysis and a programmatic forest plan analysis. Given the purpose and need for action on the Jicarilla Ranger District, the forest supervisor will decide:

- Whether to change the existing designated road system open to motor vehicle use by the public.
- Whether to change portions of existing 300-foot corridors for the purposes of dispersed camping or downed big game (elk and deer) animal retrieval.
- Whether to change travel management direction for the Jicarilla Ranger District in the Carson forest plan through a forest plan amendment.

The forest supervisor's decision space is constrained by the provisions of the 2005 travel management rule (36 CFR 212, sections 212, 251, 261), as any designation must be consistent with the rule. However, as resource conditions and public need changes, travel management decisions can be periodically reevaluated.

Public Involvement

Public involvement for travel management on the Jicarilla Ranger District began in July 2006 with a public meeting held in Farmington, New Mexico. Seventeen individuals and agencies attended the meeting. The New Mexico Department of Game and Fish commented on September 27, 2006. On January 31, 2007, letters were sent to the Carson National Forest's 282 grazing permittees and to all forest outfitter and guide permit holders advising them that public input was being sought prior to beginning an environmental analysis on travel management. On February 21, 2007, letters were sent to approximately 38 interested parties and to 263 people who had

received fuelwood permits during the 2006 season. All letters sent to the public were posted on the Carson National Forest's website.⁵ A public meeting was held in Bloomfield, New Mexico on March 19, 2007 and eight people attended. A forest-wide open house (with Jicarilla district employees present) was held in Taos, New Mexico on March 29, 2007. Approximately 150 people attended the open house. The district also included discussions on the travel management process during their 2007 and 2008 annual meetings with grazing permittees. Most recently, the travel management process was presented in January 2009 at the annual Northern New Mexico Stockman's Association meeting. Pre-scoping efforts generated around ten responses specific to the Jicarilla Ranger District.

Public comment was used in developing the Travel Analysis Process Report (TAP) (see glossary), which has been posted on the forest's website since September 2008.⁶ The TAP is not a decision document, but an informational document used to inform the proposed action and to assist decision makers.

Scoping

The proposed action was developed by considering recommendations in the TAP, the comments received from forest users over the past few years, during open houses, and through direct contacts with government officials, agencies, and Tribal officials. The proposed action has been listed in the quarterly Carson National Forest Schedule of Proposed Actions since July 2008, which is posted on the forest's website.

Forest-wide scoping for travel management commenced on January 30, 2009 with a letter sent to 670 scoping letters and 179 emails to individuals, interest groups, grazing permittees, and Federal, State, and local government agencies. The letter included a description of the proposed action for each of the ranger districts on the Carson National Forest. Forest-wide, approximately 10 written comments were received on travel management. Responses included 403 email letters, of which 341 were form letters. Two comment letters were specific to travel management on the Jicarilla Ranger District. Since the form letters included wildlife concerns, they also were addressed for the Jicarilla Ranger District. In addition, the New Mexico Department of Game and Fish scheduled meetings with specialists from the Carson Forest Supervisor's Office to review maps as a part of scoping. Comments during scoping were used to refine the proposed action and develop alternatives.

30-Day Notice and Comment Period

In accordance with the Forest Service's Notice, Comment, and Appeal Procedures for National Forest System Projects and Activities, a legal notice was published in *The Taos News* on July 17, 2009 (36 CFR 215.6). It provided notice to the public of the opportunity to comment on the proposed action, alternatives, and effects summary for travel management on the Jicarilla Ranger District, within 30 days.⁷ The Carson National Forest mailed over 700 proposed action documents and 580 emails for 30-day comment. During the comment period, the public

⁵ http://www.fs.fed.us/r3/carson/recreation/travel_mgmt

⁶ http://www.fs.fed.us/r3/carson/recreation/travel_mgmt/documents.shtml

⁷ In addition to the Jicarilla Ranger District, the 30-day comment document included proposed actions for West-side (El Rito, Canjilon, Tres Piedras) and Questa ranger districts.

responded with 7 written letters regarding travel management on the Jicarilla Ranger District and 3,470 emails (3,460 form letters) concerning all five districts. Comments received during the notice and comment period are addressed in this document or agency responses can be found in the project record.

A common remark made by the public during the 30-day comment period was the lack of specific information on possible effects of the proposed actions. In response, the Carson Forest Supervisor decided to issue another 30-day notice and comment after completion of the environmental assessment.

Tribal Consultation

The tribal consultation process for the Forest Service is guided through a variety of laws, Executive Orders and Memorandums, as well as, case law. Laws include the National Historic Preservation Act and subsequent amendments, Archaeological Resources Protection Act, American Indian Religious Freedom Act, National Environmental Policy Act, and the National Forest Management Act. Memorandums include 1994 Government-to Government Relations with Native American Tribal Governments. Executive Orders include Accommodations of Sacred Sites (E.O. 13007) and Environmental Justice (E.O. 12898).

Sixteen American Indian tribes have ancestral ties to lands within the Carson National Forest. Based on current and past consultation, the following American Indian tribes are known to have cultural ties and/or traditional use areas on the Jicarilla Ranger District:

The Hopi Tribe	Pueblo of Santa Clara
Jicarilla Apache Nation	Southern Ute Tribe
Pueblo of Jemez	Ute Mountain Ute Tribe
The Navajo Nation (Dine')	Pueblo of Tesuque
Pueblo of Okhay Owingeh	Pueblo of Zuni
Pueblo of San Ildefonso	Comanche Tribe of Oklahoma
Pueblo of Taos	Pueblo of Pojoaque
Pueblo of Picuris	Pueblo of Nambe

Appropriate members of each tribe are sent the quarterly Carson National Forest's schedule of proposed actions. The schedule has included the travel management project for the Jicarilla Ranger District since July 2008. The Tribes were also contacted annually with a proposed project list. In addition, tribal representatives received a description of the proposed action during scoping (January 2009) and also during the 30-day notice and comment period (July 2009). Except for a meeting with the Jicarilla Apache Nation, no responses specific to individual roads or corridors for travel management were received from Tribes.

In 2008, representatives of the Jicarilla Apache Nation came to Forest Service officials at the Jicarilla Ranger District and expressed interest in travel management. The Tribe wanted system

roads crossing onto tribal lands to be closed to the public for motor vehicle use. A tribal resolution provided to the district ranger indicates there is no public access across tribal lands, except by natural gas companies that have separate agreements to access well locations from tribal roads. As a result of this meeting with the Tribe, the proposed action was developed to include closing NFS roads that enter Jicarilla Apache Nation lands to public motor vehicle use.

Issues

Regulations implementing NEPA define scoping as “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). NEPA regulations also say to “[i]dentify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review . . .” (Sec. 1501.7(a) (3)). Comments from pre-scoping (2006 to 2008), scoping (2009), and the 30-day notice and comment period (2009) were reviewed for issues (unresolved conflicts with the proposed action). Among the topics raised during scoping, the Forest Service identified the following issues:

Issue #1: Proposed changes to the designated transportation system on the Jicarilla Ranger District do not go far enough in reducing the number of miles that need to be maintained.

Some people are concerned the Forest Service does not have enough funding to maintain the designated transportation system with changes that are proposed, while adequately protecting resources. Without enough funding to effectively maintain the designated transportation system, public safety may be at risk and natural resources may be harmed. Commenters felt the changes to the designated transportation system on the Jicarilla Ranger District should reflect the minimum road system described in the TAP, which is a total of 241 miles.

Response: The requirement to identify the minimum road system was established in regulations (the roads rule) published on January 12, 2001 (66 FR 3216), before promulgation of the travel management rule in November 2005. Forest Service regulations define the minimum system as “the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan, to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance” (36 CFR 212.5). The travel management rule focuses on motor vehicle use on NFS roads, NFS trails, and areas, rather than a road system (36 CFR 212.51 (a)) and does not require a forest to adopt the minimum road system as an objective or desired condition. The purpose and need of the proposed action for this analysis is to meet the requirements of the travel management rule.

The minimum road system identified in the TAP for Jicarilla Ranger District consists of 241 miles of road, 39 more miles⁸ than the current transportation system open to the public. The additional miles are necessary to meet applicable statutory and regulatory requirements of natural gas leasing and forest plan management objectives, including roads required for administrative use.

⁸ These 39 miles are closed to motor vehicle use behind locked gates, but can still be used by the public through non-motorized uses (e.g., horseback, on foot, mountain bike).

The proposed action and alternative would result in a system of 188 and 193 miles of road open to the public respectively, which is less than the minimum system described in the TAP.⁹

In order to access natural gas leases, maintenance of most roads on the district (including those open to the public) is funded through an organization made up of gas industry representatives and the Forest Service. Industry contributions pay for maintenance of district roads to Forest Service specifications. The Forest Service's contribution to maintenance is engineering expertise and occasionally culverts. This arrangement is not expected to change until gas operations cease on the district, which is not anticipated for at least 20 years.

This issue will not be carried forward into the analysis since the proposed changes to the designated system would result in fewer miles than the minimum road system identified in the TAP and road maintenance is not primarily funded by the Forest Service for the Jicarilla Ranger District. The minimum road system was an alternative considered, but eliminated from detailed study, because it includes single use roads accessed by the gas industry only.

Issue #2: Proposed changes to the designated transportation system on the Jicarilla Ranger District should have included the removal of more roads and corridors from the system to protect wildlife and their habitat and cultural resources. Some comments stated that roads and corridors can create habitat loss and fragmentation, interrupt travel patterns, and cause functional habitat loss for some wildlife species. Particularly, roads with corridors through northern goshawk post-fledgling nesting areas (PFAs) and Mexican spotted owl protected activity areas (PACs) should be removed from the designated transportation system to minimize potential negative impacts. Motor vehicle use on roads and within corridors can also cause disturbance to wildlife and damage to vegetation, soils, and cultural resources. Moreover, the effects of the proposed changes to the designated transportation system should be considered and analyzed for federally listed threatened and endangered species, Forest Service sensitive species, and other non-listed terrestrial, aquatic, and avian wildlife and habitat.

Response: In order to comply with the legal obligations of providing access to natural gas leases, there are over 430 miles of road on the Jicarilla Ranger District. The public transportation system (202 miles) makes up less than 50 percent of these miles. Even if more system roads were closed to public motor vehicle use, they would still have to remain open for gas production activities. Since the majority of motor vehicle use on roads comes from supporting natural gas production, closing roads to the public through MSO PACs or goshawk PFAs would not eliminate the majority of motor vehicle use through these areas. Dispersed camping within corridors, however, could have an effect on the MSO or goshawk, since noise and human disturbance from camping activities is occurring further from the road and for longer duration. The issue related to the impacts of corridors on wildlife, soils, vegetation, and cultural resources was carried forward in the analysis. The proposed action was modified to address the specific effects corridors may have on MSO and goshawk. Alternative 2 was developed to address the impacts of corridors on soils, vegetation, cultural resources as well as wildlife.

The effects of the proposed action and alternative on vegetation, soils, and cultural resources have been analyzed and are displayed in chapter 3. The wildlife effects analysis discusses how the

⁹ These 14 miles of road cross private lands or access Jicarilla Apache tribal lands, where no easements or right-of-ways exist.

proposed changes in the designated transportation system affect habitat loss, habitat fragmentation, functional habitat loss, and the potential for disturbance.

Issue #3: Proposed changes to the designated transportation system may negatively affect special designations, such as wilderness, inventoried roadless areas, and wild and scenic river designations. Special designations on the Carson National Forest include congressionally designated wilderness, inventoried roadless areas, rivers eligible for wild and scenic river designation, and national scenic and historic trails. Comments suggest motor vehicle use is generally not compatible with management requirements for areas with special designations and should be kept to a minimum for public enjoyment and resource protection. Motor vehicle use near these areas may negatively impact the opportunities for non-motorized recreation. Bancos Canyon, La Jara Canyon, Valencia Canyon, Vaqueros Canyon, and Fierro Mesa and Canyon are areas of resource concern and should be closed to public motor vehicle use. Moreover, except for Fierro Mesa and Canyon, these areas also include river segments that are considered eligible for wild and scenic river designation. The proposed changes to the designated transportation system may not prevent negative effects to the resources values for which the special areas are to be managed or the outstandingly remarkable values for which eligible river segments are to be managed.

Response: The Jicarilla Ranger District does not have any wilderness, inventoried roadless areas, or wild and scenic river designations. The district has identified river segments that are eligible for wild and scenic designation. These segments are managed for their outstandingly remarkable values. Bancos Canyon, La Jara Canyon, Valencia Canyon, Vaqueros Canyon, and Fierro Mesa and Canyon – were recently identified as areas of resource concern in the Carson forest plan (amendment #13, March 2009) and are managed for their resource values.

The proposed action does not include changes to designated routes in eligible wild and scenic corridors or in areas of resource concern. The indicator used to assess impacts of the proposed action to eligible wild and scenic river segments and areas of resource concern is the net change in miles of road designated open to public motor vehicle use relative to outstandingly remarkable values for eligible rivers and resource values for special areas.

Chapter 2 - Alternatives

This section describes and compares the alternatives that have been considered for travel management on the Jicarilla Ranger District.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by the NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Most suggestions can be addressed in the environmental consequences analysis. However, six suggested alternatives did not meet the purpose and need or were eliminated due to a lack of information. The reasons for dismissing the alternatives are summarized below.

An Alternative That Uses the Minimum Road System Described in the Travel Analysis Process (TAP)

As described earlier in the “Issues” section of chapter 1, the requirement to identify the minimum road system was established in the roads rule published in 2001, before promulgation of the travel management rule in 2005. Forest Service regulations define the minimum system as “the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan, to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance” (36 CFR 212.5). The travel management rule focuses on motor vehicle use on NFS roads, NFS trails, and areas, rather than a road system (36 CFR 212.51 (a)). The purpose and need of the proposed action for this analysis is to comply with the requirements of the travel management rule.

The minimum road system identified in the TAP for Jicarilla Ranger District consists of 241 miles of road, 39 more miles than the current transportation system open to the public (Table 1). The additional miles (behind closed gates) are necessary to meet the applicable statutory and regulatory requirements of natural gas leasing and be consistent with forest plan management objectives, including roads required for administrative use. Moreover, maintenance of most roads on the district (including those open to the public) is funded through an organization made up of gas industry representatives and the Forest Service. Industry contributions pay for maintenance of roads to Forest Service specifications to access gas leases.

Since the proposed action would result in fewer miles open to the public for motor vehicle use than the minimum road system and road maintenance is not primarily funded by the Forest Service for the Jicarilla Ranger District, this alternative was eliminated from detailed analysis.

Table 1. Total miles for minimum, existing, and alternative transportation systems

Minimum Road System	Existing System	Alternative 1 (Proposed Action)	Alternative 2
241	202	188	193

An Alternative That Closes Forest Roads 310, 311, 312, and 357 within Mexican Spotted Owl Protected Activity Centers and Northern Goshawk Post-Fledgling Areas

Forest Roads 310, 311, and 312 are arterial/collector roads that provide access to the northern portion (north of U.S. Highway 64) of the Jicarilla Ranger District and are necessary for the management of the forest. Forest Road 357 is the arterial/collector road that provides access to the southern portion of the district. Closing the roads to public access would not change the amount, timing, and intensity of motor vehicle use to access to natural gas facilities on the district, but it would substantially restrict recreating (mainly hunting) and visiting (viewing wild horses) by the public. This alternative was eliminated from detailed analysis, because it would not meet the purpose and need for action, while meeting legal obligations of gas leasing operations.

The two alternatives analyzed in detail address portions of this suggested alternative. The proposed action (alternative 1) was modified to remove 4 miles of existing 300-foot corridors through MSO PACs and goshawk PFAs. Alternative 2 was developed to address public concern that corridors may have potential impacts to wildlife and removes all existing 300-foot corridors. Moreover, the effects of the proposed changes to the designated public transportation system on federally listed threatened and endangered species and Forest Service sensitive species are analyzed in chapter 3.

An Alternative That Closes Forest Roads 310, 311, 312, 357, and Other Roads

This alternative was outlined in a comment letter signed by eight different parties and submitted during the first 30-day comment period. This suggested alternative (Figure 2) would close over 90 percent of the existing transportation system designated in the 1993 forest plan amendment. The public could not access the remaining designated road segments by motor vehicle. This alternative effectively closes the Jicarilla Ranger District to public motor vehicle use and is not consistent with the primary purposes and intent of the travel management rule; therefore it is eliminated from detailed study.

An Alternative That Maintains the Proposed Action as Described During Scoping

Comment letters received during scoping of the proposed action (January 2009) raised concerns the proposed action did not do more to reduce impacts to wildlife and their habitat, particularly the Mexican spotted owl and northern goshawk (Issue #2). To address this issue, the proposed action was modified to remove 4 miles of existing designated corridor through a Mexican spotted owl protected activity area and northern goshawk post-fledgling areas. Since this modification more adequately addresses wildlife concerns from motor vehicle use on the Jicarilla Ranger District, the original proposed action is an alternative considered, but eliminated from detailed study, and the modified proposed action is carried forward as alternative 1.

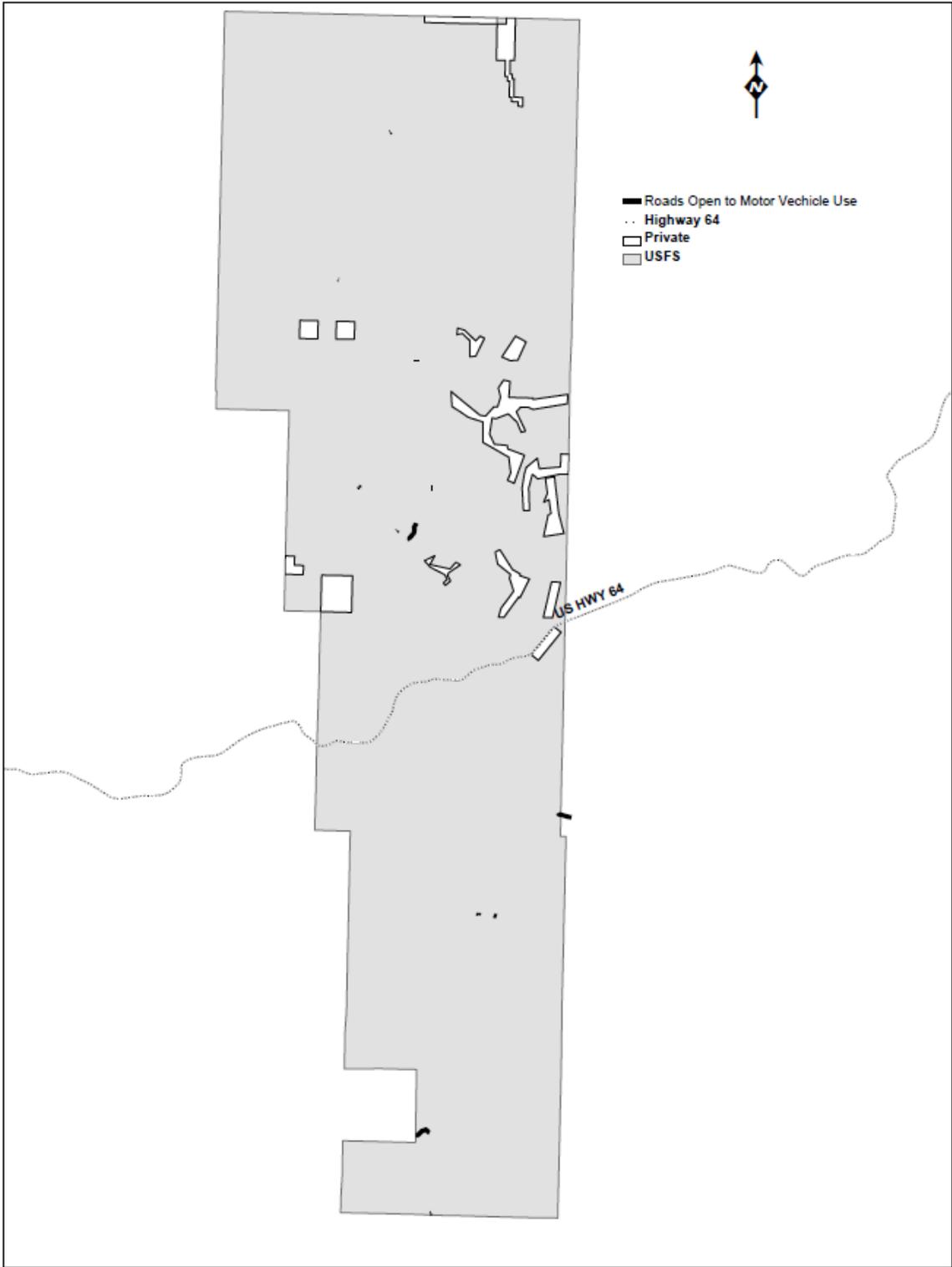


Figure 2. A map of an alternative that would close Forest Roads 310, 311, 312, and 357, as well as, other roads; this alternative was eliminated from further analysis as described above.

