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Environmental Assessment for Travel Management on the Magdalena Ranger District

Cibola National Forest; Catron, Sierra, and Socorro Counties, New Mexico

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Contents

List of Figures

List of Tables

List of Acronyms

AMU ..... antelope management units
ATV ..... all-terrain vehicle
BBS ..... breeding bird survey
BLM ..... Bureau of Land Management
BMP ..... best management practices
CEQ ..... Council on Environmental Quality
CFR ..... Code of Federal Regulations
CHU ..... critical habitat unit
CWA ..... Federal Clean Water Act
DEIS ..... draft environmental impact statement
EA ..... environmental assessment
EIS ..... environmental impact statement
EO ..... Executive Order
EPS-HDT ..... Economic Profile System-Human Dimension Toolkit
ESA ..... Endangered Species Act
EVC ..... existing visual condition
FEIS ..... final environmental impact statement
FPO ..... forest protection officer
FR ..... Federal Register
FS ..... Forest Service
FSH ..... Forest Service Handbook
FSM ..... Forest Service Manual
FWS ..... Fish and Wildlife Service
GIS ..... geographic information system
GMU ..... game management unit
HUC ..... hydrologic unit code
IBA ..... important bird areas
Infra ..... infrastructure database
IRA ..... inventoried roadless area
LEMARS ..... Law Enforcement Management Attainment Reports System

TES..... terrestrial ecosystem survey
TEU ..... terrestrial ecological units
USBEA..... U.S. Bureau of Economic Analysis
USDA ..... U.S. Department of Agriculture
U.S. ..... United States
USC ..... United States Code
UTV..... utility terrain vehicle
VAC ..... visual absorption capability
VMS ..... Visual Management System
VQO ..... visual quality objectives
WMA..... wildlife management area

Chapter 1. Purpose and Need

Document Structure

This environmental assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) regulations contained in 40 CFR 1500–1508, Agency policy in the Forest Service Handbook 1909.15, and other relevant Federal and State laws and regulations. Additional documentation that supports this EA may be found in the project record, located at the Magdalena Ranger District office in Magdalena, New Mexico.

This environmental assessment describes the proposed project for designating National Forest System roads, trails, and areas for motor vehicle use on the Magdalena Ranger District of the Cibola National Forest and Grasslands. The project will result in publication of a motor vehicle use map (MVUM). After the MVUM has been released, motorized travel off the designated system would be prohibited unless authorized in writing. By undertaking this project, the Magdalena Ranger District intends to comply with the Travel Management Rule to provide access to the district and to protect forest resources, such as water quality, wildlife and fish habitat, cultural resources, and rare plants. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized as follows:

- **Chapter 1. Purpose and Need:** This chapter includes information on the history of the project proposal, the purpose of and need for the project, and the Agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- **Chapter 2. Alternatives:** This chapter provides a more detailed description of the Agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental effects of implementing the proposed action and other alternatives. Within each section, the affected environment is described first, followed by the effects of the alternatives.
- **Chapter 4. Consultation and Coordination:** This chapter provides a list of preparers and agencies consulted during development of the environmental assessment.
- **Literature Cited**
- **Glossary**
- **Appendix**. The appendix consists of multiple parts that provide more detailed information to support the analyses presented in the environmental assessment.

Background

On November 9, 2005, the Forest Service published the final regulations governing off-highway vehicles (OHVs) and other motor vehicle use on national forests and grasslands (Travel Management; Designated, Routes and Areas for Motor Vehicle Use, Federal Register / Vol. 70, No. 216/36 CFR Parts 212, 251, 261, and 295, referred to as the Travel Management Rule). The Travel Management Rule was developed in response to the substantial increase in the use of off-

highway vehicles (OHVs) on National Forest System lands. The increasing numbers of motor vehicles on National Forest System lands and the advancement in their capabilities have resulted in escalating impacts to the forest's natural and cultural resources. The magnitude and intensity of motor use has increased to the point that the intent of Executive Orders 116544 and 11989 (precursors to the Travel Management Rule aimed at protecting natural and cultural resources and user safety) cannot be met while still allowing unrestricted motorized cross-country travel. The Travel Management Rule can be found at: http://www.fs.fed.us/recreation/programs/ohv/final.pdf

The Travel Management Rule requires each national forest and grassland to provide for a system of National Forest System (NFS) roads, NFS trails, and areas designated for motor vehicle use. Designation will include class of vehicle and, if appropriate, time of year for motor vehicle use. Designated routes and areas will be identified on a motor vehicle use map (MVUM). After the routes have been designated and identified on a MVUM, motor vehicle use will be prohibited off the designated system. The following vehicles and uses are exempted from these designations:

- Aircraft;
- Watercraft;
- Over snow vehicles;
- Limited administrative use by the Forest Service;
- Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;
- Authorized use of any combat or combat support vehicle for national defense purposes;
- Law enforcement response to violations of the law; and
- Motor vehicle use that is specifically authorized under written authorization issued under Federal law or regulation (36 CFR 212.51 (a)).

In designating routes, the responsible official may include in the designation the limited use of motor vehicles within a specific distance of specific designated routes and, if appropriate, within a certain time period, solely for the purpose of dispersed motorized camping or the retrieval of a downed big game animal by an individual who has legally taken that animal (36 CFR 212.51(b)).