An Alternative That Seasonally Limits Motor Vehicle Use Within 300-Foot Corridors

This alternative would not include motor vehicle use for dispersed camping or big game retrieval within 300-foot corridors along designated roads, except during recreational/hunting use periods. The Jicarilla Ranger District is heavily used for dispersed camping during the hunting season, primarily in the fall. This alternative would propose all designated roads, with the exception of 4 miles (FR 218B, 218B3, 218B4, 310, 310B1, 310C, 357, and 358) to have a 300-foot corridor only from July 15 to January 30, approximating elk and deer season. This alternative was eliminated from detailed analysis, because removing corridors for dispersed camping and big game retrieval would excessively restrict the public from opportunities to camp off the road with their motor vehicle and subsequently scout and hunt on foot before hunting season. In addition, time periods for hunting could change and be outside the periods when corridors are instated. Implementation would be difficult for cooperating agencies, such as the New Mexico Department of Game and Fish, to help manage use on the district.

Additionally, the existing 300-foot corridors on NFS lands (184 mi), totaling about 13,380 acres on the district, are almost exclusively used for dispersed camping during the hunting season; campers tend to use approximately 218 dispersed sites located, within 300 feet of an open road. With a maximum disturbance of 0.5 acres for a site and its access, no more than 109 acres of actual corridor are impacted by dispersed camping. Therefore, an alternative that seasonally limits motor vehicle use in corridors would have a similar effect to the proposed action (alternative 1). For the reasons discussed above, this alternative was considered, but eliminated from detailed study.

An Alternative That Creates an Off-Road Vehicle System to Provide Additional Motorized Opportunities

Comments received from public involvement efforts in 2007 requested the district develop an off-road motor vehicle system. General vicinities included both north and south of U.S. Highway 64. The 1993 forest plan amendment closed the district to vehicle use (cross-country travel) off the designated transportation system and outside designated corridors, because of the district's current open road density and erodible soils. A more comprehensive planning process would be needed to address how to safely integrate recreational motor vehicle use with natural gas operations and existing wildlife habitat seasonal closures. This comprehensive planning process is beyond the scope of this analysis, but an off-road motor vehicle system on the Jicarilla Ranger District could be proposed in the future. This would be consistent with the travel management rule, which recognizes the designation of roads and trails for motor vehicle use is not permanent. Unforeseen environmental impacts, changes in public demand, and monitoring conducted under 36 CFR 212.57 of the travel management rule may lead a responsible official to revise designations under 36 CFR 212.54 of the rule.

Alternatives Analyzed in Detail

Alternatives are used to evaluate different ways to resolve significant issues brought forth by the public during scoping, the notice and comment period and to satisfy the purpose and need for action. For this analysis, the effects of two alternatives will be analyzed in detail, the proposed action as modified based on comments, and a second alternative of managed access with no corridors. The purpose and need for the proposed action, along with important issues, serve as the objectives and framework around which alternatives were developed.

No-Action Alternative

Forest Service NEPA regulations allow an EA to document consideration of a no-action alternative through the effects analysis by contrasting the impacts of the proposed action and any alternatives with the current condition and expected future condition, if the proposed action or alternatives were not implemented (36 CFR 220.7(b)(2)(ii)). This EA will not include a separate analysis of the no-action alternative. Instead, impacts of the proposed changes to the transportation system in each alternative will be contrasted with the current transportation system and the expected future condition, if the alternative is not implemented.

Alternative 1 – Modified Proposed Action

Alternative 1 is the proposed action with modifications from what the Forest Service originally presented during scoping. It is the same proposed action presented for 30-day comment in July-August 2009. The modifications were made to address Issue #2, described in the “Issues” section in chapter 1. Alternative 1 (Figure 3 and Figure 4) would:

- Close to the public approximately 14 miles of existing open road and associated corridors that access Jicarilla Apache Nation lands and private land from NFS lands. They include portions of Forest Road (FR) 300A, 302, 303, 304, 305, 309F, 310D, 310D2, 310J, and 310J2.¹⁰
- Remove approximately 4 miles of existing 300-foot corridor¹¹ along FR 218B, 218B3, 218B4, 218B5, 310, 310B1, 310C, 357, 357P, and 358, within portions of Mexican spotted owl and northern goshawk habitat.

This alternative would also amend the Carson forest plan to include the following management direction for the Jicarilla Ranger District:

- Designated corridors along designated roads extend 300 feet on each side from the road’s running surface and are to be used solely for the purposes of dispersed camping or retrieval of a downed big game animal (elk and deer) by an individual who has legally taken that animal.

Alternative 2 - Managed Access, With No Corridors

A number of public commenters wanted a managed system that removed all corridors (Issue #2). Alternative 2 removes the same road segments from the designated transportation system as alternative 1, but also addresses Issue #2, as it relates to corridors and their potential effect on

¹⁰ These roads would be closed to the public, but would still remain open to provide legal access to natural gas leases on the Jicarilla Ranger District.

¹¹ Currently open to public motor vehicle use for dispersed camping and big game retrieval.

wildlife and other natural resources. Alternative 2 would remove all 300-foot corridors and add a total of 5 miles of unauthorized two-track road segments to the transportation system. These segments would provide motor vehicle access to traditional dispersed camping areas, but could be used for any purpose, not just for dispersed camping (Figure 5 and Figure 6). The 75-90 road segments are mostly in the northern portion of the Jicarilla Ranger District and average 120 feet in length. These designated routes would be open to motor vehicle use for any purpose.

Alternative 2 would:

- Close to the public approximately 14 miles of existing open road and associated corridors that access Jicarilla Apache Nation lands and private land from NFS lands. They include portions of FR 300A, 302, 303, 304, 305, 309F, 310D, 310D2, 310J, and 310J2.¹²
- Close all existing 300-foot corridors¹³ along the remaining 188 miles of road open for motor vehicle use.
- Add 5 miles (without corridors) of currently unauthorized two-track road segments (see description above) on NFS lands to the designated transportation system for motor vehicle use.

NOTE: Current management on the Jicarilla Ranger District prohibits cross-country motor vehicle use. Alternatives 1 and 2 do not change this management. The following would be added to the forest plan, clarifying its direction relative to cross-country travel on the Jicarilla Ranger District, if either alternative was selected.

- Motor vehicle use off the designated system of roads, trails, and areas is prohibited, except as identified on the Motor Vehicle Use Map (MVUM) or unless specifically authorized under a written authorization issued under Federal law or regulations by an authorized officer.

¹² These roads would be closed to the public, but would still remain open to provide legal access to natural gas leases on the Jicarilla Ranger District.

¹³ Currently open to public motor vehicle use for dispersed camping and big game retrieval.

Table 2. Comparison of alternatives 1 and 2 for travel management on the Jicarilla Ranger District

	Existing Designated System	Alternative 1	Alternative 2
Proposed changes in roads designated for motor vehicle use	202 mi	Close 14 mi Add 0 mi	Close 14 mi Add 5 mi of unauthorized two-track roads
Proposed changes to allow motor vehicle use for the purpose of dispersed camping and big game ¹⁴ retrieval	300-foot corridors currently allowed along 184 mi	Remove corridors along 4 mi of road open to public motor vehicle use, plus corridors along 14 mi. on NFS lands to be closed.	Remove corridors along 188 mi of road open to public motor vehicle use, plus corridors along 14 mi on NFS lands to be closed. No corridors along the 5 miles added to the system.

¹⁴ “Big game” in the context of motor vehicle use in corridors for big game retrieval on the Jicarilla Ranger District refers only to elk and deer.

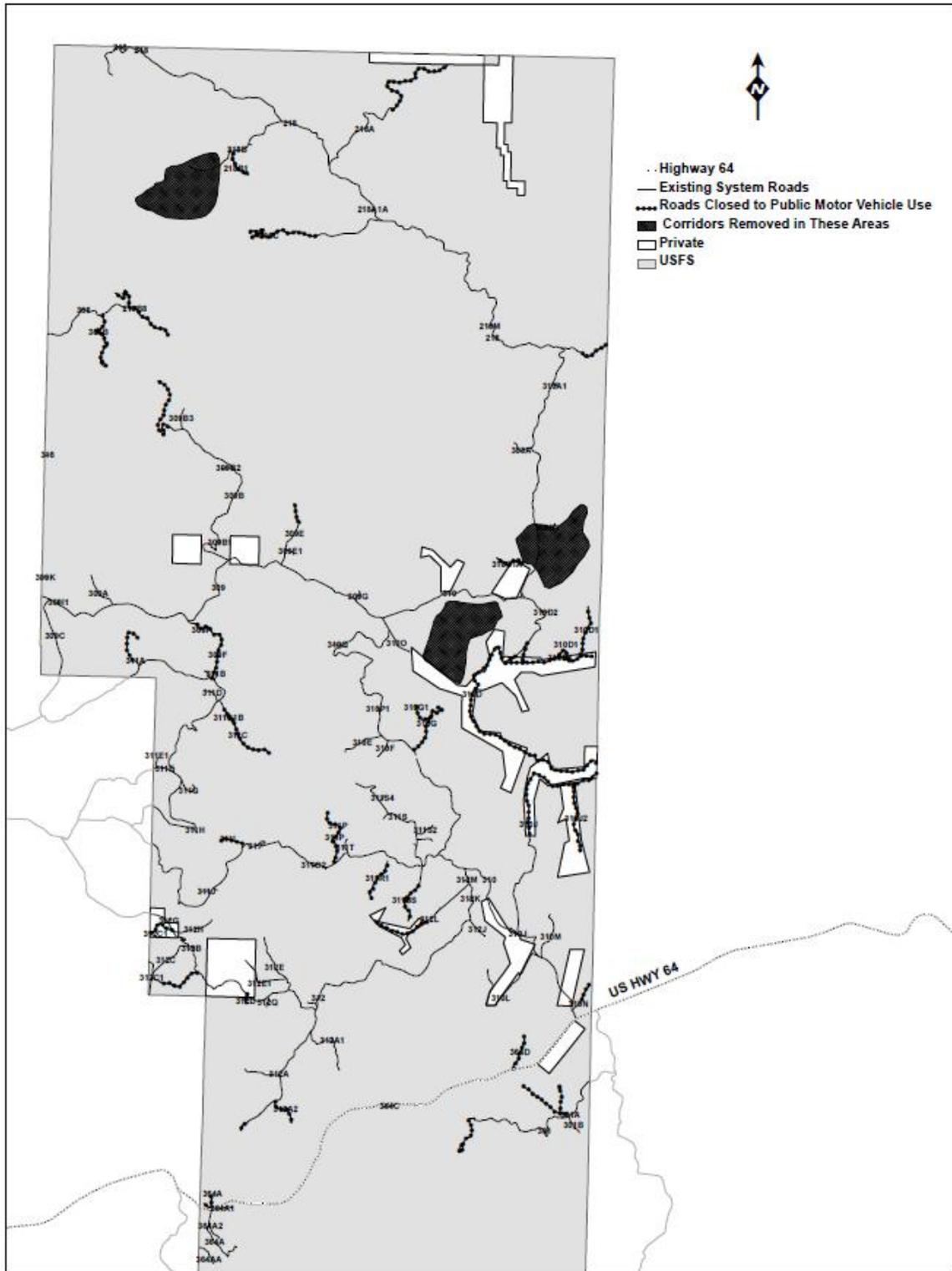


Figure 3. North side of Jicarilla Ranger District - Alternative 1, changes to current system of roads open for public motor vehicle use. No change in existing 300-foot corridors along designated roads.

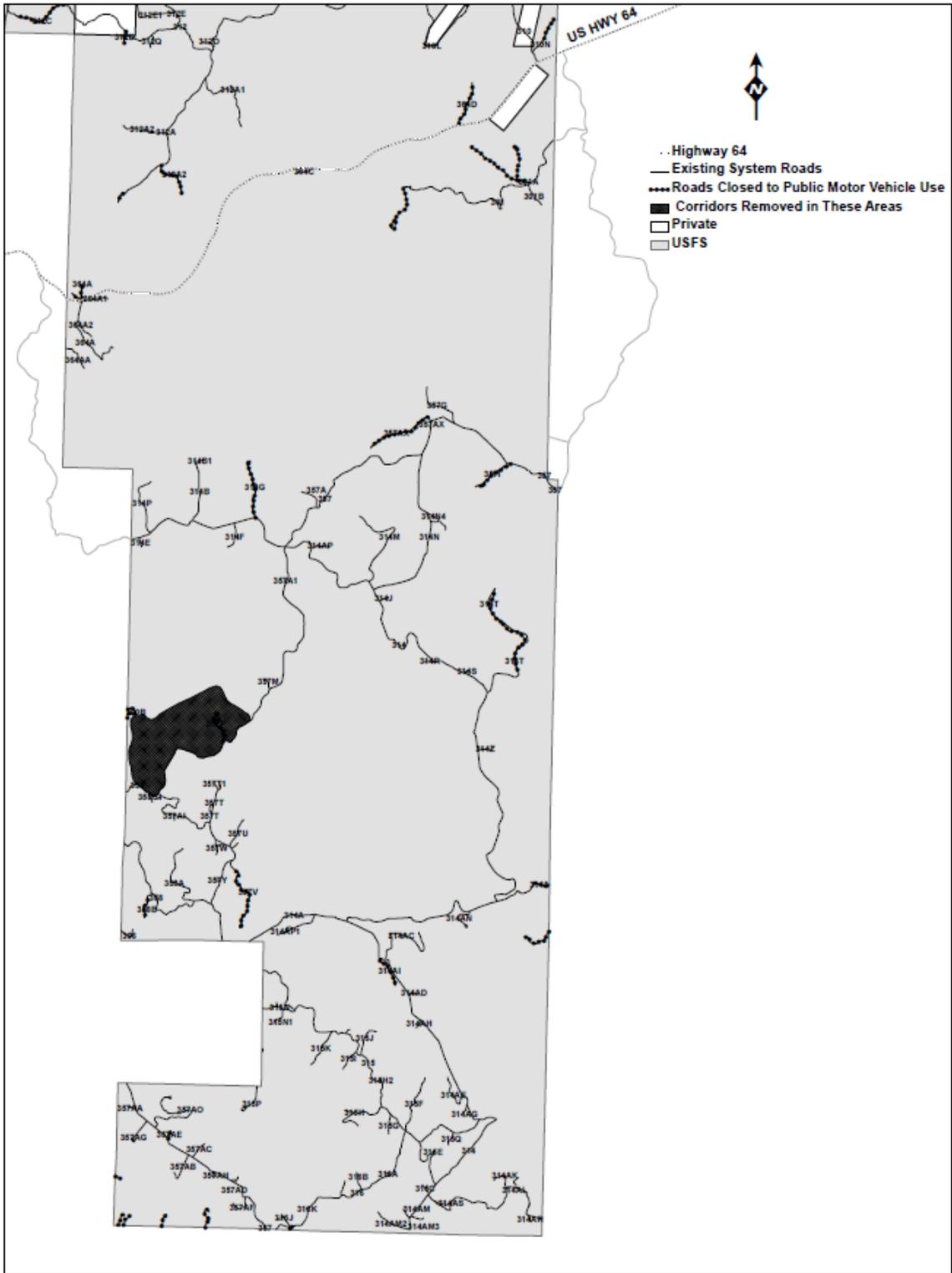


Figure 4. South side of Jicarilla Ranger District - Alternative 1, changes to current system of roads open for public motor vehicle use. No change in existing 300-foot corridors along designated roads.

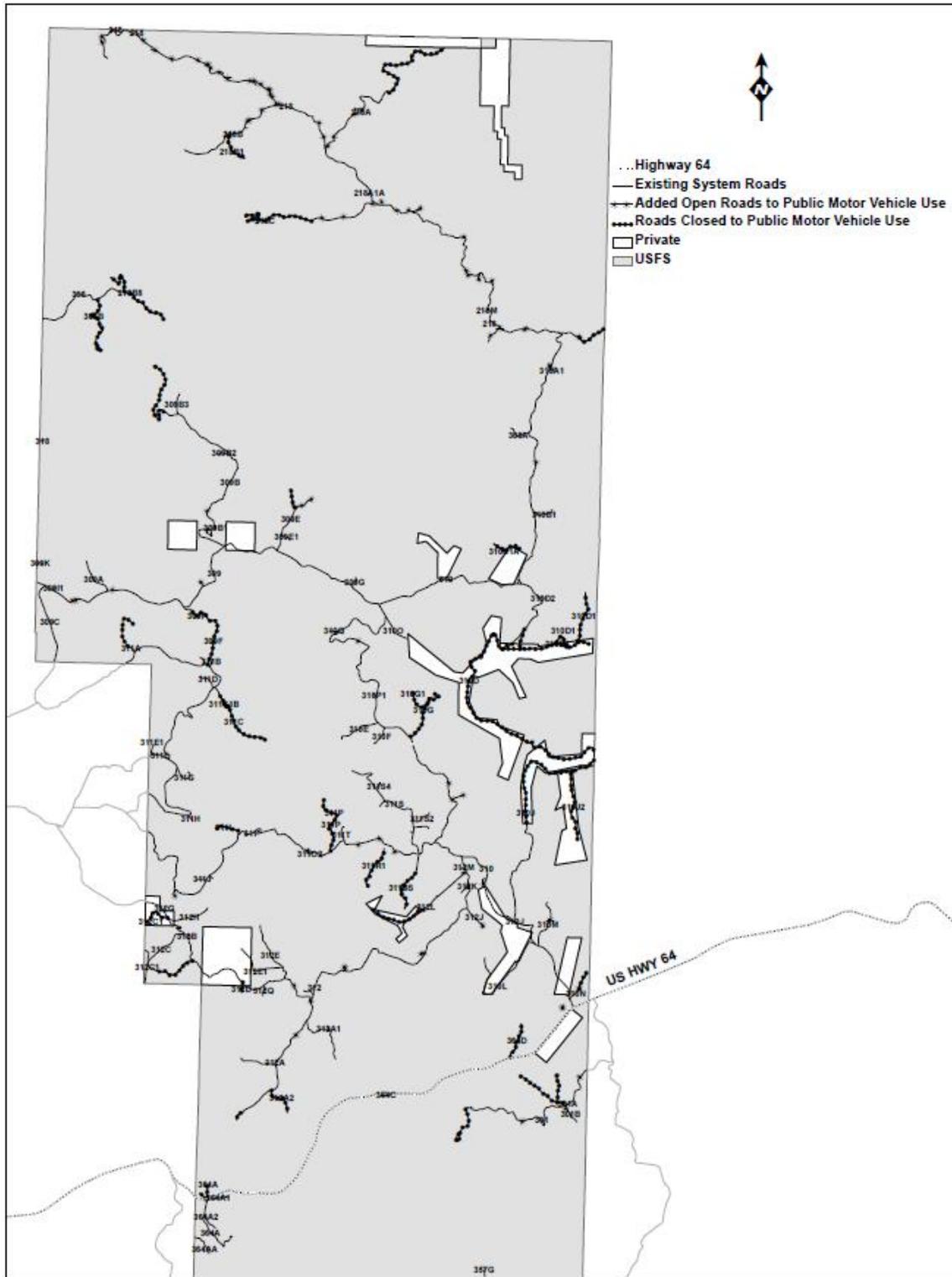


Figure 5. North side of the Jicarilla Ranger District - Alternative 2, changes to current system of roads open for public motor vehicle use, including the removal of all 300-foot corridors and addition of 5 miles of unauthorized two-track road.

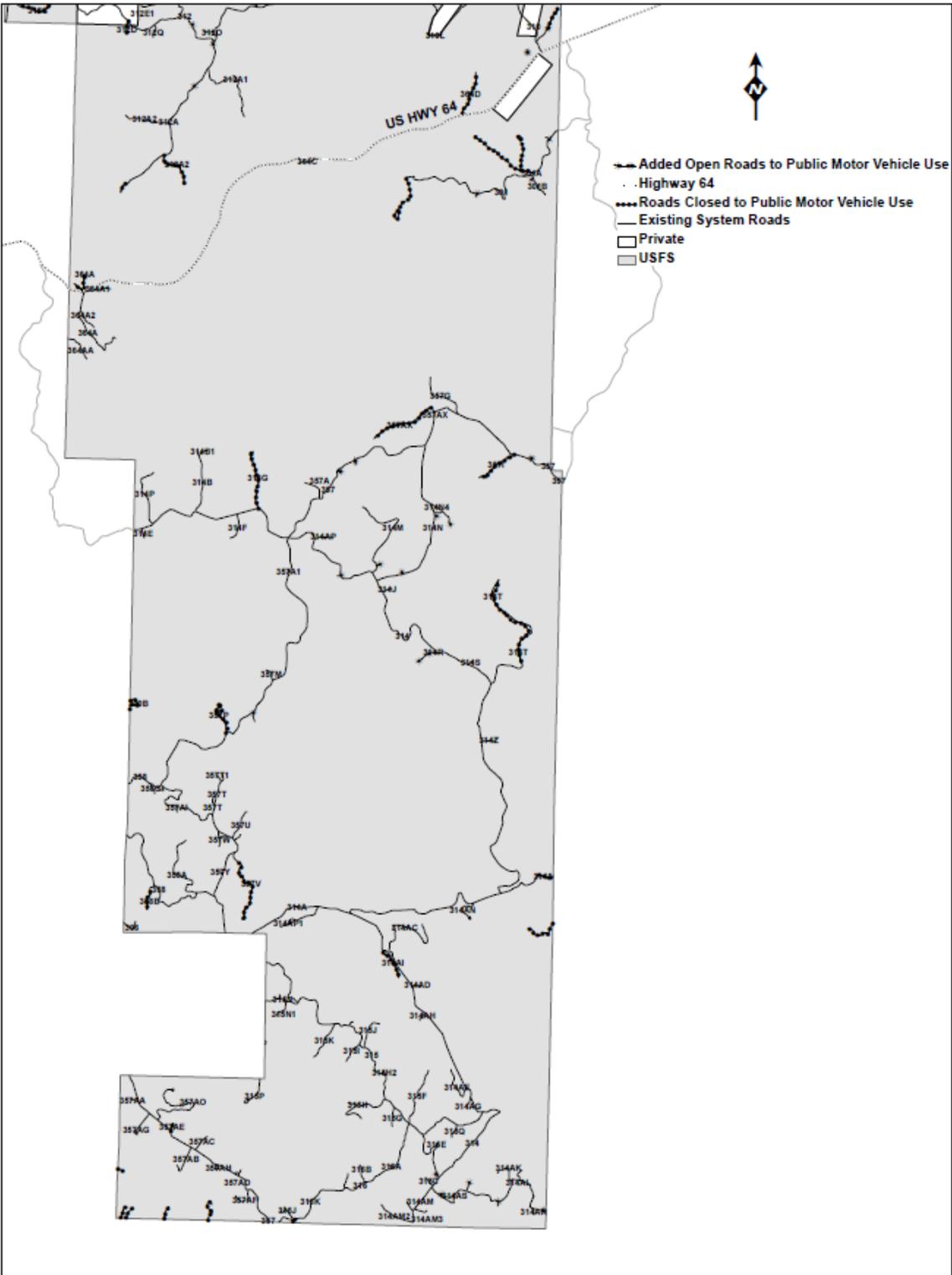


Figure 6. South side of the Jicarilla Ranger District - Alternative 2, changes to current system of roads open for public motor vehicle use, including the removal of all 300-foot corridors and addition of 5 miles of unauthorized two-track road.

Chapter 3 - Affected Environment and Environmental Consequences

This chapter summarizes the physical, biological, social, and economic environments of the project area and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives chapter. In the development of the environmental analyses that follow, the best available science was considered and documented in the project record. The environmental analyses focus on issues identified through the scoping process. An environmental effect, impact, or consequence is defined as a modification of or change in the existing environment brought about by the action taken. Effects are direct, indirect, or cumulative and may be temporary (short-term) or permanent (long-term). Effects can vary in degree, ranging from only a slightly discernible change to a drastic alteration in the environment. Table 3 provides information used by one or more of the analyses in this chapter.

Table 3. Evaluation criteria used for comparison of alternatives, including no action

	Existing Condition	Alternative 1	Alternative 2
Approx. total miles of transportation system on NFS & PVT lands	202	188	193
Approx. total miles of designated 300-foot corridor on NFS lands	184	180	0
Approximate acres of corridor for dispersed camping & big game retrieval	13,455	13,165	0
No. of dispersed campsites, within 300-foot corridors	218	214 (4 sites not accessible in 4 mi of road segments with closed corridors)	0 (214 dispersed sites would be accessed by the 5 miles of new road segments)
Approx. # acres of corridor used for dispersed camping ¹⁵	109	107	N/A

Cumulative Impacts

Cumulative effects are the impacts to the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless

¹⁵ From observations on the ground, impacts from dispersed sites are no more than 0.5 acre.

of what agency (Federal or non-Federal) or person undertakes such other actions. Reasonably foreseeable future actions include activities, developments, or events that have the potential to change the physical, social, economic, and/or biological nature of a specified area. Existing activities, projected activities directly associated with a proposed action, and other reasonably foreseeable future actions provide the basis for defining and analyzing cumulative impacts.

This analysis is tiered to the Final Environmental Impact Statement (FEIS) for the Carson National Forest Land and Resource Management Plan, amendment documentation for forest plan amendments specific to the Jicarilla Ranger District, and the Final Environmental Impact Statement (FEIS) for Surface Management of Gas Leasing and Development for the Jicarilla Ranger District, Carson National Forest.

Air Quality

Air quality existing conditions are described in the FEIS for Surface Management of Gas Leasing and Development, Jicarilla Ranger District (USDA 2008, pp. 72 -92). Currently, the San Juan Basin, including the Jicarilla Ranger District, is in attainment of all National Ambient Air Quality Standards (NAAQS) and state and local standards. The proposed changes to the designated road system are not expected to dramatically change the level of motor vehicle use from current levels; therefore air quality would not be impacted beyond existing conditions.

Climate Change and Emissions

Motor vehicle use involves the production of greenhouse gases, which are understood to contribute to global climate change. Although it is implied that emissions from motor vehicle use contain greenhouse gases that may ultimately contribute to global climate change, it is not possible to predict the amount of public motor vehicle use occurring on the district. Many outside factors, including the price of fuel, the state of the economy, and alternate recreational opportunities may contribute to an individual's decision to use a motor vehicle on the district. Moreover, emissions from motor vehicle use by the public on the Jicarilla Ranger District are not sufficient to cause climate change.

The Jicarilla Ranger District currently does not allow cross-country motor vehicle use. Alternatives 1 and 2 would reduce the number of routes available for public motor vehicle use. Alternative 2 does not include 300-foot corridors, but adds 5 miles to the existing system in areas where dispersed camping has historically occurred. Since the corridors maintained in alternative 1 would be solely for the purpose of dispersed camping and big game (elk and deer) retrieval, the difference in the levels of motor vehicle use between alternatives 1 and 2 would be essentially the same. There would be no difference between the level of emissions from using the existing designated system or from using either of the proposed systems in alternatives 1 and 2.

Greenhouse gas emissions, produced by local and regional sources, including gas development on the Jicarilla Ranger District, will contribute to the cumulative effects of such gases on climate change. The cumulative effects of motor vehicle use on climate change are likely to be not measurable in comparison with other regional (including motor vehicle use for natural gas operations) and national sources of greenhouse gases. At this time there are no regulations to limit emissions from motor vehicle use, and the current state of the science does not allow for specific analysis of the impacts of greenhouse gas emissions at the local or regional level. Any analysis of

the impacts of the decision related to either alternative on climate change would be speculative and is, therefore, not included in this environmental analysis.

Fugitive Dust

The district is located relatively far from any private residences or towns and cities, where fugitive dust could cause negative effects to human health or quality of life. Currently, public motor vehicle use on the district's designated transportation system generates dust along the native surfaced roads. These effects are typically short-term and local in nature. The effect is immediately evident during and shortly after a motor vehicle drives through an area. Prevailing winds and normal ventilation along designated roads act to disperse the dust over a large area in a short time, making the effect unnoticeable. Although both alternatives would reduce the number of miles of designated road for public motor vehicle use, it is anticipated that the level of public motor vehicle use would not change from what is currently occurring. The amount of fugitive dust generated by motor vehicle use under either alternative would not be noticeably different than what is generated on the existing designated system.

Soils

The purpose of this analysis is to focus on the effects of the proposed changes from the existing designated motor vehicle use system. Lease roads used only by the gas industry to access well pads and pipelines are not open to the public and will not be designated on the MVUM. A major assumption of the effects analysis is that most motorized Forest users would adhere to the travel management plan. Road mileage includes only roads that occur on NFS lands; therefore mileages may slightly differ from the alternative descriptions, which count miles closed through private land. Road mileage includes designated or proposed NFS system roads, which may include routes that traverse non-NFS lands. NFS routes that traverse private land are included in the analyses for linear features (road surfaces, stream crossings, etc), but not corridors, because the Forest Service does not designate corridors on NFS lands.

Stream miles and flow regime are based on cartographic feature files prepared by the U.S. Geological Survey, as depicted on USGS 1:24000 quadrangle maps. The Terrestrial Ecosystem Survey (TES) of the Carson National Forest (USDA 1987) is the basis for interpreting soil characteristics, vegetation, and landforms. Table 4 describes the criteria used to evaluate effects of the alternatives. The criteria were chosen to represent effects to soil health, riparian-wetland areas, stream channels, floodplains and water quality.

Table 4. Soil, water and riparian-wetland evaluation criteria

Evaluation Criteria	Metric	Description
Stream miles in 300-foot corridor	miles	Potential for motor vehicle use to affect stream bank stability, floodplains, associated riparian-wetland areas, and water quality. Corridor extends 300 feet from each side of a road segment for a total width of 600 feet.
Number of stream crossings	count	Potential for the transportation system to affect water quality, primarily by routing runoff and sediment into a stream course.

Evaluation Criteria	Metric	Description
Road miles within 200 feet of stream	miles	Default width needed as input to a sediment model (see below). Assumes that road surfaces within 200 feet of a stream contribute sediment to the stream channel.
Sedimentation	tons per year	Relative amount of sediment transported to stream channels via the road network. Model results are for comparison of alternatives only. Model developed as part of the Roads Analysis Plan for the Jicarilla Ranger District (USDA 2003b). Sediment (tpy) = (0.0099 x road length, ft) + 0.0439. Correlation coefficient (r ²) = 0.99
Erosion hazard – severe	acres, ≤ 45% slope	Potential for motor vehicle use to cause soil compaction, displacement, rutting and disturb stabilizing vegetation. Carson National Forest terrestrial ecosystem unit interpretation for surface erosion. Soil units with a severe erosion hazard if ground cover is removed. Assumes vehicle use occurs primarily on slopes ≤ 45%.
ORV limitation – severe	acres, ≤ 45% slope	Potential for motor vehicle use to cause soil compaction, displacement, rutting and disturb stabilizing vegetation. Carson National Forest terrestrial ecosystem soil unit interpretation for off-road vehicle use. Soil units with a potential hazard of severe erosion, due to off-road vehicle use. Assumes vehicle use occurs primarily on slopes ≤ 45%.
Road miles in potential riparian areas ¹⁶	miles	Potential for motor vehicle use to cause soil compaction, displacement, rutting, and eliminate stabilizing vegetation in riparian-wetland areas.
Potential riparian area within 300-foot corridor	acres, ≤ 45% slope	Potential for motor vehicle use to cause soil compaction, displacement, rutting and disturb stabilizing vegetation in riparian-wetland areas. Carson National Forest terrestrial ecosystem mapping units that have a riparian component. Assumes vehicle use occurs primarily on slopes ≤ 45%.

Affected Environment

The Jicarilla Ranger District is comprised of 153,413 acres (including private land) in seven watersheds. The district has approximately 528 miles of intermittent and ephemeral channels and

¹⁶ Carson National Forest terrestrial ecosystem mapping units that have a riparian component (USDA 1987).

774 acres of potential riparian-wetland habitat. The TES identifies three mapping units on the district that may contain riparian-wetland soils, landforms, and habitats. The total acres of potential riparian-wetland vegetation represent a fraction of a percent of the aggregated mapping units on the Jicarilla Ranger District. From a soils aspect, the largest concerns of motor vehicle use are erosion and sedimentation. About 41 percent of the district has a severe erosion hazard rating and over 55 percent has a potential hazard for severe erosion rating.

The Watershed Condition Assessment for the Jicarilla Ranger District (JICWA) (USDA 2003b) describes the environmental setting and summarizes the hydrologic and erosional processes and water quality for the district. A Roads Analysis Plan for the Jicarilla Ranger District (JICRAP) (USDA 2003a) presents the results of sediment modeling for roads open and closed to public motor vehicle use. These documents formed the basis of the affected environment and environmental consequences for soils, watershed management, and water resources in the FEIS for Surface Management of Gas Leasing and Development, Jicarilla Ranger District (USDA 2008). The roads analysis considered the potential sediment produced from the road surface and transported into stream channels.

Environmental Consequences

Motor vehicle use affects soil health through compaction, displacement, rutting, and removal of stabilizing vegetation. Motor vehicle use can damage riparian-wetland areas and streambanks. Road networks affect the way water is captured, stored, and routed within a watershed. Sediment generated from road surfaces and adjacent hill slopes can be routed through the road network and transported into streams. High turbidity and sediment loads can adversely affect aquatic life and damage facilities (such as water pumps). Chemicals, fertilizers, and other pollutants are transported in runoff water and sediment and can adversely affect aquatic and human health. The pollutant of primary concern from the transportation system on the Jicarilla Ranger District is sediment.

The Water Erosion Prediction Project (WEPP)-Road model was developed by the Forest Service to simulate roads and other non-vegetated, compacted soil areas within the national forests (Elliot 1999). In each simulation, the flow of sediment is modeled as it progresses along the length of the road, and then migrates off the road through culverts, turnouts, or water bars, flows down the slope across the landscape or into drainageways. The model simulates roads that are graveled or unsurfaced (bare soil).

The WEPP-Road model was used to predict erosion rates from roads that would be the most likely to affect downstream water quality and to document sediment yield from existing roads. Roads within 200 feet of a channel, either adjacent to the channel or crossing the channel, were selected for modeling from eight Public Land Survey System sections, selected to represent varying road densities and topography, and to capture the dominant TES map units within the district. Most of the roads¹⁷ on the district (80 percent) within 200 feet of streams have a gradient of between 4 and 6 percent for a distance of less than 1,000 feet before changing slope direction to redirect surface water and sediment off the road. The modeling documented a strong correlation between road length and predicted sediment yield. Additional information on the

¹⁷ All of the roads on the Jicarilla Ranger District, including those used for natural gas production, were included in the WEPP-Road model.

WEPP-Road modeling can be found in the Roads Analysis Plan for the Jicarilla Ranger District (USDA 2003b).

Current forest plan direction prohibits cross-country travel by motor vehicles on the district, but allows motor vehicle use within a 300-foot corridor for dispersed camping and big game retrieval. Neither alternative changes the cross-country travel prohibition. Alternative 1 would close 14 miles of road and 4 miles of 300-foot corridors of the current open road system. Alternative 2 would close the same 14 miles of open road and all corridors (184 mi) currently designated on the district. In addition, alternative 2 would add 5 miles (75-90 road segments, averaging 120 feet) of road segments to the current road system. These segments are made up of existing unauthorized two-track road accessing dispersed campsites, within 300 feet of a system road. Since the 14 miles of road to be closed under both alternatives 1 and 2 would still remain open for the purpose of natural gas operations, changes related to the corridor is the primary focus of discussion in this analysis.

Effects of the alternatives to soil, water, and riparian-wetland resources are based on the evaluation criteria listed in Table 4 and summarized in Table 5, using the WEPP-Road model.

Table 5. Summary of soil and water effects on the Jicarilla Ranger District

	Existing	Alt 1	Alt 2
Stream miles in 300-foot corridor	60.6	60.2	N/A
Number of stream Crossings	158	158	158
Road miles within 200 feet of a stream	46	46	46
Sedimentation (tons per year)	2,405	2,405	2,405
Erosion hazard – severe (acres \leq 45% slope) ¹	6,376	6,376	N/A
ORV limitation – severe (acres \leq 45% slope) ¹	8,549	8,549	N/A
Road miles in potential riparian areas	59	59	59

	Existing	Alt 1	Alt 2
Potential riparian area within 300-foot corridor (acres \leq 45% slope)	161	161	N/A

N/A = Not applicable under alternative 2

¹ 13,109 acres total in 300-foot corridor

Since the current prohibition of cross-country motor vehicle use on the Jicarilla Ranger District would remain unchanged under alternatives 1 and 2, there would be no change in the impacts to soils in areas between roads.

Both alternatives would also close 14 miles of existing road on NFS lands and associated corridors to motor vehicle use by the public. These road segments would still be used for gas related activities. However under both alternatives, motor vehicle use within the corridors of these roads would be closed. No dispersed camping sites were found along the miles of road proposed to be closed under both alternatives; consequently there would be no difference to the impacts on soils, if either alternative was implemented.