The Forest Service recognizes motorized use on national forests and grasslands as a legitimate and appropriate way for people to enjoy these lands—in the right places and with proper management, as described in the preamble to the Travel Management Rule on page 68264 of Volume 70 of the Federal Register.

The Magdalena Ranger District of the Cibola National Forest and Grasslands is located in west-central New Mexico. The Magdalena Ranger District is located in parts of Catron, Sierra and Socorro Counties. The district's lands are widely dispersed and are comprised of four distinct mountain ranges: the Bear/Gallinas Mountains; the Datil Mountains; the Magdalena Mountains; and the San Mateo Mountains. There are approximately 797,569 acres within the district boundary, with approximately 65,862 acres that are private or other governmental in-holdings.

The project area that will be analyzed under the Travel Management Rule, excluding private inholdings, wilderness areas, and the Langmuir Research Site, is 637,616 acres (acres are rounded to the closest whole number).

The Magdalena Ranger District transportation system serves a variety of administrative and public purposes. Timber harvesting, livestock grazing, fire management, law enforcement,

facilities management, and recreation are all important activities that rely on the forest transportation system to be successful.

There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District that are currently open to motorized travel. These system roads are managed for various types of vehicles which include standard passenger vehicles and high-clearance vehicles, such as pickup trucks and sport utility vehicles. The mileages listed here and used throughout the document were derived from the travel analysis process (TAP) and modified to reflect the most recent information available.

Motorized cross-country travel is allowed by the "Cibola National Forest Land and Resource Management Plan," amended 1985 (Forest Plan) except for the Apache Kid Wilderness and Withington Wilderness, which are closed to all motorized and mechanical uses. Motorized travel is restricted to the existing road system within the Langmuir Research Site. There are no trails designed or maintained for motorized use on the district.

Some National Forest System (NFS) roads on the district, including system and unauthorized roads, are redundant routes that access the same area. Others are poorly located, provide no obvious access to forest resources, or are causing natural and/or cultural resource impacts. Since the district is open to motorized cross-country travel, the problem of road redundancy is augmented by the continued creation and use of unauthorized roads. Road redundancy is most common in the southern part of the San Mateo Mountains.

Some roads decommissioned by the Forest Service continue to be used by the public and often act as connector roads between open system roads. For the purpose of this document, decommissioned roads are defined as roads that were removed from the NFS road system at some time in the past but many continue to receive some level of use. These roads may or may not have been physically closed when they were decommissioned.

The Forest Service lacks several legal rights-of-way through private lands bordering or within the district boundary, where access is not available for forest use and management. The lack of legal rights-of-way restricts access to some NFS roads and developed recreation areas. This is particularly true in the Magdalena and San Mateo Mountains where the lack of rights-of-way through private land makes some of the trailheads inaccessible by motor vehicles.

The district has experienced a proliferation of unauthorized routes as a result of the increased recreational use of OHVs, especially during the hunting season and because the district is currently opened to motorized cross-country travel. Motorized dispersed camping (camping in general forest areas outside of developed campgrounds), is a popular activity and commonly associated with hunting. The unregulated use of motorized cross-country travel has the potential to cause damage to soils, water quality, wildlife habitat, and archaeological resources. It may also cause conflict with existing or proposed recreational uses such as hiking. A designated and managed system of routes for motor vehicle use and motorized dispersed camping is needed to address the above concerns as well as comply with the Travel Management Rule.

The Magdalena Ranger District will continue to provide access to the forest for nonmotorized activities such as camping, hunting, hiking, mountain biking, and horseback riding and will also continue to provide a road system for motorized access, although the routes available for motorized use may change. The district staff recognizes the ties the American Indian tribes and local communities have to the district and the need to maintain their cultural and traditional uses.

The legal gathering of forest products will be maintained using roads designated for motorized use or through other written authorization as allowed by the Travel Management Rule.

Previous Decisions

The Travel Management Rule directs that "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 National Forest System lands for motorized use" (36 CFR 212.50(b)).

Many roads currently available for motorized use are open to all motorized vehicles and will not be changed. Only the changes to the current system are subject to the National Environmental Policy Act (NEPA) per 36 CFR 212.50(b).

There are 44,530 acres within the Apache Kid Wilderness and 19,075 acres within the Withington Wilderness. Motorized and mechanized uses are prohibited in the Apache Kid Wilderness and Withington Wilderness. Congress designated both wilderness areas in 1980 in the New Mexico Wilderness Act. The 1964 Wilderness Act prohibits the use of motorized or mechanical transport or equipment in designated wilderness areas. As a result, the wilderness areas are outside of the project analysis area. This designation will not be revisited during this project because it complies with the Travel Management Rule.