Except for 4 miles (290 ac), alternative 1 would continue to allow motor vehicle use of 300-foot corridors for dispersed camping and big game retrieval. Potentially, these corridors provide motor vehicle access to around 13,090 acres; however, the actual accessible area is much less due to rough terrain, natural barriers, slope, and vegetation. Current use of the corridors by motor vehicles is mostly limited to areas adjacent to historic dispersed campsites during the fall and spring. There is no indication there would be a change in impacts to soils under alternative 1, compared to the current system.

Alternative 2 would not include corridors for dispersed camping and big game retrieval, but would add 5 miles of road segments (75-90), averaging 120 feet in length, to the designated transportation system in areas where there is historic dispersed camping, within existing corridors. The current method of driving across a corridor would be replaced with an established route, approximately 20 feet wide, where motor vehicle use would be concentrated. These spur roads would be designated as routes on the MVUM map and could be driven on for any type of use. Within the existing 300-ft corridor, 43 dispersed camping sites occur within 50 feet of a road, 121 sites within 100 feet, 164 sites within 150 feet, 188 sites within 200 feet, 198 sites within 250 feet, and 218 within 300 feet.¹⁸ The use of these designated access routes may increase surface disturbance and soil compaction on an estimated 13 acres, but would likely not be much different than alternative 1, with corridors.

The effects of alternative 2 would be related to the elimination of motor vehicle use within 13,380 acres of corridor. Effects to soil resources would be limited to the running road surface, and associated road prism, cut and fill slope and shoulder. Cumulative effects would occur from vehicle and recreationist use at the terminus of the routes, estimated to be about 60 acres total.

¹⁸ Jicarilla RD employees identified dispersed camping sites as areas where there is evidence of camping from a motor vehicle (i.e., fire rings, game poles, 2-tracks leading into open areas).

Because these routes and sites are already in use, the net effect would really be no change from the existing condition.

A review of the Travel Analysis Process (TAP) Report for the Carson National Forest (USDA 2008) and Roads Analysis Plan (RAP) for the Jicarilla Ranger District (USDA 2003) found no roads listed as a high watershed concern in the Jicarilla Ranger District. Table 7 of the Jicarilla RAP (USDA 2003) listed 21 road segments (6.2 miles) identified as either high or extreme risk for contributing sediment into stream channels. Alternative 1 would close all but 0.2 miles (FR 312G and FR 357X) to public motor vehicle use. Overall effects to water quality from potential sedimentation are described in the Jicarilla RAP and watershed analysis. Chapter 3 of the Jicarilla FEIS describes the affected environment and environmental consequences of managing gas leasing. That document analyzed the entire road system (open and closed) and is summarized in the Cumulative Effects section.

Water Quality and Beneficial Uses

Affected Environment

The State of New Mexico Environment Department (NMED) has identified water quality standards and beneficial uses for waters of the State (NMED 2008a). The Jicarilla Ranger District has only intermittent and ephemeral stream channels. All intermittent streams have designated uses for aquatic life, livestock watering, wildlife habitat, and secondary contact (NMED 2008b). All ephemeral streams have designated uses for livestock watering, wildlife habitat, limited aquatic life and secondary contact (NMED 2008b). Approximately 78 percent of the district drains to the Navajo Reservoir, which is impaired for mercury in fish tissue. NMED indicates the most likely source of mercury is from atmospheric deposition. Approximately 22 percent of the district eventually drains to the San Juan River (Animas River to Largo Canyon reach), which is impaired for mercury in fish tissue, *E. coli* and sedimentation/siltation. The sediment total maximum daily load (TMDL) calculated a 23 percent reduction in fine sediment is needed to meet water quality objectives (NMED 2005). The *E. coli* TMDL calculated that a 73 percent reduction is needed to meet water quality objectives (NMED 2005). A TMDL for mercury is scheduled for 2017.

Environmental Consequences

The Final Environmental Impact Statement for Surface Management of Gas Leasing and Development, Jicarilla Ranger District (USDA 2008a) estimates sediment yield of 5,149 tons per year from the entire road system, including over 200 miles of lease roads not open to the public.

Under alternative 1, the designated transportation system would contribute about 42 percent of the sediment load, which would remain unchanged from the current condition. Alternative 1 would not change the 300-foot corridors, currently designated on the district. No more than 107 acres of actual corridor would continue to be impacted by dispersed camping under alternative 1 (using 214 sites @ 0.5 ac).

Alternative 2 would not include corridors for dispersed camping and big game retrieval, but would add 5 miles of road segments (75-90), averaging 120 feet in length, to the designated transportation system in areas where there is historic dispersed camping, within existing corridors. The current method of driving across a corridor would be replaced with an established

route, approximately 20 feet wide, where motor vehicle use would be concentrated. These spur roads would be designated as routes on the MVUM map and could be driven on for any type of use. The use of these designated access routes may increase surface disturbance and soil compaction on an estimated 13 acres, but would likely not be much different than alternative 1, with corridors.

Cumulative Effects

The FEIS for Surface Management of Gas Leasing and Development, Jicarilla Ranger District (USDA 2008a, pp. 124-125) indicates the primary cumulative impacts to water quality would result from more unsurfaced roads¹⁹ and bare ground related to the increased gas development activity. The most frequent effect of surface disturbance is decreased soil productivity, accelerated erosion and increased surface water runoff. As discussed above, the effects of alternatives 1 or 2 on soil and water are only slightly distinguishable from the effects of the existing condition. Therefore, neither alternative would have an incremental effect, when added to the effects of increasing gas development on the Jicarilla Ranger District.

Efforts to bring lease roads up to standard will reduce sediment delivery over the long term. Current management of limiting public motor vehicle use to designated roads and prohibiting public motor vehicle use behind closed gates will continue to aid in protecting soils from erosion.

Vegetation

Affected Environment

The vegetation of the Jicarilla Ranger District is primarily determined by the elevation (6,180 to 7,650 feet), temperature, and precipitation of the area. The northwest portion of the district is higher in elevation and cooler, and receives more precipitation and in comparison to the southern and eastern portion. The vegetation communities on the district include grassland (both native and reclaimed), mixed shrubland, piñon-juniper woodlands, ponderosa pine, mixed conifer, and riparian. The approximate percentage of land within district boundaries that each vegetation community type covers is shown in Table 6. Road mileages are basically proportional to the extent of the vegetation types found on the district, with two exceptions (Table 6). Riparian areas are normally crossed perpendicular to the stream channel, minimizing disturbance. The majority of mixed conifer is found on north facing slopes or narrow canyon bottoms, both of which are almost entirely inaccessible by motor vehicle.

Table 6. Vegetation cover types within Jicarilla Ranger District boundary

Vegetation Cover Type	Acres	Percent	Approximate Existing System Road Miles
Grassland	11,213	7	15
Mixed shrubland	22,453	14	29

¹⁹ The FEIS analysis included all roads, including roads open to public motor vehicle use and those open only for industry use.

Piñon-juniper	88,257	56	114
Ponderosa pine	33,906	21	44
Mixed conifer	1,943	1	<1
Riparian	50	<1	<1

Dispersed campsites within 300 feet of a designated route are mostly found in the ponderosa pine forests and piñon-juniper woodlands, north of US 64. Table 7 shows the current distribution of campsites relative to vegetation. Dispersed campsites in grasslands are the only sites that cause a loss of the cover type.

Table 7. Location of dispersed campsites within corridors by vegetation type

Vegetation Cover Type	Dispersed Sites	Percent of Total
Grassland	22	10
Riparian	0	0
Shrubland	19	9
Piñon-juniper	83	38
Ponderosa pine	93	43
Mixed conifer	1	< 1

Invasive Plants

Invasive nonnative plants pose threats to biological diversity of native plant communities, altering of ecosystem processes, and loss of rare or special status plants. Invasive plants displace native plant communities and degrade wildlife habitat by competing with, and often choking out, native vegetation such as grasses, forbs, and shrubs. Invasive nonnative plants are generally referred to as weeds or invasive plants and include those legislated by the State of New Mexico as “noxious weeds.” An important concern is that weeds contribute to the decline in frequency of native plant species that depend on similar habitat. Invasive plants also cause a decline in species richness overall. Invasive species are highly adept at capturing available moisture and nutrients, and spread, choking out other vegetation. Weed management is governed under the Federal Noxious Weed Act (P.L. 93-629, 1974), and the Forest Service’s March 1996 interagency document “Forest Service Weed Strategy.”

The introduction of invasive plants to an area and the subsequent impacts to native vegetation can occur through seed dispersal on the undersides of motor vehicles or through removal of native vegetation as a result of surface disturbance. Motor vehicle use and surface disturbance on the district are primarily the result of daily trips to access well sites and the construction of roads, well pads, and pipelines associated with gas development. Grazing by livestock and wildlife can also contribute to invasive plant proliferation, but is relatively minor in the context of gas production activities. The gas industry is responsible for controlling the spread of invasive plants on the Jicarilla Ranger District in areas where surface disturbance related to development has occurred. The Carson National Forest also has an ongoing program to address invasive plants. Currently the completion of a forest-wide invasive plants treatment environmental analysis document is anticipated for completion in 2010.

The loss (removal) of native vegetation is measured by the acreage of surface disturbance. Currently, the district, as a whole, contains less than one percent (in acres) of invasive plants (Table 8). The highest concentration (75 percent) of invasive plants on the district is located south of U.S. 64, in the central to eastern portion, where the highest density of gas well pads is found. Anticipated expansion rates of invasive plant species on the Jicarilla Ranger District will vary, but can be estimated to spread at a rate of one percent, based on the information displayed in Table 8.

Table 8. Invasive plants known to exist on Jicarilla Ranger District (1992 and 1998 surveys)

Common Name	Scientific Name	Life Cycle	Origin	Acres	
				1992	1998
Bull thistle	<i>Cirsium vulgare</i>	Biennial	Eurasia	0.01	1
Canada thistle	<i>Cirsium arvense</i>	Perennial	Eurasia	0.05	3
Field bindweed	<i>Convolvulus arvensis</i>	Perennial	Eurasia	1.25	No data
Musk thistle	<i>Carduus nutans</i>	Biennial	Europe	No data	3
Plumeless thistle	<i>Carduus acanthoides</i>	Biennial	Eurasia	0.70	No data
Russian knapweed	<i>Centaurea repens</i>	Perennial	Eurasia	0.02	1
Scotch thistle	<i>Onopordum acanthium</i>	Biennial	Europe	2.14	4
Wyeth lupine	<i>Lupinus wyethii</i>	Perennial	U.S.	18.42	No data
Saltcedar	<i>Tamarix ramosissima</i>	Perennial	Eurasia	No data	20

Sources: USDA 1992; NMSHTD 1998.

Considering where invasive plants are known to occur on the district, their occurrence is likely associated with motor vehicle use by gas developers, rather than from motor vehicle use by the public, which is primarily in the fall and spring. Currently, the district's designated transportation system, as well as other roads closed to public motor vehicle use, is used by the gas industry to access well sites. Gas development activity would not change under alternatives 1 or 2.

Environmental Consequences

Since the current prohibition of cross-country motor vehicle use on the Jicarilla Ranger District would remain unchanged under alternatives 1 and 2, there would be no difference in the impacts to native vegetation or the potential for invasive plants to spread in areas between roads.

Both alternatives would also close 14 miles of existing road to public motor vehicle use. These road segments would still be used for gas related activities; therefore there would be no difference to the impacts on vegetation or the potential for invasive plants to spread, if either alternative was implemented. The corridors associated with the 14 miles of closed road would also be closed to public motor vehicle use. Presently, there is no evidence of dispersed camping within these 14

miles of corridors and native vegetation is not impacted by motor vehicle use. Closing 14 miles of corridors under alternatives 1 and 2 would not change vegetation conditions.

Both alternatives would eliminate 300-foot corridors in 4 miles of road traversing through piñon-juniper woodland and ponderosa pine. Currently, 4 dispersed campsites are located within these corridors, which would not be accessible by motor vehicle under either alternative. There would be no change in the vegetation, if 4 miles of corridor are closed.

Alternative 2 would not include corridors for dispersed camping and big game retrieval, but would add 5 miles to the designated transportation system in areas where there is historic dispersed camping. The current method of driving across a corridor would be replaced with an established route, approximately 20 feet wide, where motor vehicle use would be concentrated. The use of these designated access routes may increase surface disturbance and vegetation damage on an estimated 13 acres, but would likely not be much different than the existing condition and alternative 1, with corridors.

Cumulative Effects

The changes to the transportation system proposed in alternatives 1 and 2 would have imperceptible direct and indirect effects to vegetation and invasive plant occurrence. Vegetation removal from surface disturbance and incidence of invasive plants is related to natural gas development. The lack of cross-country travel since the mid-1990's has confined invasive plant incidence to industrial locations or adjacent to them. These alternatives would not change the conditions for starting an infestation of invasive plants.

In alternatives 1 and 2, the overall direct and indirect effects to vegetation would not perceptibly contribute to cumulative effects, when overlapped with the effects from gas development (e.g., well pads, access roads, pipelines); grazing from livestock, wild horses, and wildlife; vegetation treatments; prescribed burning projects; and non-motorized recreation.

Wildlife

In an effort to group potential effects on wildlife, this analysis focuses on federally listed species, Forest Service sensitive species, migratory birds, and management indicator species identified in the Carson forest plan. This analysis is based on proposed changes to the current transportation system that is open to the public on the Jicarilla Ranger District.²⁰ The Carson National Forest consulted with the New Mexico Department of Game and Fish to address any wildlife issues associated with the current designated transportation system open to motor vehicle use by the public.

Federally Listed Threatened, Endangered, and Proposed Species

Threatened, endangered, and proposed animal and plant species are managed under the authority of the Federal Endangered Species Act (ESA), (P.L. 93-205, as amended in 1973) and the National Forest Management Act (P.L. 94-588). Table 9 lists the species for Rio Arriba County

²⁰ Since cross-country motor vehicle use is currently prohibited on the Jicarilla RD and the alternatives are consistent with the travel management rule and do not change this prohibition, the impacts of cross-country motor vehicle use are not discussed in this travel management analysis.

taken from the US Fish and Wildlife Service's (FWS) website and determines whether an analysis is required for travel management on the Jicarilla Ranger District. This list was reviewed on June 4, 2009. Only the Mexican spotted owl requires a detailed analysis, since it is the only federally listed species with habitat present on the district.

Table 9. Federally threatened, endangered, and proposed species for Rio Arriba County

Species	Legal Status	Habitat Present	Habitat Not Present	Habitat Present, But Not Affected	Comments
Black-footed ferret (<i>Mustela nigripes</i>)	E		X		No prairie dog towns over 200 acres in analysis area; no further analysis required.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E		X		There is no riparian habitat found on the Jicarilla Ranger District suitable to support Southwestern willow flycatchers; no further analysis required.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	E	X			Analysis required
Interior least tern (<i>Sterna antillarum</i>)	E		X		Forest is not within the range of this species; no further analysis required.
Rio Grande silvery minnow (<i>Hybognathus amarus</i>)	E		X		Forest is not within the range of this species; no further analysis required.

E = Endangered

Mexican Spotted Owl

The Mexican spotted owl's (MSO) habitat is typically characterized by high structural complexity and canopy closure (Stacey and Hodgson 1999). Nests are built in large diameter trees and in caves or on cliff ledges in the northern end of their range. Estimates of the Mexican spotted owl's home range vary widely; however, most studies have found that the home range varies between 645 acres and about 3,830 acres (USDI 1995).

The Jicarilla Ranger District has two designated Critical Habitat Units (CHUs). The primary constituent elements within the CHUs are essential to the conservation of the MSO and include physical and biological features that support nesting, roosting, and foraging. The Jicarilla Ranger District manages for these features. Spotted owl habitat can include both canyon and forested areas. Primary constituent elements for forested areas (mixed conifer and riparian forest types) have the following attributes:

- High basal area of large diameter tree
- Moderate to high canopy closure
- Wide range of tree sizes suggestive of uneven-age stands
- Multi-layered canopy with large overstory trees of various species
- High snag basal area
- High volumes of fallen trees and other woody debris
- High plant species richness, including hardwoods
- Adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of MSO prey species

Primary constituent elements for canyon habitat have the following attributes:

- Cooler and often more humid conditions than the surrounding area
- Clumps or stringers of trees and/or canyon wall containing crevices, ledges, or caves
- High percent of ground litter and woody debris
- Riparian or woody vegetation (although not at all sites)

Mexican spotted owl surveys began on the Jicarilla Ranger District in 1990 when a nesting pair was discovered. A protected activity center (PAC) was established in 1991 and surveys continued through 1994 for this PAC. In 1993, owls were detected in an area north of the PAC, prompting the establishment of a second PAC. The southern PAC is characterized by patches (28-133 acres) of mixed conifer forest, while the northern PAC has only a few small patches (7-16 acres) of mixed conifer habitat. Both PACs have cliffs, which may be important to the owl. No nesting pair has been found on the district since 1993, with nesting only occurring within the southern PAC.

From 1995 through 2002, single night surveys were conducted as part of a monitoring effort for proposed new gas wells. During a night time survey in 2002, BLM documented hearing a MSO just west of the southern PAC on BLM lands. Protocol surveys began in 2003 and were completed in 2004 and 2005, covering 2,700 acres of mixed conifer/canyon habitat on the district. No reported owl occurrences were found during these surveys or during the daytime follow-up surveys. A new two-year survey was initiated in 2009, but no MSO have been documented.

Both motorized and nonmotorized vehicle use may degrade or destroy spotted owl habitat, particularly meadow and shrub habitats vital to the owl's prey. Noise produced by vehicles and the vehicle riders may disturb spotted owls at important nesting and roosting sites (USDI 1995). Birds may be more susceptible to disturbance-caused nest abandonment early in the nesting season, because parents have less time and energy invested in the nesting process. Research regarding human disturbance of raptors, including spotted owls, continues to be published and is useful in effects determinations to MSO (Frid and Dill 2002; Swartout and Steidl 2003; and Ward and Salas 2000).

Affected Environment

Currently, all designated roads open to public motor vehicle use on the Jicarilla Ranger District have a 300-foot corridor to each side of the road for dispersed camping and big game (elk and deer) retrieval. Upon review of open roads and associated corridors that may overlap the two PAC

locations, only the southern PAC has three segments of designated road running through it. No historic dispersed camping areas have been identified within the corridors overlapping this PAC. To reduce the potential of disturbance from motor vehicle use, the proposed action was modified (alternative 1) to remove the corridors associated with road segments within the southern PAC. In developing alternative 2, corridors along all designated roads were eliminated and routes were added to provide managed access. Since no historic camping areas were found within corridors overlapping the southern PAC, alternative 2 does not include additional routes in the southern PAC or corridors. Both alternatives 1 and 2 have no corridors or additional routes within MSO PACs.

Within the boundaries of the Jicarilla Ranger District, two Mexican spotted owl critical habitat units (CHU) - SRM-NM-11 and SRM-NM-12 – have been designated. SRM-NM-11 contains one PAC, while SRM-NM-12 contains the other. The two CHUs combined cover 20,643 acres within the district boundary. Critical habitat includes steep slopes (greater than 40 percent), canyons, and rocky outcroppings with dense, mixed coniferous forests. Approximately 5,008 acres of potential MSO habitat has been identified on the district. Of the 5,008 acres of potential nesting habitat, 2,450 acres occurs in critical habitat.

Environmental Consequences

The only area where MSO would be impacted by proposed changes to public motor vehicle use is along the south boundary of the southern PAC along Forest Roads 357, 357P, and 358. This area is within CHU SRM-NM-11; however no primary constituent elements would be affected under alternatives 1 or 2. Since the corridors associated with these road segments would be removed in both alternatives, the potential for disturbance from public motor vehicle use would be less than what may be occurring now with established corridors; therefore, this would benefit the MSO in the long term. Both alternatives also propose closing 14 miles of designated road and associated corridors. These closures would not affect MSO, since no suitable habitat occurs where these roads are currently located.

The proposed amendment to the Carson Forest Plan under alternatives 1 and 2 would not affect the MSO or its critical habitat. The proposed changes are clarifying activities already occurring on the Jicarilla Ranger District. The effects of the proposed amendment are consistent with the current forest plan consultation with US Fish and Wildlife Service.

Forest Service Sensitive Species

There are 47 species on the USDA R3 Regional Forester's Sensitive Species 2007 list that occur on the Carson National Forest. The forest developed a list that breaks down the range of species by district (USDA 2010). Of the 47 species listed, 12 sensitive species have the potential of occurring on the Jicarilla Ranger District (Table 10). All other species on the Regional Forester's list do not occur on the district and would not be impacted by either alternative 1 or 2. The northern goshawk requires a detailed analysis, since it is the only sensitive species with habitat present on the district that could be affected by the alternatives.

Table 10. Forest Service sensitive species for the Carson National Forest

Species	Habitat Present	Habitat Not Present	Habitat Present, but Not Affected	Comments
Bald eagle (<i>Haliaeetus leucocephalus</i>)			X	The district is only used for winter roosting habitat. The proposed changes would have no effect on the bald eagle or its roosting habitat.
Northern goshawk (<i>Accipiter gentiles</i>)	X			Analysis required.
Peregrine falcon (<i>Falco peregrinus</i>)			X	A new eyrie was located in 2009. Since this location is more than 1 mile from the proposed changes to the transportation system, both alternatives would have no effect on the peregrine falcon or its habitat.
Burrowing owl (<i>Athene cumicularia hypugaea</i>)			X	The only grasslands present in areas of change are located on private land, where roads would be removed from the designated transportation system. The roads would be still open to private landowners and the gas industry. The proposed changes would have no effect on the burrowing owl or its habitat.
Gray vireo (<i>Vireo vicinior</i>)			X	Currently, piñon-juniper woodlands are adjacent to roads proposed to be closed to the public. These stands are located on NFS and private lands. Closures under either alternative 1 or 2 would have no effect to the vireo, since these roads would still be open to industry and private landowners.
Spotted bat (<i>Euderma maculatum</i>)			X	The proposed changes to the transportation system would have no effect on spotted bat roosting and foraging habitats.
Pale Townsend's big-eared bat (<i>Corynorhinus townsendii pallescens</i>)			X	The proposed changes to the transportation system would have no effect on Pale Townsend's big-eared bat roosting and foraging habitats.

Species	Habitat Present	Habitat Not Present	Habitat Present, but Not Affected	Comments
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)			X	The only grasslands present in areas of change are located on private land where roads will be removed the district road system. The roads are still open to private landowners and the gas industry. The proposed changes to the transportation system would have no effect to the Gunnison's prairie dog or its habitat.
Bluehead sucker (<i>Catostomus discobolus discobolus</i>)		X		Due to the lack of perennial water, there are no fish residing on the Jicarilla RD. Proposed changes under alternatives 1 and 2 would not affect sediment delivery into the San Juan River.
Flannelmouth sucker (<i>Catostomus latipinnis</i>)		X		Due to the lack of perennial water, there are no fish residing in the Jicarilla RD. Proposed changes under alternatives 1 and 2 would not affect sediment delivery into the San Juan River.
Roundtail chub (<i>Gila robusta</i>)		X		Due to the lack of perennial water, there are no fish residing in the Jicarilla RD. Proposed changes under alternatives 1 and 2 would not affect sediment delivery into the San Juan River.
Pagosa milk-vetch (<i>Astragalus missouriensis</i> var. <i>humistratus</i>)			X	Proposed changes would not occur where this plant is located, therefore there would be no effect to the Pagosa milk-vetch.

Northern Goshawk

A forest habitat generalist, the northern goshawk preys on a variety of small birds and mammals and hunts over a wide range of forest types and stand conditions (Reynolds et al. 1992). In New Mexico, goshawks typically breed in mature, closed canopy, coniferous forest of mountains and high mesas (NMDGF 2003). Goshawks are residents in Rio Arriba County and are documented breeders in the district (NMDGF 2003).

Affected Environment

Between 1991 and 2002, approximately 18,099 acres of the Jicarilla Ranger District (51 percent of the ponderosa pine and mixed conifer) was surveyed for goshawk. Of the remaining 49 percent of ponderosa pine and mixed conifer not surveyed, not all of these stands meet the definition of potential goshawk habitat. In 1993, a nesting pair of goshawks was discovered and a post-fledgling area (PFA) surrounding the nest site was identified in the Middle Mesa area (Middle Mesa PFA). This territory has been monitored for occupancy every year since its discovery (USDA 2003c).

In 2007, a new nesting pair was located in a different location, in the northeast portion (Buzzard Park PFA) of the district, near Buzzard Park Campsite. Also in 2007, goshawks were found in the southern part of the district. While nesting was not confirmed in 2007, the district will continue to monitor the area for nest sites.

To reduce the potential of disturbance from motor vehicle use, the proposed action was modified (alternative 1) to remove the corridors associated with road segments within the goshawk PFAs. In developing alternative 2, corridors along all designated roads were eliminated and routes were added to provide managed access. Alternative 2 does not include additional routes within PFAs. Both alternatives 1 and 2 have no corridors or additional routes within northern goshawk PFAs.

Environmental Consequences

For both alternatives 1 and 2, 300-foot corridors would be removed along Forest Roads 310, 310C, 310B1, 218B, 218B3, 218B4, and 218B5, within goshawk PFAs. In addition, alternative 2 removes the corridors and does not include any access routes within the PFA. By eliminating corridors for dispersed camping and big game retrieval within PFAs, both alternatives reduce potential disturbance to goshawks from motor vehicles and campers and hunters; therefore this would be a beneficial effect to the goshawk. Buzzard Park Campsite would be maintained in both alternatives. This camping area was established long before the PFA was designated and it appears that camping in this area does not affect the goshawk nesting site. Most of the camping occurs in the fall outside of the goshawk breeding period. Both alternatives propose closing 14 miles of designated road and associated corridors. These closures would not affect northern goshawk, since no goshawk habitat occurs where these roads are located.

Management Indicator Species

The Carson forest plan (as amended) identified 11 wildlife species as management indicator species (MIS) to monitor the health of the forest's ecosystems (USDA 1986c). The forest plan provides direction on managing quality habitat for MIS by management area (MA). All 11 MIS were considered in the Jicarilla Ranger District travel management analysis (Table 11); however, because of limited vegetation types found within the areas of change and the lack of effects to the habitat components, only elk were found to have the potential of being affected by implementation of any of the alternatives and will be evaluated in detail.

Table 11. Forest plan management indicator species for the Carson National Forest

Management Indicator Species	MIS Habitat Component for Quality Habitat	Forest Plan Management Areas	Comments
Brewer's sparrow (<i>Spizella breweri</i>)	sagebrush	MA 12 - Sagebrush	The proposed travel management changes, would not affect sagebrush component.
Juniper titmouse (<i>Baeolophus ridgwayi</i>)	piñon-juniper canopies	MA 8 – Piñon-juniper	The proposed travel management changes, would not affect piñon-juniper canopies.
Abert's squirrel (<i>Sciurus aberti</i>)	interlocking canopies in ponderosa pine	MA 4 - Ponderosa Pine <40% MA 5 - Mixed Conifer & Ponderosa Pine >40% MA 7 - Unsuitable Timber	The proposed travel management changes would not affect interlocking canopies in ponderosa pine.
Hairy woodpecker (<i>Picoides villosus</i>)	snags	MA 1 – Spruce-fir <40% MA 3 – Mixed Conifer <40% MA 4 - Ponderosa Pine <40% MA 5 - Mixed Conifer & Ponderosa Pine >40% MA 6 – Aspen MA 7 - Unsuitable Timber MA 14 - Riparian	The proposed travel management changes would not affect the number of snags in the project area.
Red squirrel (<i>Tamiasciurus hudsonicus</i>)	mixed conifer	MA 3 – Mixed Conifer <40% MA 5 - Mixed Conifer & Ponderosa Pine >40% MA 6 – Aspen MA 7 - Unsuitable Timber	Red squirrel habitat is not found on the Jicarilla Ranger District.
Wild turkey (<i>Meleagris gallopavo</i>)	old growth pine	MA 3 – Mixed Conifer <40% MA 4 - Ponderosa Pine <40% MA 5 - Mixed Conifer & Ponderosa Pine >40% MA 7 - Unsuitable Timber	The proposed travel management change would not affect old growth in ponderosa pine and mixed-conifer trees.
White-tailed ptarmigan (<i>Lagopus leucurus</i>)	alpine tundra and subalpine deciduous shrub	MA 9 – High elevation grassland	White-tailed ptarmigan habitat is not found on the Jicarilla Ranger District.
Bighorn sheep (<i>Ovis canadensis canadensis</i>)	alpine, subalpine tundra and	MA 9 – High elevation grassland	Rocky Mountain bighorn sheep habitat is not found on the

Management Indicator Species	MIS Habitat Component for Quality Habitat	Forest Plan Management Areas	Comments
	mountain meadow grassland		Jicarilla Ranger District.
Resident trout	perennial stream, riparian	MA 14 - Riparian	Resident trout habitat is not found on the Jicarilla Ranger District.
Aquatic macro Invertebrates	perennial stream, riparian	MA 14 - Riparian	Aquatic macro-invertebrates habitat is not found on the Jicarilla Ranger District.

Elk (General Forest Habitat)

Elk are an indicator of general forest habitat type (USDA 1986c). Populations in the mountainous western U.S. tend to inhabit coniferous forests associated with rugged, broken terrain or foothill ranges. All land within Jicarilla Ranger District boundary (over 157,000 acres) supports habitat for this species (USDA 1986c). Primary winter range and large game winter habitat (approximately 15,600 acres and 81,600 acres respectively) usually consists of lower elevation, south-facing slopes and areas with good thermal cover nearby. For both alternatives, 14 miles of designated road (FR 310D, 310D1, 310J, and 310J2) that access private land and the Jicarilla Apache Nation Reservation would be closed.

Habitat Trends: The Carson forest plan identified 1,362,760 acres as occupied elk habitat. The Carson MIS assessment determined that elk habitat had increased by almost 4 percent (USDA 2007) between 1986 and 2002. Overall, the habitat condition and trend for elk on the Carson National Forest is considered fair and stable. Through the New Mexico Habitat Stamp program, the Jicarilla Ranger District has conducted many habitat improvement projects. These include installing over 300 water structures and thinning and burning acres of piñon-juniper woodland.

Population Trends: Within the U.S. and at the scale of its geographic range, Rocky Mountain elk is secure, common or abundant, and widespread. Elk population levels on the Carson National Forest are currently stable (USDA 2007).

Approximately 116 miles of designated road are currently open within big game winter ranges. Both alternatives would reduce that number to 102 miles. On the south end of the district, the 14 miles of road and associated corridors proposed to be closed to public motor vehicle use under alternatives 1 and 2 would affect a limited amount of elk habitat. During the winter season, public motor vehicle use on these roads is very light; however, the roads are still used by industry and private landowners traveling through NFS lands to access gas development facilities and private land. Under both alternatives, closing roads and associated corridors within elk winter range on the district would decrease habitat disturbance from public motor vehicle use during the winter months. These closures would have only a small beneficial effect on elk populations, since roads

on the district are still open to use by gas industry vehicles for removing production water and maintaining natural gas wells year-round. Gas related activities contribute the most to motor vehicle use on roads during the winter.

In alternative 1, the removal of the 300-foot corridors within the MSO PAC and northern goshawk PFAs would have limited benefits to elk winter habitat, since these areas are outside the big game (elk and mule deer) winter range. The proposed changes in alternative 1 would likely not affect elk summer use. In alternative 2, removing all 300-foot corridors and the designating 5 miles of new road for dispersed camping and big game retrieval would have limited benefits to the elk. Most elk use areas further than 300 feet from a road (NMDGF 2005). Moreover, even though alternative 2 would not include corridors for dispersed camping and big game retrieval along all designated roads, roads on the district would still be open for industry use. Having no corridors on the district would not change the elk use of the area. Implementing either alternative 1 or 2 would not affect the forest-wide habitat and population trends for elk.

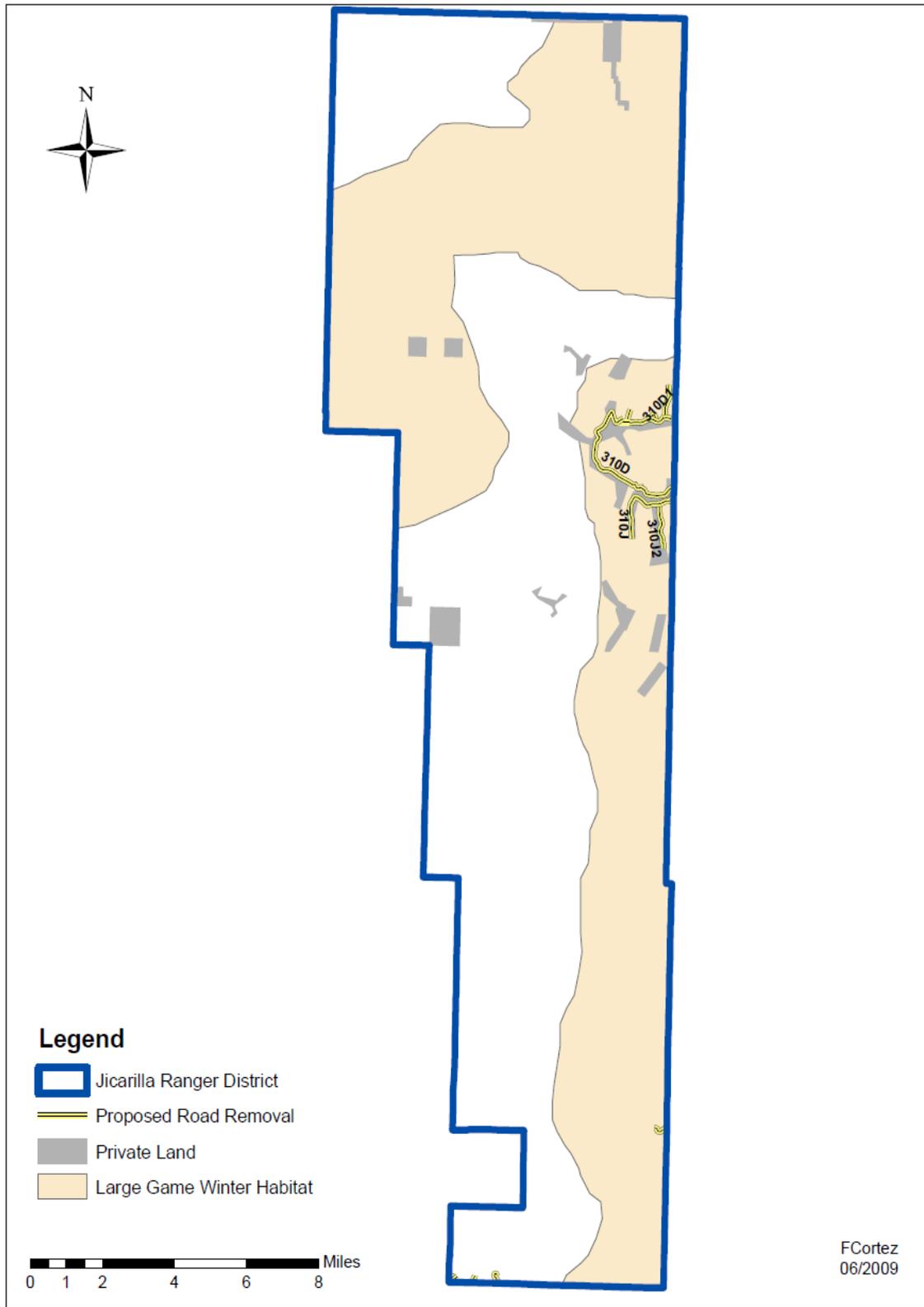


Figure 7. Big game (elk and deer) winter habitat on the Jicarilla Ranger District

Migratory Birds

New Mexico Partners in Flight identifies physiographic areas and high priority migratory bird species by broad habitat types (NMPIF 2003). The Jicarilla Ranger District occurs within the Southern Rockies/Colorado Plateau bird conservation region. New Mexico Partners in Flight has also developed a list of highest priority breeding bird species by habitat type. The U.S. Fish and Wildlife Service released its updated “Birds of Conservation Concern Report” in December 2008 (USDI 2008). This analysis considers birds from both the U.S. Fish and Wildlife Service birds of conservation concern and Partners in Flight highest priority. The habitats described below are found on the Jicarilla Ranger District. Not all species described below have been located on the district, but they have the potential of occurring there. The Great Basin Desert Shrubland and Montane Shrub, Piñon-juniper, and Ponderosa Pine habitat types are found within the Jicarilla Ranger District travel management areas of change.

Great Basin Desert Shrubland and Montane Shrub Habitat Type

These two habitat types are combined since it is not possible to separate the habitat with the current habitat data available. The Great Basin Desert Shrubland highest priority species include loggerhead shrike, sage thrasher, Bendire’s thrasher, and sage sparrow (NMPIF 2003). The Montane Shrub highest priority species include Lucifer hummingbird, MacGillivray’s warbler, green-tailed towhee, and black-chinned sparrow (NMPIF 2003). The district is outside the range of the Lucifer hummingbird and the black-chinned sparrow only migrates through the forest. The Gunnison sage grouse (from the FWS list) is not found on the forest.

Piñon-Juniper Habitat Type

The highest priority species for the Piñon-juniper habitat type include ferruginous hawk, gray flycatcher, gray vireo, Bendire’s thrasher, and black-throated gray warbler (NMPIF 2003). The FWS list also includes the piñon jay (USDI 2008).

Ponderosa Pine Habitat Type

The highest priority species in the Ponderosa Pine habitat type include northern goshawk, Mexican spotted owl, flammulated owl, greater pewee, olive warbler, Virginia's warbler, and Grace's warbler (NMPIF 2003). The Mexican spotted owl is not found in ponderosa pine habitat on the Carson National Forest. The greater pewee and the olive warbler are not found on the Carson National Forest.

Environmental Consequences

The proposed corridors in alternative 1 would have the potential of causing nest destruction of the ground nesting birds listed in Table 12. Alternative 2 would remove any existing corridor and therefore, would reduce the potential of any removal of nests for ground nesting birds. Since managed access routes are already in existence on the ground this should not affect any ground nesting birds. Both alternatives would not have a measurable negative effects to the ground nesting birds that are listed in Table 12, due to the fact that only a limited number of nests that would be potentially removed within the proposed corridors.