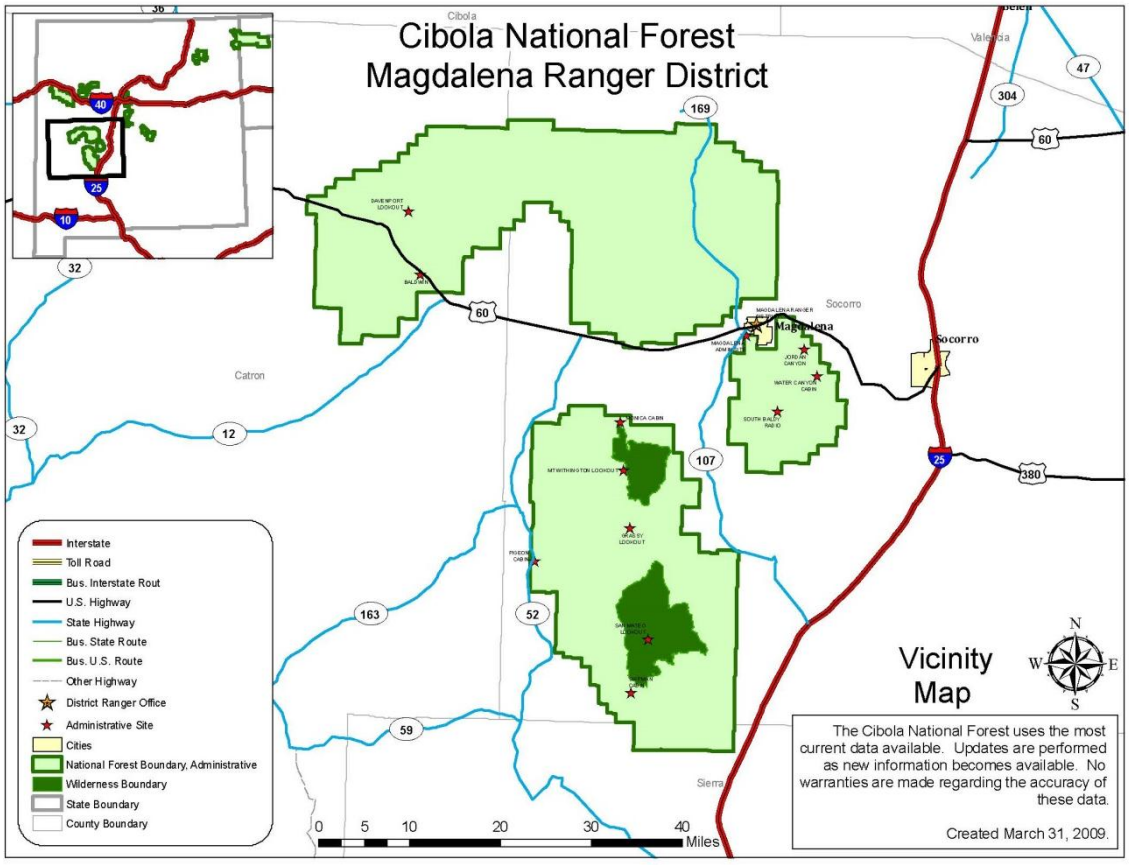

Figure 1. Magdalena Ranger District vicinity map

There are 30,606 acres within the Langmuir Research Site, located in the Magdalena Mountains. Motorized and mechanical uses are restricted to the existing designated road system within the Langmuir Research Site through Public Law 96–550, December 19, 1980: "Roads shall be limited to those necessary for scientific research activities and other reasonable activities as determined by the Secretary. Motor vehicle use shall be restricted to roads designated in the plan." The area is closed to motor vehicle use off designated roads (Forest Plan, page 111). This designation will not be revisited during this project because it complies with the Travel Management Rule.

Seasonal road closures may be used to prevent damage to resources and routes during sensitive times of the year, such as winter or the monsoon season. Since closures are weather dependent, they will not be included on the MVUM. Closures will be posted in the field when they are in effect.

Purpose of and Need for Action

There is a need for improving the management of motorized vehicle use on National Forest System lands within the Magdalena Ranger District of the Cibola National Forest and Grasslands in accordance with the provisions of the Travel Management Rule at 36 CFR parts 212, 251, and 261. The Travel Management Rule requires the district to provide for a system of National Forest System roads, trails, and areas designated for motor vehicle use. There is a need to comply with the Travel Management Rule, 36 CFR 261.13, which requires that forests prohibit motor vehicle use off the system of designated motorized routes. There is a need to amend the Forest Plan to be compliant with the Travel Management Rule (see appendix A).

Proposed Action Development

The district hosted several public workshops in 2010 during development of the proposed action. These included community workshops in Magdalena, Reserve, Datil, Monticello, Socorro, and Truth or Consequences, New Mexico, and meetings with Native American tribes.

During the community workshops, the public was asked to clearly identify routes and areas that they use and consider important to their enjoyment of the district. Hard copy maps displaying all of the system routes and all known unauthorized routes were provided to participants at each of the community workshops. Individuals marked the routes and areas they use on these maps and provided a brief description of what uses they associated with these locations.

Information about travel management, maps, public workshops, and project contacts was made available online at: http://www.fs.usda.gov/detail/cibola/home/?cid=STELPRDB5262323

The maps used at the community workshops were available online for people to download. These resources allowed people who could not attend community workshops to provide input during development of the proposed action.

The ID team weighed public input and natural and cultural resource management needs and concerns that were identified during the travel analysis process (TAP) to develop the proposed action.

- In situations where public input was consistent with the recommendations of the TAP, that area or travel route was brought forward into the proposed action.

- In some instances, public input did not align with the recommendation of the TAP. In these cases, mitigation measures were developed to address the resource concerns and the route was brought forward into the proposed action.
- In some instances, the route was dropped from consideration if mitigation measures could not be identified.
- Some routes were dropped from consideration if there was no public input to support designation and the TAP recommendation did not support designating the route.