Table 12. Ground nesting migratory birds by habitat type

Species	Habitat Type
Virginia's warbler	ponderosa pine
Wilson's phalarope	wet meadow
Mountain plover	plains and mesa grasslands

Cumulative Effects

The Jicarilla Ranger District is identified as the cumulative effects area for wildlife and the existing transportation system on the district is used as a basis for the cumulative effects analysis. Cross-country motor vehicle use is currently prohibited on the Jicarilla Ranger District and the alternatives do not change this. Therefore, the impacts of cross-country motor vehicle use are not discussed.

Gas development activities are occurring within the cumulative effects area of analysis for MSO, northern goshawk, and elk. Gas development will continue on the Jicarilla Ranger District for at least another 20 years. Most of the road development on the district is in support of gas development and a large percentage is open only to industry vehicles. Adjacent to and within the southern owl PAC, there are three wells already developed. Three wells are also within the Middle Mesa goshawk PFA. The Buzzard Park PFA has one existing well. Since no nest sites have been found where goshawks were seen in the southern part of district, no post-fledgling areas have been established.

The district contains two big game winter habitat areas (Figure 7). Numerous wells and their support structures are within the eastern big game winter range, including big game winter range adjacent to the Jicarilla Apache Tribal Lands.

A review of the Schedule of Proposed Actions dated 10/01/2009 – 12/30/2009 for the Jicarilla Ranger District yielded no other actions that could incrementally affect the wildlife species listed in this analysis, when combined with the effects of the alternatives.

Current Transportation System

Alternatives 1 and 2 would maintain the current transportation system on the Jicarilla Ranger District, except for closing 14 miles (both alternatives) and removing all corridors and adding 5 miles of road (alternative 2). Designated roads open to motor vehicle use in Douglas-fir stands in MSO Critical Habitat Units would not impact the Mexican spotted owl. There has not been a sighting of spotted owls near any of these roads. In addition, since this analysis is based off of GIS cover types and not ground reviewed, it is unknown if the Douglas-fir stands meet the definition of primary constituent elements. Most of the private land on the district is outside of the CHUs and does not contain suitable habitat for the MSO.

Within the southern MSO PAC, the designated road (approximately 0.6 miles) open to public motor vehicle use is located at the southern edge of the PAC. The road is not in the canyon habitat of the PAC, where the nesting habitat occurs. While there is a potential for noise disturbance from motor vehicle use and other activities, the distance from the nesting habitat provides a buffer. For both alternatives, there would be no cumulative impacts to MSO.

Within the Middle Mesa and Northeast PFAs, approximately 0.5 mile and one mile of designated road is open to public motor vehicle use, respectively. For both alternatives, these designated roads have some potential for noise disturbance, since they are currently open to the public, as well as for the gas industry. The proposed changes would reduce the potential for noise disturbance during the breeding season; however because the roads have existed in the area for several years and the birds are still nesting in the area, cumulatively there would be no effect to the goshawks. Besides the roads open to the public, there are additional miles of road that are only open to industry for gas field production. Year-round motor vehicle use of roads by industry would increase the chance of disturbance to goshawks during their breeding season. Some of these roads have been developed and used since the goshawk nest sites were initially found. There is no private land within the goshawk PFAs.

Approximately 116 miles of designated road are currently open within big game winter ranges. Both alternatives would reduce that number to 102 miles. During the winter season, public use on these roads is very limited; however, the roads are still used by industry and private landowners traveling through National Forest System lands to access gas development facilities and private land. Although implementation of either alternative would result in a positive effect for wintering big game, the overall cumulative effect would still be negative to the habitat efficiency and use of winter range by elk and deer.

Gas Development Activities

Most of the Jicarilla Ranger District has been leased for gas production and it is likely the district will have additional future energy mineral development occurring. There is approximately 2,093 acres of habitat within the big game winter range that is not currently leased, but is available for future leasing. Leasing can include one or more of the following types of activities - well pad development, access road construction, and installation of pipelines and/or compressors.

For MSO, northern goshawk, and elk, disturbance from current gas field development is present within the cumulative effects analysis area for both alternatives. As a consequence, noise and vehicle traffic may also disturb any of these species that may be in the vicinity. Removing 300-foot corridors from the southern PAC and PFAs under both alternatives would also eliminate dispersed camping areas and the routes to access them, thus reducing the potential for additional disturbance from people camping within these areas. Since most big game retrieval occurs in the fall and early winter, it is unlikely that the removal of the corridors for big game retrieval would have any added benefit for the owl and goshawk.

Elk are impacted by habitat removal, habitat fragmentation, and noise disturbance from gas field development on both the district and private land within the district boundary and adjacent BLM and Jicarilla Apache Nation lands. The removal of the 300-foot corridor in alternative 2 and closing of 14 miles of roads to the public under both alternatives would likely have a limited benefit to elk, since the majority of motor vehicle use on the district's designated transportation system is from industry and not from the general public during the winter. The forest plan currently includes a winter closure for well drilling activities on the district, which aids in reducing habitat disturbance.

Continual gas field development would have future impacts from noise, habitat loss, and fragmentation on MSO, northern goshawk, and elk. For both alternatives, the proposed changes would not reduce or add to these impacts.

Road Density

Within the current transportation system or under either alternative, the district does not have any areas greater than 3 miles/square mile. Under “Wildlife and Fish - Road Densities,” the Carson forest plan provides a guideline that says to manage over time to achieve winter big game range at approximately 0.5 mile/square mile of roads open to public use during December 15 – April 15. Between mid-December and mid-April, there is very little use by the public on these roads.

For both alternatives, the area that has most of the proposed 14 miles of road closure has road densities between 1 to 2 miles/square miles. While both alternatives would reduce nearly all of that area to less than 1 mile/square mile open to public motor vehicle use, the roads are still open to private landowners and industry, if they have permission to use these roads. There is really no net decrease within the area, when motor vehicle use on roads by others (rather than the public) is considered. Cumulatively, there would be no change in the impacts of these roads on big game within big game winter areas.

Cultural Resources

A cultural resource is a broad term that refers to areas of traditional significance, use, and the remains of past and current human activity. These resources may be the physical remains of a prehistoric or historic property or a place of traditional cultural significance or use. A traditional cultural property (TCP) refers to the connection between places on the landscape and a group’s traditional beliefs, religion, or cultural practice.

The National Historic Preservation Act (NHPA), as amended, and its implementing regulations require that Federal agencies consider the effects of their undertakings on “historic properties.” The term “historic properties” refers to cultural properties, both prehistoric and historic, that are eligible for listing in the National Register of Historic Places (NRHP). The lands, resources, and historic properties within the Carson National Forest are considered traditionally significant to all affiliated American Indian tribes and, in some cases, certain resources or areas are considered sacred to a specific tribe(s). These traditional sacred places and traditional use areas are cultural historic properties that may be eligible to the NRHP because of their association with cultural practices and beliefs rooted in history and their importance in maintaining the cultural identity of ongoing American Indian communities. Consultations about these uses and places are governed and/or mandated by the NHPA, as amended in 1992 (U.S.C. 470 et seq.), the American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996), the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 et seq.) and Executive Order 13007 of 1996.

Federal agencies consider the effects of their management activities on historic properties by first determining the area of potential effect, then conducting literature searches and field surveys to locate cultural properties. Additionally, they consult with American Indian tribes and other interested parties to determine whether traditional cultural properties are within the area of potential effect. The locations and descriptions of historic properties are stored in secure state and Forest Service databases and geographic information systems for analysis and protection.

The Southwestern Region’s (Region 3) Travel Management protocol, an amendment to the Region’s Programmatic Agreement on Historic Property Protection and Responsibilities with the Advisory Council and the Arizona, New Mexico, Oklahoma, and Texas State Historic Preservation Officers (SHPO) outlines the process for compliance with Section 106 of the NHPA. The protocol grandfathered in existing system motorized routes and existing corridors where motor

vehicle use is already authorized. New routes, corridors, and areas to be designated must go through the Section 106 compliance process before the addition is put on the motor vehicle use map.

Affected Environment

The cultural history of the Jicarilla Ranger District is largely linked to earlier research conducted in the Navajo Reservoir Region by Dittert (1958) and Eddy (1966, 1972), as well as more recent studies by Gerow and Hogan (2000), Wilshusen (1995), and Wilshusen et al. (2000) in adjacent regions to the south and west (USDA 2008a). In general, the cultural history of the region is divided into five major periods, of which four are documented on the district. The earliest evidence of human occupations in the region is termed PaleoIndian, but no properties of this period have been recorded on the district. This is followed by the Archaic period, during which the beginnings of agriculture emerge in the archeological record. Subsequent developments are designated as the Basketmaker and Pueblo periods, when agriculture and large towns begin to appear across the Colorado Plateau. This, in turn, is followed by the historic period, which includes developments by both American Indians and well as later Euro-American settlers (USDA 2008a).

Archeological surveys conducted on the Jicarilla Ranger District are generally project oriented, and are not designed to inventory areas for research purposes. At present, approximately 20 percent of the district has been inventoried for cultural resources, resulting in the recording of almost 2000 historic properties. Across the district, almost 70 percent of the properties are culturally affiliated with the Anasazi and date to the Pueblo I period, with the remainder of the properties dating to the Archaic (less than 1%), Basketmaker II (less than 1%), Basketmaker III (8%), Pueblo II (6%), Pueblo III (less than 1%), Navajo Dinétah and Gobernador (17%), Apache (less than 1%), and Historic Anglo/Hispanic (2%) time periods (USDA 2008a).

Recreational use of the district is primarily by hunters camping, scouting, and retrieving big game. Camping has caused some of the most adverse unintentional impacts from recreational activity to historic properties. Past forest recreation management allowed campers to camp forest-wide and allowed vehicles to park up to 300 feet from the edge of a road. In the Southwest, areas popular with campers are often near water, scenic vistas, or flat areas that were also commonly used prehistorically.

On the Jicarilla Ranger District, 76 historic properties are located within or adjacent to the 218 dispersed campsites identified within 300-foot corridors. Impacts to all of the affected properties have not been assessed, but in cases where data is available, the presence of the campsite is causing impacts. Many of these properties are impacted by unintentional vandalism. Unintentional vandalism consists of campers taking rocks from prehistoric structures to build camp fire rings and wind breaks; using and rearranging of rocks from features as tent weights; digging holes for latrines; collecting and rearranging artifacts into piles on the surface, using pieces of collapsed wooden Navajo structures as firewood, crushing and breaking artifacts by motor vehicles, and rutting of soils and clearing of vegetation through use of motor vehicles off the road. In some other cases, campers have collected and removed artifacts from a property(s) and then dumped them on the surface of a camping area that is not located on an historic property, thus destroying the original contextual information of the artifacts and creating false historic properties. Indirect impacts from camping include damage from erosion resulting from changes in soil compaction and denuding of vegetation near historic properties. Although limited, impacts

from big game recovery and butchering have occurred on the forest for decades. Hunters can inadvertently damage properties by burying the entrails and other parts under the ground and most the time these impacts are minor. Under current cultural resources management practices, when an historic property is documented and shows signs of being impacted by motor vehicle use, the Forest Service protects the property by prohibiting motor vehicle use within that segment of the corridor.

Environmental Consequences

Alternative 1 is the proposed action, which closes 14 miles of road and keeps all but 4 miles of 300-foot corridors. Alternative 2 represents the same designated road system as alternative 1 (188 mi), with no corridors and 5 additional miles (75-90 road segments, averaging 120 feet), for a total of 193 miles. Carson National forest plan amendment #9 prohibits cross-country travel by motor vehicles, but allows motor vehicle use within a 300-foot corridor on both sides of designated roads open to the public for dispersed camping and big game retrieval. Since the 14 miles of road to be closed under both alternatives 1 and 2 would still remain open for the purpose of natural gas operations, changes related to the corridors is the primary focus of discussion in this analysis.

Except for 4 miles, alternative 1 would not change the current policy allowing motor vehicle use within 300 feet on either side of a designated road for the sole purpose of dispersed camping or big game retrieval. The Southwestern Region's Travel Management protocol (Appendix I of the Regional Programmatic Agreement) outlines the process for compliance with Section 106 of the NHPA. The protocol grandfathered in existing system motorized routes and existing corridors, where motor vehicle use is already authorized.

As described under Affected Environment, when an historic property is documented and shows signs of being impacted by motor vehicle use, the Forest Service protects the property by prohibiting motor vehicle use within that segment of the corridor. Under alternative 1, this practice would not change. Upon discovery of a property being impacted, it would be protected by excluding motor vehicle use from that portion of the open corridor. The direct effects on cultural resources from Alternative 1 would not change from what is presently occurring within the corridors.

The Travel Management protocol requires new routes, corridors, and areas to be designated to go through the Section 106 compliance process before the addition is put on the motor vehicle use map. Alternative 2 would add 5 miles of currently unauthorized two-track road segments to the designated transportation system for motor vehicle use and eliminate corridors.

Alternative 2 concentrates motor vehicle use along designated routes and eliminates corridors. The removal of corridors would substantially reduce the potential of impacts on cultural resources from motor vehicle use, specifically within 300 feet of either side of a designated road, compared to keeping the corridors. Alternative 2 would add 5 miles of designated routes to the transportation system. Before showing these routes on the MVUM and making them available for public motor vehicle use, heritage resource surveys would be required. If historic properties are discovered in any of the additional routes proposed, the route would be dropped or potential impacts to the properties would be mitigated.

The potential for an individual historic property to be impacted under alternative 1 would be higher than in alternative 2, without corridors. Alternative 2 would reduce the overall impact to cultural resources (tire tracks, rutting, displacement of artifacts, erosion, etc.) that comes from motor vehicle use. A more managed access approach for dispersed camping, as in alternative 2, would benefit cultural resources.

Cumulative Effects

All proposed projects on the Jicarilla Ranger District are covered by separate NEPA decisions that require either complete avoidance or mitigation of effects to historic properties, prior to any ground disturbing activities, in compliance with the Section 106 and enacting regulations (36 CFR 800). However, the district-wide presence of cattle and wild horses, and activities associated with permitted wood cutting are cumulatively affecting historic properties within established corridors.

Cumulative effects on historic properties under alternative 1 would not change what is presently occurring within the corridors. Alternative 2 would eliminate corridors, so the overall cumulative effects would be reduced, except for the added routes which would be mitigated for adverse effects to historic properties prior to inclusion on the MVUM.

Contemporary Tribal Uses or Issues

The tribal consultation process for the Forest Service is guided through a variety of laws, Executive Orders and Memorandums, as well as, case law. Laws include the National Historic Preservation Act and subsequent amendments, Archaeological Resources Protection Act, American Indian Religious Freedom Act, National Environmental Policy Act, and the National Forest Management Act. Memorandums include 1994 Government-to Government Relations with Native American Tribal Governments. Executive Orders include Accommodations of Sacred Sites (E.O. 13007) and Environmental Justice (E.O. 12898).

Affected Environment

Sixteen American Indian tribes have ancestral ties to lands within the Carson National Forest. Forest Service consultations with appropriate members of each tribe can identify the tribe's historic and present day traditional uses and sacred places of the area. These traditional use areas and sacred places are considered traditional cultural properties that may be eligible to the National Register of Historic Places. The eligibility is due to their association with cultural practices and beliefs rooted in history and their importance in maintaining the cultural identity of American Indian communities. Based on current and past consultation, the following American Indian tribes are known to have cultural ties and/or traditional use areas on the Jicarilla Ranger District:

The Hopi Tribe	Pueblo of Santa Clara
Jicarilla Apache Nation	Southern Ute Tribe
Pueblo of Jemez	Ute Mountain Ute Tribe
The Navajo Nation (Dine')	Pueblo of Tesuque

Pueblo of Okhay Owingeh	Pueblo of Zuni
Pueblo of San Ildefonso	Comanche Tribe of Oklahoma
Pueblo of Taos	Pueblo of Pojoaque
Pueblo of Picuris	Pueblo of Nambe

Each group has their own history, traditions, and relationship to the land and the other groups. Traditional use of the Jicarilla Ranger District and its resources by the tribes dates back several generations, and for some groups many centuries.

Examples of traditional uses of the district by people from adjacent tribes include gathering of piñon nuts, medicinal plants, plant material and minerals for pigments, hunting, and collection of oak for ceremonial purposes. While the discussion of impacts often focuses on effects to historic properties, because they are discreet locations that are more easily identified, sacred places and traditional use areas that are accessed for the collection of traditional materials may be affected. At present, two traditional cultural properties are specifically documented on the Jicarilla Ranger District. Both places are affiliated and traditionally sacred to the Navajo Nation. Most likely there are other traditional places of cultural or religious importance to American Indians on the district that are not documented by the Forest Service. Other than the Navajo Nation, specific use areas or sacred places on the district have not been identified by tribal governments and local tribal communities, although the Pueblo of Tesuque and the Jicarilla Apache Tribe have begun the process of identifying areas important to them. Some tribes may not reveal specific locations of traditional use or sacred places because of cultural restrictions and/or religious beliefs unless that location is at risk of being adversely impacted by project activities.

Environmental Consequences

Additional tribal consultation will follow the Carson National Forest programmatic agreements, compliance with Forest Service policies, and forest memorandums of understanding with tribal governments (USDA and NMSHPO 2008).

Both alternatives 1 and 2 would close 14 miles of system road, of which 2 miles (parts of FR 300A, 302, 303, 304, and 305) lead onto Jicarilla Apache Nation lands. The closure prevent the inadvertent trespass onto tribal lands by the public driving on the district.

Noise

Noise levels depend on the distance from the generating source to the receptor. A motorcycle generating 90 decibels (dB) sound at 5 feet is quite loud. The same motorcycle a mile away is not noticeable from the background noise level. Often the background noise level is in the 20 to 30 dB range, increasing to the about 40 dB on a windy day. Topography, vegetation, and distance all play a part in noise propagation and diminishing of the noise. The vegetation along a roadside helps determine the propagation distance of noise caused by a moving vehicle. Soft surfaces, such as grasses and tree and shrub leaves, tend to absorb the noise. Hard surfaces such as rocks tend to reflect the noise.

Affected Environment

Since natural gas production is the prevalent use of the Jicarilla Ranger District, the designated transportation system is primarily driven to access well pads for gas and operations. Only during the hunting season (fall and spring) is the system heavily used by the general public. Consequently, almost all the noise generated by unnatural sources on the district is the result of heavy equipment, pick-up and tanker trucks, drilling rigs, individual well compressors, and compressor stations. Very little of the noise is from public motor vehicle use.

Motor vehicle use on the designated transportation system for the Jicarilla Ranger District is intermittent. Most non-industrial use occurs during hunting seasons, with some use by observers of wild horses. Noise generated from a passing vehicle is often under two minutes in length from the approach and passing to the departure. The approach is as the approaching vehicle generated noise exceeds the background level, passing is when the vehicle passes the location, during the departure the vehicle noise is blended with the background noise. This sound level rises during the vehicle's approach, hits the highest level at passing, and then decreases as the vehicle departs. An automobile passing has a sound level of approximately 70dB. Street legal vehicles are required to have a muffler or other means of reducing sound emission.

The Jicarilla Ranger District does not include any congressionally designated areas, such as wilderness areas, where noise levels are controlled by legislation. Campers and hunters may expect noise levels on the district to be low in areas where they are recreating, but rarely is noise in these areas caused by public motor vehicle use. Instead, unnatural sounds are coming from gas development activities.

Background noise, noise generated by natural processes such as wind, and point locations are beyond the scope of this analysis and will not be addressed. Point location noise sources are covered under a noise policy developed by the Bureau of Land Management, in cooperation with the Forest Service, for the Jicarilla Ranger District. This analysis is limited to the short term noise levels generated by motor vehicles using the designated roads open to the public.

Environmental Consequences

For either alternative, public motor vehicle use would not be expected to change from what is presently taking place. Reducing 14 miles of designated road on the district is not likely to change the number of motor vehicles driven by the public on the designated system. Eliminating corridors for dispersed camping and big game retrieval may have some effect of reducing noise during hunting season, when the corridors are used, but the difference in noise level would be imperceptible. In either alternative the direct and indirect effects from noise are not measurable, due to the intermittent nature of the source, the short time of change in the background noise level, vegetation's absorption of the noise generated, topography of the land, and decreasing noise over distance for the designated roads open to motorized vehicle use to the public. Since there are no direct and indirect effects of the alternatives on noise, there are no cumulative effects.

The effects of noise as it relates to wildlife are described in the Wildlife section of this chapter.

Special Designations

The Jicarilla Ranger District does not contain any designated wilderness or roadless areas. However, areas without designated roads open to public motor vehicle use in comparison to other

areas on the district include the areas of resource concern - Bancos Canyon, La Jara Canyon, Valencia Canyon, Fierro Canyon and Mesa - each of which has important cultural and wildlife values (see Areas of Resource Concern).

On December 4, 2002, President Bush signed the Old Spanish Trail National Historic Trail Act (P.L. 107-325), designating the Old Spanish Trail as a National Historic Trail. The Old Spanish Trail is an assortment of pack routes that connected Santa Fe, New Mexico and Los Angeles, California. A portion of this non-motorized trail passes through the Jicarilla Ranger District in the Carracas Canyon area (Miller 2010). In addition, the Gas Buggy Interpretive Site is located on the district and was once used for an experimental nuclear explosion to fracture underground gas seams in the 1960s.

Areas of Resource Concern

In 2008, the forest plan was amended to include additional management direction specifically on the Jicarilla Ranger District. Amendment 13 of the Carson forest plan identifies five areas of resource concern on the district, with management area direction to protect, maintain, and enhance their resource values. These areas are:

Table 13. Areas of resource concern on the Jicarilla Ranger District

Area of Resource Concern	Resource Values
Bancos Canyon	Cultural resources, watershed, wildlife habitat, and seclusion
La Jara Canyon and Valencia Canyon	Undeveloped characteristics, cultural resources, wildlife security, seclusion
Fierro Canyon & Mesa	Undeveloped characteristics
Vaqueros Canyon	Visual resources, wildlife habitat

Affected Environment

Bancos Canyon

Forest Road 310 crosses the Bancos Canyon by dropping down Buzzard Canyon and up Dike Canyon. This crossing is on the upper narrow end of the canyon. Forest Road 308A leaves FR 310 and continues down to its gated closure in Bancos Canyon. The closure is approximately 0.25 mile west of the FR 310 crossing. Forest Road 308B is on the western edge of the district in Bancos Canyon. The road ends at Cottonwood Canyon. Access to this road is via roads on BLM lands. An older closed road is in the bottom of Bancos Canyon, but is not on the designated transportation system and is not proposed to be in either alternative.

La Jara Canyon

The rim of La Jara Canyon is accessed by Forest Roads 300, 301, 314 B, 357B, and 357B1; however, none of these roads extend into the canyon.

Valencia Canyon

The rim of Valencia Canyon is accessed by Forest Roads 314, 314AA, 314B1, 314N, 357, 357I, 357O1, and 357U. Except FR 314, which is a main road and crosses the eastern part of the canyon, none of these system roads extend into the canyon.

Fierro Canyon and Mesa

The rim of Fierro Canyon is accessed by Forest Roads 314A, 314 AF, 314AN, and 357. None of these system roads extend into Fierro Canyon.

Vaqueros Canyon

US Highway 64 is a Federal highway that traverses Vaqueros Canyon in an east-west direction. It is not considered a designated road on the Jicarilla Ranger District. Forest Road 364A is on the western edge of Vaqueros Canyon. This road continues up Pueblita Canyon for approximately one mile. This road is part of the designated system and is open to public motor vehicle use.

Environmental Consequences

None of the 14 miles of road proposed to be closed in both alternatives and the 5 miles to be added to the designated system in alternative 2 are within areas of resource concern. Since none of the 4 miles of corridor to be removed in alternative 1 go through areas of resource concern, there would be no effect from corridor removal on these areas. In alternative 2, the removal of corridors where FR 314 traverses the eastern part of Valencia Canyon would provide a beneficial effect to the undeveloped characteristics, cultural resources, wildlife security, and seclusion of the area. Overall, alternatives 1 and 2 (except a very small portion of Valencia Canyon) would have no effect on the resource values for which Bancos Canyon, La Jara Canyon, Valencia Canyon, Fierro Mesa and Canyon, and Vaqueros Canyon are to be managed.

Wild and Scenic River Eligibility

The National Wild and Scenic Rivers Act (P.L. 90-542; U.S.C. §1271) was established by Congress in 1968 to preserve free-flowing rivers that possess certain “outstandingly remarkable” values. Pursuant to Section 5(d)(1) of the act, the Secretary of Agriculture requires the Forest Service to evaluate rivers within its jurisdiction for their potential for inclusion in the National Wild and Scenic Rivers System. Evaluation of a river’s potential as a wild and scenic river consists of the following 3-step process:

1. Determination of eligibility (inventory);
2. Potential classification - wild, scenic, or recreational (inventory); and
3. Determination of suitability (decision).

Step 1 is an inventory to identify rivers or rivers segments that possess outstandingly remarkable values that make them eligible for consideration with the National Wild and Scenic Rivers System. Step 2 is also an inventory to determine potential classification of an eligible river. A “wild” river area is described by Section 2 (b) of the act as “...those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shoreline essentially primitive and water unpolluted. These represent vestiges of primitive America.” Step 3 is a decision by the Forest Service to recommend to Congress a stream

segment(s) to be designated as a wild, scenic or recreational river. Management guidelines for eligible wild river areas prohibit new mining claims and mineral leases within ¼ mile of the river, and discourage most new structures and utilities infrastructure. A “recreational” river area is described by Section 2 (b) of the act as, “[t]hose rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past” (USDI 1982).

Affected Environment

In 1998, the Carson National Forest evaluated rivers on the Jicarilla Ranger District pursuant to the act. An eligibility and classification inventory was completed by an interdisciplinary team, including experts in wildlife, recreation, hydrology, and fisheries (USDA 1998). The district does not contain any perennial surface water features; however, five of the district’s intermittent channels were determined to be eligible for designation in the National Wild and Scenic River System. The eligible canyons and their characteristics are summarized below:

- Bancos Canyon was determined to be eligible as a “wild” river for its free-flowing condition and its outstandingly remarkable recreational, wildlife, and cultural values. It was identified as a popular hunting, hiking, and historic property viewing area, and a key winter migratory corridor and holding area for deer and wintering bald eagles.
- La Jara Canyon was determined to be eligible as a “recreational” river for its outstandingly remarkable wildlife, cultural, and riparian values. It is a key winter migratory corridor and security area for elk, deer, and wintering bald eagles, and is one of the few locations in the area capable of supporting riparian vegetation. La Jara Canyon also contains three Navajo defensive sites listed on the National Register of Historic Places (USDA 1998).
- Carracas Canyon was determined to be eligible as a “recreational” river for its outstandingly remarkable wildlife, historic, and riparian values. It is important for wildlife, because it contains a key winter migratory corridor and holding area for deer and a significant security area for large bucks and wintering bald eagles. Its historic value is due to Boiler Springs and a wagon road from Arboles to Dulce. The Old Spanish Trail also passes through a portion of Carracas Canyon. It is one of a few places on the district that can support riparian plants (USDA 1998).
- Vaqueros Canyon was determined to be eligible as a “recreational” river for its outstandingly remarkable scenic value from color diversity in fall vegetation; wildlife values because the east end is prime elk wintering habitat; historic value because it contains the historic Vaqueros Ranger Station site; and is one of a few places on the district that can support riparian plants (USDA 1998).
- Cabresto Canyon was determined to be eligible as a “recreational” river for its outstandingly remarkable wildlife, historic, and cultural values. Its wildlife values are based on key wintering habitat for general wildlife and bald eagles at the east end. Historic values are due to an old school house and several homesteads in the canyon, and its cultural importance is due to an important petroglyph area (USDA 1998).

The Carson National Forest amended its forest plan (amendment #12) to incorporate guidance on how to manage river segments deemed eligible through its forest-wide inventory (USDA

2002a).²¹ Amendment #12 provides direction on protecting outstandingly remarkable values so as to not preclude an eligible river or river segment from eventually becoming a formal candidate for wild and scenic river designation. Before these areas can be designated as wild and scenic, they must undergo a final evaluation and public involvement in the decision process. Before these waterways can be designated as components of the Wild and Scenic Rivers System, they must undergo a final suitability evaluation, including public involvement, and be designated by Congress.

Environmental Consequences

During scoping, some people expressed concerns that proposed changes to the designated transportation system may negatively affect special designations (Issue #3). The indicator used to assess impacts of the proposed action to eligible wild and scenic river segments and areas of resource concern is the net change in miles of road designated open to motorized public use relative to outstandingly remarkable values for eligible rivers and resource values for special areas. Alternatives 1 and 2 would not change the number of miles of road designated open to public motor vehicle use in areas where there are eligible river segments; therefore neither alternative would affect the outstandingly remarkable values of eligible river segments on the district. Since there would be no direct or indirect effects from alternatives 1 and 2, there would be no cumulative effects on eligible river segments.

Social and Economic Environment

The Jicarilla Ranger District is located within Rio Arriba County, New Mexico. The nearest major population is in the Farmington/Aztec/Bloomfield area of San Juan County, New Mexico, west of the district. Other nearby communities include Dulce, Chama, Gobernador, and Lindrieth. Most population data is not available at the community level, but does exist at the county level. The study area for the social analysis is the combined San Juan and Rio Arriba counties, with the next larger scale is the state of New Mexico. The study area data compares census data and, when appropriate, population and recent population characteristic estimates. Some of the data sources include the Bureau of Labor Statistics, Bureau of Economic Analysis, state and local governing bodies, and non government organizations.

The assessment of social and 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 Carson National Forest provides. In particular, would changes in the use of the Jicarilla Ranger District 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 will be insignificant or will they be felt in very specific segments of the local economy?

²¹ Eligible river segments identified during the forest-wide inventory process are not incorporated in the forest plan through amendment 12.

Social Background

The general area was settled following the Spanish conquest of northern New Mexico and southern Colorado in the early 1600's or before as Oñate moved north from Mexico. The Jicarilla Ranger District and the private lands within its boundaries were settled by European and Spanish descendents during the late 1800's and early 1900's. The Four Corners Area was established by Mormon settlers who moved into the area along the large waterways. The Jicarilla Ranger District has little perennial water, which precluded large scale settlement.

The core values of people from the rural Southwest form the basis and concept of their use of public lands. Land is literally and figuratively the ground upon which these people have built their existence. Public land tends to mean something different to people in the rural areas of the Southwest than it does to weekend visitors from the city. This is due mostly to the way rural and urban residents associate with land in general and their relationship toward landscape (USDI 2000, pp. 3-65).

Today, residents of Rio Arriba and San Juan counties derive economic benefits—including employment, labor earnings, and tax revenues—from oil and gas development and production on National Forest System lands on the Jicarilla Ranger District. In addition, many of the companies that provide equipment and services for oil and gas development and production come from Farmington, Bloomfield, or Aztec.

Demographics

Table 14 provides a summary of population information for Rio Arriba and San Juan counties as well as the state and nation. As the table shows, the U.S. Census Bureau indicates about 41,000 people lived in Rio Arriba County and about 124,000 people lived in San Juan County in 2004 (USCB 2005). From 1990 to 2004, San Juan County grew faster than the state or nation, while Rio Arriba County grew more slowly than New Mexico. Population in Rio Arriba County declined slightly from 2000 to 2004, but has grown overall at an average rate of just over 1 percent per year since 1990.

Table 14. Population data for study area, New Mexico, and United States, 1990 to 2004

Area	1990	2000	2004	Average Annual Growth 1990 to 2004
Rio Arriba County	34,365	41,190	40,710	1.2%
San Juan County	91,605	113,801	124,166	2.2%
New Mexico	1,515,069	1,819,046	1,903,289	1.6%
United States	248,709,873	281,421,906	293,655,404	1.2%

Sources: Source: Economic Profile System 2009, U.S. Census Bureau 2005, 2002, 1993

The population of the study area does not mimic the national population. The study area populations tend to be lower in the white, black, and Asian races. The other races exceed the national levels. The American Indian and Alaska Native population, and some other race, and the

two or more races exceed national levels. This indicates a thought process to insure the different populations and their cultural desires are considered (USCB 2000). The study area is basically a tri-cultural area with large populations of American Indians, Hispanics, and whites.

Income and Earnings

Per capita personal incomes in Rio Arriba and San Juan counties are lower than those for New Mexico or the United States, as a whole. However, an analysis of the change in per capita personal incomes from 2000 to 2003 shows that per capita income in both counties are growing substantially faster than in the U.S. as a whole. Table 15 provides a summary of per capita and total personal income from 2000 and 2003.

Table 15. Per capita personal income (PCPI), 2000-2003

Area	PCPI in 2003 (\$)	PCPI in 2000 (\$)	Average Annual Change, 2000- 2003	Total Personal Income in 2003 (\$000)
Rio Arriba County	20,720	17,035	6.7%	846,400
San Juan County	21,124	18,969	3.7%	2,586,721
New Mexico	24,995	22,135	4.1%	46,955,434
United States	31,472	29,845	1.8%	9,151,694,000

Source: BEA 2005.

PCPI = Per Capita Personal Income

Note: PCPI and total personal income are reported in current dollars; average annual change is not adjusted for inflation.

The majority of local jobs in the study area are located in the population centers, around Farmington, New Mexico. Some residents of the study area have jobs outside the county boundaries. Table 16 gives a snapshot of the county industry sector and employment levels as a percentage of total employment in 2006. The data indicate nearly 60 percent of the employment is located in the service sector while about 10 percent is in the goods producing sector. The long term implication is the money coming into the localized economy leaves the local area fairly quickly. This is not to say the monies do not circulate within the economy but many of the needs for a sector such as service providing purchase supplies outside the area (money migrates out).

Table 16. Aggregated county employment in 2006

	Employment	Percent of Total
Total private & public	83,974	100
Total private	64,528	77
Goods-producing	16,157	19
Natural resources & mining	6,841	2
Agriculture, forestry, fishing & hunting	402	0

	Employment	Percent of Total
Mining	6,439	2
Construction	7,008	8
Manufacturing (incl. forest products)	2,308	3
Service-providing	50,518	60
Trade, transportation, and utilities	5,536	7
Information	591	1
Financial activities	1,691	2
Professional & business services	2,507	3
Education & health services	10,211	12
Leisure & hospitality	7,564	9
Other services	4,778	6
Unclassified	0	0
Total public	17,269	21
Federal government	2,474	3
State government	1,374	2
Local government	13,421	16

Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW)

Agriculture, forestry, fishing, and hunting contributed minimally to earnings in Rio Arriba County. The top contributors to earnings in Rio Arriba County were government, educational, health, and social services, and construction. The leading contributors to earnings in San Juan County were public administration, mining, and educational, health, and social services.

Economic Activity Associated with the Jicarilla Ranger District

Oil and gas is a source of direct employment in the region, as described above; U.S. Bureau of Economic Analysis (BEA) data indicates that there are 148 jobs in Rio Arriba County in mining and mining support, including oil and gas exploration, development, and production. The labor earnings from these jobs totaled nearly \$7 million in 2003 (USDA 2008a).

The district does not represent a major employer in the county. In 2000, the district office had only six full-time and two part-time employees. This number increased to 11 by 2003, an extremely small portion of the county labor force (USDA 2003d).

Timber harvested on the district is not a major source of revenues or production value for the district or Rio Arriba County. In 2000, 67 cords were commercially harvested for firewood, with a value of \$1,340. This increased to 813 cords in 2001, with a value of \$16,260, and decreased to 3.1 cords in 2002, valued at \$62.92. Wood gathering for personal use is a locally important resource, but occurs on a small scale. From 2000 to 2002, an average of 103 cords has been

harvested for personal use, with an average annual value of about \$10 per cord. Other wood products, including oak brush and latillas, are valued as a local resource, but are important for personal rather than commercial use (USDA 2003d).

Revenues collected by the district include fees for grazing, and for outfitter and recreation special use permits. Grazing fees collected by the district totaled about \$4,780 in 2000, \$4,580 in 2001, and \$3,880 in 2002. Outfitter-guide permit fees averaged about \$2,450 each year from 2000 to 2002, with incidental recreation event fees of \$80 (USDA 2003d).

Since 2006, the Jicarilla Ranger District's operating budget has averaged \$556,000, but it varies greatly from year to year. A very small portion of the budget is used for road maintenance (about \$2,500 budgeted for 2003 and about \$5,750 in 2002) (USDA 2003d). The gas industry directly pays for the maintenance of nearly all roads on the district. The roads committee has cooperative responsibility for most forest roads, spending about \$180,000 annually for their upkeep. Short road segments that serve single wells are generally maintained by the company holding the lease. The operating budget and roads committee funds generally support services provided by local contractors, mostly based in San Juan County in the tri-city area.

Environmental Consequences

The economic and social environment of the study area is dependent upon the natural gas industry. Subsequently, motor vehicle use of the transportation system is almost entirely from gas development activities. Closing 14 miles of road to the public in both alternatives would not affect gas activities, since use of these roads to access leases would continue. Gas activities involving motor vehicles would not be affected by adding 5 miles of road to the transportation system or removing the corridors in alternative 2, since gas companies strictly travel on (both system and non-system) roads to reach wells, pipelines, and compressor stations. Consequently, changes to travel management on the Jicarilla Ranger District under alternatives 1 or 2 would have no effect on the socio-economics of Rio Arriba and San Juan counties.

Cumulative Effects

A travel management decision will not change the social makeup of the study area nor preclude access to the National Forest System lands. Subsequently, since there are no direct or indirect effects from either alternative to the social and economic environments of Rio Arriba and San Juan counties, there would be no cumulative effects. The public would still be able to visit the Jicarilla Ranger District to collect wood, watch wild horses, camp, and hunt.

Environmental Justice

Regulatory guidance for the evaluation of environmental justice includes both Executive Orders 12898 and 13045. Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations—states "...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 in the United States... (U.S. 1994)."

Executive Order 13045 - Protection of Children from Environmental Health Risks and Safety Risks - addresses the vulnerability and sensitivity of children stating, "...each Federal agency

shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks (U.S. 1997).”

Affected Environment

The Council on Environmental Quality (CEQ) defines a minority as individuals belonging to one of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (CEQ 1997). The Jicarilla Ranger District is located within Rio Arriba County, San Juan County—the center for economic stability in the region—is immediately west of Rio Arriba County. Percentages of American Indians comprise considerably higher proportions of Rio Arriba County and San Juan County compared to New Mexico and the United States. This is primarily due to the location of Jicarilla Apache Nation and the Navajo Nation in Rio Arriba and San Juan counties, respectively. The Jicarilla Apache Nation is east of the district, with several roads providing access between the two areas. The Jicarilla Ranger District is valued by local American Indians for its sacred and ancestral properties and as a place for gathering traditional or sacred items.