The following objectives were developed based on public input and natural and cultural resource concerns identified in the TAP. The goal during development of the proposed action was to designate a transportation system that would address most of the following considerations:

- Provide access to valued and popular areas for forest users and meet the transportation needs for managing the national forest.
- Allow for a variety of motorized uses including 4-wheel driving in trucks and/or OHVs.
- Ensure roads are properly located on the landscape to minimize damage to natural and cultural resources. Roads/routes that reduce these impacts would be selected over other roads/routes that access the same areas.
- Ensure motorized dispersed camping is located in areas that can support this use with minimal resource impacts.
- Coordinate with the New Mexico Department of Game and Fish to provide reasonable and accepted access to hunting on the forest while minimizing disturbance to habitat.
- Minimize illegal activities and trespass through public education and law enforcement, particularly in problem areas.

The existing conditions of each resource area in relationship to the current transportation system are summarized in chapter 3. Specialist reports provide detailed descriptions of existing conditions by resource and are available in the project record.

Proposed Action

This is the proposed action that was presented in the "Scoping Report for the Magdalena Ranger District Travel Management Proposed Action" dated June 2010. Changes were made as a result of additional field review. Please see the detailed description of the proposed action in chapter 2.

The Magdalena Ranger District proposes the following actions to implement the Travel Management Rule.

1. Restrict 400.5 miles of open National Forest System Roads (NFSR) to administrative use only. These roads would not be designated for motorized use and would not be displayed on the motor vehicle use map (MVUM).
2. Designate a 600-foot-wide corridor (300 feet on either side) of 374.4 miles of designated roads solely for the purpose of dispersed camping.
3. Reopen 14.7 miles of closed system roads (maintenance level 1) for all classes of vehicles.

4. Construct 4.5 miles along five segments of roads to reroute around private land where the Forest Service does not have legal access. Designate open to all classes of vehicles.
5. Add 13.8 miles of unauthorized routes to the system as maintenance level 2 and designate for all classes of motor vehicles. These roads are needed to provide access to the forest, to meet resource and recreation management objectives, and to provide for an efficient transportation system.
6. Acquire approximately 25.7 miles of rights-of-way along 25 road segments located on private property within the Magdalena Ranger District boundary. The road segments will not appear on the MVUM until rights-of-way are obtained.
7. Amend the Forest Plan to remove the variable road density guidance for each management area and its associated analysis areas. Change the road density guidance to a maximum of 1.9 miles of roads per square mile average for Management Areas 11, 12, 13, and 16 on the Magdalena Ranger District.
8. Amend the Forest Plan to remove outdated timeframes for performing road construction, reconstruction, maintenance, or obliteration of roads. To provide for consistency between the plan and Travel Management Rule, change or delete the standards/guidelines for the activities listed above to reflect the designated system as shown on the MVUM.

When combined with previous decisions, these proposed changes would result in a motorized system with 843.9 miles of designated National Forest System roads. Of these, the limited use of motor vehicles within 300 feet either side of 374.4 miles of road would be allowed solely for the purpose of dispersed camping. Motorized big game retrieval off of the designated system would not be authorized.

Decision Framework

The responsible official will decide on a motorized transportation system that provides for motorized travel on the Magdalena Ranger District. This decision will include:

- Which system of roads, trails, and areas to designate.
- Which motor vehicle classes will be allowed on specific roads and trails.
- What special seasonal or timing restrictions, if any, will be applied to specific routes.
- Whether or not to allow dispersed motorized camping and, if so, under what conditions.
- Whether or not to allow motorized big game retrieval and, if so, under what conditions.
- Whether or not to approve proposed road routes that would address the lack of rights-of-way across private property.
- What mitigation and/or monitoring measures should be implemented as part of the selected alternative.

Linked to this decision would be a nonsignificant forest plan amendment to provide direction that is consistent with the Travel Management Rule.

Public Involvement

The Magdalena Ranger District travel management interdisciplinary team (ID team) initiated a collaborative process in January 2010 to inform the public about the travel management planning

process. Early in the process, the Cibola National Forest entered into an agreement with the U.S. Institute for Environmental Conflict Resolution (USIECR) to secure assistance in the collaborative process design and implementation.

The process began with USIECR and the travel management ID team completing assessments of internal and external stakeholders. The Cibola National Forest entered into cooperating agency memorandums of understanding with Catron and Socorro Counties. The role of these stakeholders was to bring their perspectives on the potential outcomes of the Travel Management Rule to the table and to work collaboratively with other participants to develop recommendations for involving the wider public in motorized designations on the Magdalena Ranger District.

The July 22, 2010, scoping letter and report were sent to 180 people and/or organizations. The scoping letter, report, and maps were posted on the Cibola National Forest's travel management Web page. Press releases were sent to local area media outlets to announce the release of the scoping letter and report. The district hosted public workshops in Magdalena, Datil, Monticello, and Socorro, New Mexico, during the scoping period to present the proposed action and to receive comments from the public. Approximately 113 comments were received.

Tribal Consultation

The Cibola National Forest routinely consults with five American Indian tribes that may have used and may continue to use lands managed by the Magdalena Ranger District for traditional cultural and religious activities. The tribes are the: Pueblos of Acoma and Zuni, Navajo Nation, Mescalero Apache Tribe, and Ft. Sill Chiricahua-Warm Springs Apache Tribe. In addition, the forest consults with the Alamo Band, a chapter of the Navajo Nation.

The tribes and chapter have been consulted regarding the Magdalena Ranger District's travel management planning through both the Section 106 consultation process and the NEPA process. The Travel Management Rule and the forest's planning efforts were first introduced to the tribes in a project consultation letter in February 2009. Consultation meetings were held in 2009 with the Pueblos of Acoma and Zuni, Navajo Nation, and Alamo Band. These meetings were preliminary in nature, as the proposed action had not yet been developed. Ysleta del Sur Pueblo responded to the forest that it had no concerns or objections to the undertaking and further consultation was not needed. The Pueblos of Acoma and Zuni, as well as the Navajo Nation confirmed their interest in consultation on this undertaking. During consultation, the Alamo Band indicated that its tribal members use national forest lands for collecting firewood and piñon nuts, and rely heavily on the sale of the nuts. The Band expressed concern that the travel restrictions would affect the tribal member's ability to drive off-road for resource collection.

The travel management planning process was highlighted in the forest's annual Section 106 project consultation letter that was sent to the tribes in February 2010. In followup consultation, the Navajo Nation indicated that the tribe generally supports the idea of eliminating cross-country travel as it tends to create new roads and damage plants and makes it more difficult for traditional practitioners to conduct their activities in privacy. Attempts were unsuccessful to meet with the Pueblo of Acoma to consult regarding this undertaking in 2010. Consultation with the Pueblo of Zuni was closed in the fall of 2010 due to a lack of funding at the Zuni Heritage and Historic Preservation Office.

The scoping letter and report was sent to all five tribes and the Alamo Band in July 2010. No written comments were received as a result of scoping. Information regarding sites of cultural and religious significance and general traditional use found in this analysis was obtained through consultation over an extended period, and prior to the timeframes for travel management planning on the Magdalena Ranger District.

Information and recommendations from these public and tribal involvement efforts, coordination with representatives from State, local, and tribal governments, and Forest Service ID team resource assessments have been incorporated to develop this proposed action. Further information on all public and tribal involvement efforts may be found in the project record located at the Magdalena Ranger District.

Issues

This section lists the issues identified as a result of the analysis of comments received during the scoping period. Issues are defined as those directly caused by implementing the proposed action. The analysis of major issues and project objectives provides the basis for formulating alternatives that meet the purpose and need of the proposed action and for making a decision on the project (Forest Service Handbook (FSH) 1909.15, Section 12.32–33).

The responsible official, Nancy Rose, Cibola National Forest supervisor (retired), approved the list of issues on November 1, 2010, in compliance with FSH 1909.15, Section 12.32.

1. **Designation of unauthorized (user-created), closed, decommissioned, or new roads and motorized dispersed camping corridors.** There is concern that designating unauthorized, closed, decommissioned, or new roads could have effects to natural or heritage resources. There is also a concern that the designation of motorized dispersed camping corridors will lead to conditions that mimic cross-country travel inside and adjacent to the corridors.
2. **Loss or reduction of motorized recreation opportunities.** There is concern that quality opportunities for motorized recreation, particularly opportunities for wider vehicles including full-size 4x4s, were not fully considered in the proposed action. These concerns included:
    a. Requests for motorized trail opportunities for users desiring more challenges.
    b. Requests for additional designations for full-size vehicles and ATV opportunities.
    c. Requests for a designated OHV recreation area.
3. **Environmental impacts.** There is concern that motorized use designations being proposed could cause environmental impacts including:
    a. **Fragmentation and wildlife disturbance**: There is a concern that adding unauthorized roads to the system and designating them for motor vehicle use may increase fragmentation of wildlife habitat and create additional barriers to wildlife movement. There is also a concern that the addition of unauthorized routes will reduce wildlife habitat capability to sustain populations and increase areas of disturbance.

b. **Impacts to drainage channels**: There is concern that designating routes and constructing new trail segments in areas with intermittent and ephemeral stream channels may impair the ecological and hydrologic function of drainage channels.

c. **Impacts to soils**: Much of the project area has soils that erode easily or have a low bearing strength. These soils are extremely susceptible to compaction and rutting.

d. **Impacts to vegetation**: Concern was expressed about the loss of vegetation due to increased vehicle use and spread of invasive species from seed sources dispersed by the inclusion of unauthorized routes.

e. **Impacts to heritage resources**: There is concern about an increased potential for impacts to heritage resources by designation of unauthorized roads.

4. **Lack of availability of motorized big game retrieval.** There is a concern that not providing designated motorized big game retrieval from designated system roads would impede some hunters' abilities to retrieve big game on the Magdalena Ranger District.

Chapter 2. Alternatives

This chapter describes and compares the alternatives considered for travel management on the Magdalena Ranger District. It includes the following key sections:

- Alternatives described in detail;
- Alternatives considered but eliminated from detailed study;
- Monitoring requirements to avoid or minimize adverse effects.

Consideration of No Action (Baseline Conditions)

Typically, Forest Service environmental assessments include a "no action alternative" as one of the alternatives considered in detail. No action, or no changes from the current condition, serves as a baseline for comparing the effects of other identified action alternatives. Usually selecting no action or making no changes to the existing condition could be a realistic option for the responsible official. In the case of travel management on the Magdalena Ranger District, no action would, in part, provide for continued unrestricted cross-country motorized travel on the district outside of the Apache Kid Wilderness and Withington Wilderness, and on the Langmuir Research Site. This is not consistent with the Travel Management Rule that requires cross-country travel to be in designated areas, which are usually "a discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district." (36 CFR 212.1) Because it is inconsistent with the requirements of the Travel Management Rule and could not be selected by the responsible official, the "No Action Alternative" is not one of the alternatives considered in detail in this assessment.

The Council on Environmental Quality's (CEQ) National Environmental Policy Act implementing regulations does not require a "no action" alternative for an environmental assessment. The CEQ regulations require "the alternative of no action" only in an environmental impact statement (40 CFR 1502.14(d)). The Forest Service NEPA regulations require environmental assessments to contrast the effects of action alternatives with that of taking no action (26 CFR 220.7(b)(2)(ii)). Although the "no action" alternative does not exist in this EA, it does display the effects of taking no action (baseline conditions) in chapter 3 at the beginning of the "Environmental Consequences" in each resource section. Continuation of the baseline conditions provides the basis for the comparison of the effects of the changes that would occur under each of the other action alternatives. (Please see appendix B for maps showing the alternatives.)

The baseline conditions related to motorized use include the following:

- There are 697,716 acres currently open to motorized cross-country travel on the Magdalena Ranger District, which represents 88 percent (791,707 acres) of the district. As a result of unrestricted motorized cross-country travel, there has been a proliferation of unauthorized routes. Some of the activities that occur from motorized cross-country travel are: driving to dispersed camping sites; gathering forest product such as firewood; scoping hunting spots and retrieving downed game.
- There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District that are open to general motorized use which includes passenger vehicles and high-clearance vehicles, such as pickups or sport utility vehicles.

Alternatives Considered in Detail

This section describes the alternatives considered and presents those alternatives in comparative form, defining the differences between each alternative and providing a basis for choice among the alternatives for the decision maker. The alternatives were developed to respond to the issues described in the previous section. While many potential options for road designation exist, it is neither practical nor feasible to consider every possible combination. The alternatives described here represent a range of management options which address the issues raised and meet the purpose of and need for the proposal.

Alternatives

Alternative 1 – Proposed Action

This alternative is the proposed action that was presented in the "Scoping Report for Magdalena Ranger District Travel Management Proposed Action" dated July 22, 2010, with minor changes as a result of additional field review. These changes include refining the location of motorized dispersed camping locations and closing one road due to its location within threatened species protected activity centers.

Magdalena Mountains: Forest Road 45 would not be designated for motorized use, and its associated dispersed camping corridor would be removed starting at its location at the sections 35/36 section line and extending eastward to the end of the road.

San Mateo Mountains:

1. Remove the dispersed camping corridor on Forest Road 138 between its junction with Forest Road 549 and Forest Road 96;
2. Remove the dispersed camping corridor on Forest Road 549 from Hughes Mill Campground south to its junction with Forest Road 476;
3. Remove the dispersed camping corridor on Forest Road 478A.

The Magdalena Ranger District proposes the following actions to implement the Travel Management Rule:

1. Changing the status of 378.2 miles of open National Forest System Roads (NFSR) to "Restricted to Administrative Use Only." These roads are needed periodically for resource management needs (i.e. wildlife and range improvements, vegetation management, and fire presuppression activities) and were not identified as roads used by the public to access the district. These roads will not be shown on the motor vehicle use map (MVUM).
2. Designating a 600-foot-wide corridor, 300 feet on either side of 374.4 miles of designated roads for dispersed camping.
3. Reopening 14.7 miles of closed system roads (Maintenance Level 1) for all classes of vehicles.
4. Constructing 4.5 miles along 5 segments of roads to reroute around private land where the Forest Service does not have access through rights-of-way. Designate the roads open to all classes of vehicles.

5. Adding 17.0 miles of unauthorized routes to the system as Maintenance Level 2 and designate for all classes of vehicles.
6. Acquiring rights-of-way for approximately 21.4 miles within and leading to the Magdalena Ranger District boundary.
7. Prohibiting motorized big game retrieval on the Magdalena Ranger District off the designated system.

When combined with previous decisions, these proposed changes would result in:

- A road system with 850.8 miles of roads designated for motor vehicle use;
- Motorized dispersed camping along 374.4 miles of specified National Forest System Roads;
- Prohibiting motorized big game retrieval off of the designated system.

Alternative 2

This alternative is the existing road system and responds to Issue 2: Providing additional motorized use access and recreation opportunities, when compared to the proposed action, as well as comments received during the scoping period in August 2010. Under this alternative, the district would:

1. Keep the 1,171.4 miles of open National Forest System Roads (NFSR) designated for motor vehicle use. Open system roads are those roads that are considered NFSR (as identified in INFRA) and currently available for motor vehicle use.*
2. Not add unauthorized routes to the system and designating for motor vehicle use.
3. Not all system roads would be accessible. Some roads would only be accessed by crossing private lands for which the Forest Service does not have legal rights-of-way. There are 66.5 miles of rights-of-way that are located on private property within the Magdalena district boundary or are located outside of the Magdalena Ranger District boundary and are needed for access onto the district.

When combined with previous decisions and route designations identified in the Proposed Action, these proposed changes would result in:

- A road system with 1,210.8 miles of roads designated for motor vehicle use.
- Pullup parking adjacent to existing roads within a vehicle length.
- Prohibiting motorized big game retrieval off of the designated system.

** NOTE: After the baseline data was established, these discrepancies in the database were discovered: 35.1 miles of road were erroneously identified as National Forest System Roads (NFSRs) and 8 miles of NFSRs were not identified as such. These errors have been accounted for in alternative 2 by subtracting 27.1 miles of road from the miles of road that would be designated for motor vehicle use. For alternative 2, this would result in a baseline of 1,144.3 miles of open NFSRs. This discrepancy was accounted for in alternatives 1, 3, and 4 under "roads restricted to administrative use." These database errors will be corrected prior to publishing the motor vehicle use map.*

Alternative 3

Alternative 3 responds to Issues 2 and 4: Providing additional motorized access and motorized recreational opportunities when compared to alternatives 1 and 4. This alternative also responds to the issue of not allowing motorized big game retrieval off of the designated system in the proposed action. This alternative designates additional roads and motorized access, designates an area for motor vehicle use, and proposes new construction of an additional route to access parts of the district for which the Forest Service has no legal rights-of-way.

This alternative provides for the following changes:

1. Changing the status of 367.1 miles of open National Forest System Roads (NFSR) to "Restricted to Administrative Use Only." These roads are needed periodically for resource management needs (i.e. wildlife and range improvements, vegetation management, and fire presuppression activities) and were not identified as roads used by the public to access the district. These roads will not be shown on the motor vehicle use map (MVUM).
2. Designating approximately 756 acres for a motorized recreation area in the southern part of the San Mateo Mountains in Sections 2 and 3, T. 9 S., R. 5 W., south of National Forest System Road 225. The area is bounded by NFSR 225 on the north, NFSR 925 on the south, a section fence on the east, and an unnamed arroyo on the west. This area is being considered based on the criteria for designation of trails and areas, as found in 36 CFR 212.55 (b).
3. Changing the designation of several roads for motor vehicle use in response to natural resource protection needs (roads located primarily in arroyos). An adjacent unauthorized road or a National Forest System Road (NFSR) will be designated as their replacement in the road system. The changes are:
    - Do not designate the southern segment of NFSR 10A2 and the eastern segment of NFSR 162A. Designate user-created road U10A2A.
    - Do not designate NFSR 10BE. Designate user-created road U10BB1.
    - Do not designate NFSR 469Z. Designate user-created road U469Z1.
    - Do not designate NFSR 354L. Designate user-created road U354L1.
4. Authorizing motorized big game retrieval for elk and deer within a 0.5-mile-wide corridor, 0.25 mile on either side of 342.5 miles of designated roads in accordance with 36 CFR 212.51(b).
5. Designating a 600-foot-wide corridor, 300 feet on either side of 374.4 miles of designated roads for dispersed camping.
6. Constructing 6.4 miles along six segments of roads to reroute around private land where the Forest Service does not have access through rights-of-way. Designate open to all classes of vehicles.
7. Reopening 16.9 miles of closed system roads (maintenance level 1) for all classes of vehicles.
8. Adding 29.2 miles of unauthorized routes to the system as maintenance level 2 and designate for all classes of vehicles.

9. Not all system roads are accessible; some can only be accessed by crossing private lands for which the Forest Service does not have legal rights-of-way. There are 19.9 miles of rights-of-way located on private property within the Magdalena district boundary or are located outside of the Magdalena Ranger District boundary and are needed for access onto the district.

When combined with previous decisions and route designations identified in the proposed action, these proposed changes would result in:

- A road system with 876.7 miles of roads designated for motor vehicle use.
- A 756-acre area designated for a motorized recreation area.
- Allowing motorized big game retrieval along 342.5 miles of specified National Forest System Roads.

Alternative 4

This alternative was developed in response to Issues 1 and 3: The issues that new road construction and road reconstruction should be avoided and the potential natural and heritage resource impacts were a concern. This alternative also responds to the issues of reducing dispersed camping corridors along roads within endangered species habitat.

This alternative provides for the following changes:

1. Changing the status of 477 miles of open National Forest System Roads (NFSR) to "Restricted to Administrative Use Only." These roads are needed periodically for resource management needs (i.e. wildlife and range improvements, vegetation management, and fire presuppression activities) and were not identified as roads used by the public to access the district. These roads will not be shown on the motor vehicle use map (MVUM).
2. Designating a 600-foot-wide corridor, 300 feet on either side of 321.2 miles of designated roads for dispersed camping.
3. Constructing 3.7 miles along five segments of roads to reroute around private land where the Forest Service does not have access through rights-of-way. Designate open to all classes of vehicles.
4. Reopening 10.6 miles of closed system roads (maintenance level 1) for all classes of vehicles.
5. Adding 17.3 miles of unauthorized routes to the system as maintenance level 2 and designating for all classes of vehicles.
6. Not all system roads are accessible; some can only be accessed by crossing private lands for which the Forest Service does not have legal rights-of-way. There are 20.9 miles of rights-of-way located on private property within the Magdalena district boundary or located outside of the district's boundary that are needed for access onto the district.

When combined with previous decisions and route designations identified in the proposed action, these proposed changes would result in:

- A road system with 746.9 miles of roads designated for motorized use.
- Motorized dispersed camping corridors along 321.2 miles of specified NF System Roads.
- Prohibiting motorized big game retrieval off of the designated system.

Features Common to All Alternatives

- With the Sandia Ranger District Travel Management decision in 2008, the Forest Plan was amended to prohibit cross-country travel off of the designated system, except as shown on the motor vehicle use map. This amendment would take effect for the Magdalena Ranger District once a decision is signed for the project. Motor vehicle use off the designated system of roads, trails, and areas will be prohibited, except as identified on the motor vehicle use map (MVUM). Motor vehicle operators are responsible for obtaining an MVUM prior to motorized travel on the Magdalena Ranger District.
- Amend the Forest Plan to remove outdated timeframes for performing road construction, reconstruction, maintenance, or obliteration of roads. To provide for consistency between the Forest Plan and the Travel Management Rule, change or delete the standards/guidelines for the activities listed above to reflect the designated system as shown on the motor vehicle use map (MVUM).
- Access for permitted activities (i.e. firewood gathering, forest product gathering, mineral exploration and development, maintaining water developments, and recreational events) on National Forest System (NFS) lands would be authorized for motorized vehicles according to the terms of the written authorization. The Forest Service will determine when and how access is achieved through written stipulations in the terms of the permit or through annual operating plans. It is the responsibility of all permittees to follow the terms of their permits.
- Exempt the following vehicles and uses from these designations: (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; and (8) motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulation (36 CFR 212.51(a)).
- Allow pullup parking adjacent to existing roads within a vehicle length.
- Emergency fire suppression activities would continue to be exempt from seasonal restrictions and restrictions on use, except in wilderness and other congressionally designated special areas that restrict off-road motorized use. Any Federal, State, tribal, or local office, in the performance of an official duty, could receive permission to use motorized vehicles on unauthorized routes that are not designated as part of the transportation system.
- Amend the Forest Plan to remove the variable road density guidance for each management area and its associated analysis areas. Change the road density to a maximum of 1.9 miles of roads per square mile average for all management areas on the Magdalena Ranger District.

- The forest supervisor can implement special orders to restrict public use of roads and trails where substantial resource damage is occurring or where implementation of other management activities is deemed necessary. This may include seasonal restrictions on an annual basis (e.g. calving areas or active raptor nests) as well as temporary restrictions for short-term conditions (e.g. mudslides and wet conditions, timber sale activities, etc.).
- Where included in the designation of roads for motor vehicle use, motorized dispersed camping corridors do not include private land nor are they designated within 300 yards of any human-made water structure used for livestock or wildlife (State of New Mexico Chapter 27, Article 1-8).
- Any unauthorized or decommissioned road that is added for motor vehicle use would be given a Forest Service Road System number and would become part of the forest transportation system. These roads will be surveyed for cultural resources prior to being added to the system. Any cultural resources located along the road would be mitigated through avoidance, testing for subsurface cultural deposits, data recovery, plating over resources in the road, or road reroutes. The routes will not appear on the MVUM until mitigation is complete.
- Road management objectives will be assigned for each newly constructed road and previously unauthorized route designated for use on the motor vehicle use map (MVUM).
- None of the alternatives make any changes to use and access of the district by foot, bicycle, and horse travel. This project does not designate or prohibit nonmotorized uses.
- On-the-ground signing would be used to clearly identify the road system number that corresponds with the MVUM.
- The district will identify portals, gateways, or trailheads where motorized vehicle use information can be displayed using “Tread Lightly” and “Leave No Trace” programs to educate motorized users.
- The district will explore partnerships and volunteer opportunities when making changes to the designations and maintaining motorized routes, and for conducting monitoring in accordance with 36 CFR 212.57.
- The district will emphasize user education and information as management tools to inform motorized recreationists of appropriate uses, ethics, and interactions with other users. Information would be distributed through active user groups and clubs to achieve compliance.

Alternatives Considered but Eliminated from Detailed Study

Development of an OHV Motorized Trail System

The interdisciplinary team considered comments on developing a connected motorized OHV trail system on the eastern flanks of the Magdalena Mountains, to the north and south of Water Canyon.

- The area south of Water Canyon was not considered further because the motorized OHV trail system would have been located in the Langmuir Research Site. The Langmuir Research Site was constructed in 1963 and designated a research area in 1980. This congressionally designated research area is dedicated to atmospheric and astronomic research. Motorized and mechanical uses are restricted to the existing designated road

system within the Langmuir Research Site through Public Law 96–550, December 19, 1980, "Roads shall be limited to those necessary for scientific research activities and other reasonable activities as determined by the Secretary. Motor vehicle use shall be restricted to roads designated in the plan." The current travel management direction for the area is closed to motor vehicle use off designated roads. The area is also closed to OHV use.

- The area north of Water Canyon was not considered further due to resource protection needs and an issue with access (rights-of-way). The area presented for trail development is of high hydrological value (soil and water) and is an important wildlife habitat.

Monitoring Requirements

The