Executive Order 12898, a low-income population is determined using annual statistical poverty thresholds from the U.S. Census Bureau (CEQ 1997). Estimates from 1999 indicate that a higher percentage of the populations of both Rio Arriba and San Juan Counties lived below poverty level as compared with the United States and New Mexico. The percentage of children under the age of 18 below poverty level in San Juan County was the highest of the four geographic areas assessed, and the percentages for New Mexico, Rio Arriba County, and San Juan County are all considerably higher than for the United States.

The 2000 population estimates show the percentage of children under 18 years of age in San Juan County (32.6 percent) was greater than in Rio Arriba County (28.6 percent). In addition, the proportion of children under 18 years of age in San Juan County was higher than the entire state of New Mexico and the United States

Environmental Consequences

Rio Arriba and San Juan counties have populations that are comprised of a higher percentage of minorities, children, and persons living below poverty level than either the United States or New Mexico. The designated road system open to motor vehicle use by the public would decrease by 14 miles (about 7%) from the existing designated transportation system of 202 miles. Under alternative 1, the continued use of corridors (except along 4 miles of road) would still allow motor vehicle access to nearly 98 percent of existing dispersed camping areas. The removal of 4 miles of corridor would have little change on the retrieval of a downed big game animal by an individual who has legally taken the animal.

Alternative 2 would remove corridors and add 5 miles of road in areas where there currently is historic dispersed camping. Before showing these routes on the MVUM and making them available for public motor vehicle use, heritage resource surveys would be required. If historic properties are discovered in any of the additional routes proposed, the route would be dropped or potential impacts to the properties would be mitigated. Managed access under alternative 2 would significantly restrict public access by motor vehicle to historic dispersed campsites in the short term. In the long term, approximately 214 existing dispersed campsites would be available by

motor vehicle. Under this alternative, the removal of all corridors would prohibit motor vehicle use to retrieve a downed big game animal by an individual who has legally taken the animal. This would have an impact on hunters, especially those who are unable to pack out a downed elk or deer without the use of a motor vehicle.

Other recreational activities would continue to occur under both alternatives. Implementing the changes to the designated transportation system under either alternative would have no disproportionate effects on minority, low income, or children populations in San Juan or Rio Arriba counties.

Cumulative Effects

All of the impacts considered have no potential to contribute incrementally toward cumulative impacts on minority and low-income populations, as well as children, on a regional basis when recreation, and other uses of public land. Therefore, any potential impacts to environmental justice considerations would be relatively small and immeasurable.

Recreation

The Jicarilla Ranger District is located within the Four Corners Region that includes portions of New Mexico, Utah, Arizona, and Colorado. Recreational attractions of the Four Corners Region include Monument Valley Navajo Tribal Park (Utah), Grand Canyon (Arizona), Mesa Verde (Colorado) National Park, and Navajo Lake State Park and Chaco Culture National Historic Park (New Mexico). Popular recreational activities in the region include camping, hiking, hunting, shooting, fishing, wildlife viewing, sightseeing, winter sports, horseback riding, mountain biking, motorized sports, rock climbing, kayaking, and rafting (USDI 2003).

Affected Environment

Despite the region's popularity for a variety of recreational activities, the Jicarilla Ranger District is not considered a primary destination for recreational uses. The exception is turkey and big game hunting, which accounts for an estimated 15,900 recreational visitor days (RVDs) per year on the district. Camping sites, motorized dispersed and dispersed, within the district receive approximately 1,600 RVDs annually, which is primarily attributable to hunters. The small amount of recreation not attributable to hunting is estimated at an additional 800 and 900 RVDs from dispersed camping and day use, often for wild horse or wildlife viewing.

Buzzard Park and Cedar Springs campgrounds are no longer maintained by the district, but are open from May through November for dispersed camping (USDA n.d.). No recreation trails are designated on the district, although company roads accessing natural gas wells often serve as informal trails.

The Jicarilla Ranger District is a popular hunting location for elk and deer, mainly because it contains more forest and woodland ecosystems than in most of the region. Hunting is an important part of the lifestyle for both local residents and those outside the area. Designated roads open to public motor vehicle use allow for recreational accessibility for hunters and other users of the district.

The 202 miles of designated road are managed as a maintenance level 2, which means they are managed for use by high clearance vehicles. Traffic by the public is normally light, usually consisting of one or a combination of administrative, permitted, dispersed (scattered locations),

recreational, or other specialized uses. Traffic management strategies have been to discourage passenger cars and to accept high clearance vehicles (FSH 7709.58, 12.3). There are no designated motorized trails or areas open to cross-country travel on the Jicarilla Ranger District.

Forest plan amendment #9 includes a 300-foot corridor along roads open to motor vehicle use on the Jicarilla Ranger district. The corridor designation permits motor vehicle use within 300 feet of a designated open road for the purpose of dispersed camping or big game animal²² retrieval. The corridor is fairly well accepted by the public and adhered to.

The majority of the dispersed camping areas on the Jicarilla Ranger District are immediately adjacent to roads open to public motor vehicle use or within existing 300-foot corridors. Over the past several years, district employees have traversed the current system roads and located dispersed sites on the ground by using one or more of the following criteria: 1) evidence of an unauthorized two-track road; 2) rock assembled into a fire ring; 3) burned wood in a fire ring; 4) game pole suspended above the ground; or 5) other evidence of use as a camping location. Approximately 218 sites have been found within 300 feet of open roads. Most of the areas are found in the northern part of the district (north of US 64) in ponderosa pine or piñon-juniper woodland. All of the dispersed sites are in dry areas, with no water available.

For the most part, motor vehicle use within corridors is limited to when deer and elk hunting seasons occur on the district (August to January). Hunters pull off a designated road and camp from their vehicles. A hunter may subsequently retrieve an animal (elk or deer) using a motor vehicle. Forest Road 310 and its corridor receive the most use. Portions of the southern part of the district are used in the later hunts, depending on snow conditions. Outside of hunting season, motorized use of corridors for dispersed camping rarely occurs, as gas development activities (well drilling, traffic, pipeline installation, and the sound of compressors) are not conducive to the conditions sought by recreational campers.

Environmental Consequences

Current forest plan direction prohibits cross-country travel by motor vehicles on the district, but allows motor vehicle use within a 300-foot corridor for dispersed camping and big game retrieval. Neither alternative changes the cross-country travel prohibition. Alternative 1 would close 14 miles of road and 4 miles of 300-foot corridors of the current open road system. Alternative 2 would close the same 14 miles of open road and all corridors (184 mi) currently designated on the district. In addition, alternative 2 would add 5 miles (75-90 road segments, averaging 120 feet) of road segments to the current road system. These segments are currently unauthorized two-track road extending to dispersed camping areas.

No dispersed campsites are found along the 14 miles of road to be closed to the public under both alternatives. This is likely because the road segments run through fairly flat, open grassland and cross private land or access the Jicarilla Apache Nation. The corridors are also not where deer or elk are found during the hunting season. Under alternatives 1 and 2, there would be minimal effects to recreationists, particularly hunters, from closing 14 miles to public motor vehicle use. These roads are not used for dispersed camping and are not necessary for hunting or driving to a recreational destination. They would still remain open for the purpose of natural gas operations.

²² “Big game” retrieval in the context of motor vehicle use in corridors on the Jicarilla RD refers only to elk and deer.

Recreationists would still have 188 (alternative 1) and 193 miles (alternative 2) of road available to access the Jicarilla Ranger District.

Alternative 1 would prohibit motor vehicle use within the existing corridors along 4 miles of road. These corridors are not considered popular areas for big game hunters, since only 4 dispersed campsites have been identified, less than 2 percent of all dispersed campsites on the district. In addition, people would still be able to park alongside the road and then walk in to wherever they want to set up camp. Other than along 4 miles of road, alternative 1 would not change motor vehicle access to 214 dispersed campsites, within 300 feet of an open road, and dispersed camping by motor vehicle would still be permitted along the roadside. Recreationists would likely not notice a change in their camping and big game retrieval experience, if motor vehicle use for dispersed camping and the retrieval of a downed elk or deer were eliminated from these 4 miles, under alternative 1.

Alternative 2 would remove 184 miles of corridors on NFS lands, but add 5 miles of unauthorized two-track road (70-90 segments) in areas where there is historic dispersed camping. These additional miles would provide motor vehicle access to approximately 214 existing dispersed sites, within 300 feet of system roads on the district. Managed access under alternative 2 would limit parking for dispersed camping along the roadside. With the exception of 4 campsites in MSO PACs and goshawk PFAs, alternative 2 would provide access by motor vehicle to around 214 dispersed campsites on the district and would eliminate motorized big game retrieval on the district. Since the Jicarilla Ranger District supports popular elk and deer hunting units, alternative 2 would reduce motorized access for dispersed camping and severely impact the motorized big game retrieval aspect of the overall hunting experience.

Cumulative Effects

The effects of alternative 1, along with the effects of gas development activities, would not be noticeable to the recreationist visiting the Jicarilla Ranger District. Campers and hunters would still be able to park their motor vehicles within almost all of the currently designated corridors and get away from the heavy traffic caused by the natural gas development industry.

Alternative 2 would have cumulative effects related to recreation. By limiting motor vehicle access for dispersed camping to the sides of the road (no corridors) and roads and well pads for gas development continue to be constructed and maintained, the recreational experience during hunting season would be negatively affected. There would be fewer areas in which to find a quiet place to camp with a motor vehicle, and parking along the side of a road, with heavy traffic from trucks and other large vehicles would substantially impact a quality recreational experience and cause it to be less safe.

Law Enforcement

The Jicarilla Ranger District has access to law enforcement officers, special agents, forest protection officers, and officers from the New Mexico Department of Game and Fish. These different individuals all have the ability to enforce regulations related to travel management. The New Mexico Department of Game and Fish enforce concurrent regulations governing off road vehicle travel.

Off-road vehicle travel has been regulated since the mid-1990's following adoptions of two forest plan amendments. Compliance with those regulations and amendments has limited off-road travel

to portions of a corridor extending 300 feet on each side of designated roads. Motor vehicle use within the corridor has been limited to dispersed camping and big game retrieval.

Law enforcement is expected to continue at the current level or be increased when possible. Saturation patrols have been conducted in the past and are expected to be continued in the future. Alternatives 1 and 2 will have the same level of law enforcement. There are no direct or indirect effects from the current level of law enforcement. There are no cumulative effects when there are no direct or indirect effects.

Implementation

Implementation is expected to commence following a decision on the designated motorized travel system open to the public. Route signage, educational signs, and on the ground educational contacts are expected to be part of the implementation. Volunteers will be encouraged to help with the implementation of the decision.

Rationale for a Non-Significant Forest Plan Amendment

In order to be consistent with travel management rule direction, the Carson forest plan would need to be amended if either alternative 1 or 2 is implemented. The National Forest Management Act (NFMA, (16 U.S.C. 1604 (f) (4))) requires forest land and resource management plans

...be amended in a manner whatsoever after final adoption and after public notice and if such plan amendment would result in a significant change in such plan, in accordance with subsections (e) and (f) of section 6 and public involvement comparable to that required by subsection (d) of this section.

The regulations guide development, revision, and amendment of land management plans. The 2000 planning regulations (36 CFR 219.14 (b)(2)) allow use of the planning regulation provisions in effect before November 9, 2000, which were promulgated in 1982. When a decision is made, the responsible official has elected to amend the Carson forest plan using the 1982 planning regulations. On amending a forest plan, the 1982 planning regulations state,

If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures (36 CFR 219.10(f)(1982)).

Under either alternative, a plan amendment for Travel Management on the Jicarilla Ranger District would not be significant. The change is aimed at using language and terminology that is consistent with the 2005 travel management rule. The amendment would not be significant because it: (1) would not make any changes to standards and guidelines for the rest of the Carson National Forest; (2) would not alter the multiple-use goals and objectives for long-term land and resource management on the Carson National Forest; (3) would not increase any one type of output that would trigger an increase or decrease in another; (4) does not include a demand for goods and services not discussed in the forest plan, and; (5) would not forego opportunity to achieve a forest output in later years.

Chapter 4 – Agencies and Persons Consulted

Tribes

Comanche Tribe of Oklahoma
The Hopi Tribe
Jicarilla Apache Nation
The Navajo Nation (Dine')
Pueblo of Jemez
Pueblo of Nambe
Pueblo of Okhay Owingeh
Pueblo of San Ildefonso
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Tesuque
Pueblo of Picuris
Pueblo of Pojoaque
Southern Ute Tribe
Pueblo of Zuni
Ute Mountain Ute Tribe

Government Agencies

NM Department of Energy Minerals &
Natural Resources
NM Department of Game and Fish
NM Environment Department
NM Oil Conservation Division
NM State Engineers Office District 1
Rio Arriba County
Taos County
US Army Corp of Engineers-Albuquerque
District
USDI Fish Wildlife Service-NM Ecological
Services

Groups

Amigos Bravos
Blue Ribbon Coalition
Carson Forest Watch
Center for Biological Diversity
Forest Council
Forest Trust
Jicarilla Watch
NM Cattlegrowers Association
NM Wilderness Alliance
Northern NM Stockman's Association
San Juan Citizens Alliance
Sierra Club-Northern NM Group
Southwest Center for Biological Diversity
Wild Earth Guardians
Wildlife Federation-Albuquerque
The Wilderness Society
Wild Watershed

Industry

Conoco Phillips
Energen Resources
Schalk Development
Synergy Operating, LLC.
Williams Production
XTO Energy

Individuals

3,600 members of the public participated during scoping and 30-day comment. Their names are in the project record.

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Glossary

Area	A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district.
All terrain vehicle	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.
Best management practice (BMP)	Application of the best available demonstrated control technology, processes, measures and operating methods that are socially, economically and technically feasible for controlling soil loss or improving water quality.
Big game	Those species of large mammals normally managed as a sport hunting resource. On the Jicarilla Ranger District, big game retrieval includes only elk and deer.
Big game winter habitat	Habitat used by big game during the winter months to provide food and shelter and which generally limits the population. For planning purposes, areas of land where 75 percent of the individuals in a population can be expected to be found during average winter (snowfall and temperature) conditions from December 15 through April 15.
Corridor	A set distance from a route where motorized vehicles are authorized to be used (36 CFR 212.51 (b)).
Decibel (dB)	Sound pressure level measurement 85dB is considered the threshold where hearing loss can occur.
Designated road, trail, or area.	A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map.
Dispersed camping	Camping outside and away from a designated campground.
Forest plan	A land and resource management plan developed to meet the requirements of the National Forest Management Act of 1976 that guides all resource management activities and establishes management standards and guidelines for the National Forest System lands of a given national forest. See National Forest Management Act (NFMA).
Forest Road (FR) or Trail	A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.
Forest transportation system	The system of National Forest System roads, National Forest System trails, and airfields on National Forest System lands.
Fugitive dust	Airborne particles emitted from any source other than through a stack or a vent.

Grazing permittee	An individual who has been granted written permission to graze a specified number, kind, and class of livestock for a specific period on a grazing allotment.
Maintenance level 1	These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs
Maintenance level 2	Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.
Maintenance level 3	Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
Maintenance level 4	Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
Maintenance level 5	Assigned to roads that provide a high degree of user comfort and convenience.
Managed access	Designation of routes to dispersed camping sites in lieu of designation of a corridor. Motor vehicle use is limited to the designated route
Management indicator species	Those species selected in the planning process to monitor the effects of planned management activities on viable populations of all wildlife and fish species, including those species that are socially or economically important.
Migratory birds	Species that migrate north each spring to breeding grounds in the United States and Canada then fly south to spend the bulk of the year in Mexico, Central or South America. Many common songbirds are neotropical birds.
Minimum road system	The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan, to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance. (36 CFR 212.5)
Motor vehicle	Any vehicle which is self-propelled other than: (1) a vehicle operated on rails; (2) any wheelchair or mobility device, including one that is battery powered, that is solely designed 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 roads, trails, and areas on an administrative unit or a Ranger District of the National

	Forest System.
Motorcycle	A two-wheeled motor vehicle on which the two wheels are not side-by-side but in line.
National Forest System (NFS) road	A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other public road authority.
National Forest System (NFS) trail	A forest trail other than a trail which has been authorized or by a legally documented right-of-way held by a State, county, or other local public road authority.
National Environmental Policy Act (NEPA)	An act that requires the analysis of the effects of Federal undertakings in order to promote efforts to prevent or eliminate damage to the environment, stimulate the health and welfare of man, and enrich the understanding of the ecological systems and resources important to the Nation.
National Forest Management Act (NFMA)	A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires preparation of forest plans.
Off-highway vehicle	Any motor vehicle designated for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, march, swampland, or other natural terrain.
Open to public travel	The road that is available, except during scheduled periods, extreme weather, or emergency conditions; passable by four-wheeled standard passenger cars, and open to the general public for use with out restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. (23CFR 460.2.c) (Generally Forest Service maintenance levels 3, 4, & 5 roads are operated as open to public travel)
Passenger car	An automobile designed to be used on aggregate/gravel surfaced or paved roads and highways.
Post-fledgling area (PFA)	Post fledging family area. A designated area around a known goshawk nesting site or high use area (about 600 acres) that would be expected to be the primary activity area for a pair of goshawk raising fledglings.
Private road	A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.
Protected activity center (PAC)	An area of not less than 600 acres around the activity center of the Mexican spotted owl using boundaries of known habitat polygons and/or topographic features.
Public road	A road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C 101 (a)).
Road analysis plan (RAP)	The document developed during the roads analysis process. A roads analysis is designed to identify the components of an optimum road system. The primary objective of this

	report is to provide line officers with information necessary to implement road systems that are efficiently managed, have minimal ecological effects, and are in balance with available funding. The analysis does not allocate funds nor does it finalize issues pertaining to the Carson National Forest road system.
Recreational visitor day (RVD)	One recreational visitor day represents one visitor for a 12-hour stay.
Road	A motor vehicle routes over 50 inches wide, unless identified and managed as a trail.
Road construction or reconstruction	Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.
Road decommissioning	Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).
Road maintenance	Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).
Route	A road or trail.
Sensitive species	Those species of plants or animals that have been recognized and listed by the Regional Forester as “sensitive” meaning that they may need special management to prevent their listing on Federal or state lists.
Temporary road or trail	A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas.
Threatened, endangered, or sensitive	Those plant or animal species identified by the Secretary of Interior as threatened, endangered or sensitive in accordance with the Endangered Species Act of 1973, as amended.
Trail	A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.
Trailers	A vehicle designed to be pulled by a automobile, truck, or tractor
Travel analysis	Travel analysis assesses the current forest transportation system and identifies issues and assesses benefits, problems, and risks to inform decisions related to identification of the minimum road system per 36 CFR Part 212.5(b)(1) and designation of roads, trails and areas for motor vehicle use per 36 CFR Part 212.51. Travel analysis is not a decision-making process. Rather, travel analysis informs decisions relating to administration of the forest transportation system and helps to identify proposals for changes in travel management direction

Travel analysis process (TAP)	TAP is not a National Environmental Policy Act (NEPA) process, rather it is an integrated ecological, social, and economic approach to transportation planning, addressing both existing and future roads. TAP is a broad-scale analysis that encompasses the entire forest. TAP is a comprehensive undertaking to match the transportation system to the desired future condition, as determined through existing direction, public input, and agency resource specialist suggestion. The outcome from this TAP is a set of proposals.
Travel management atlas	An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.
Unauthorized road or trail	A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.
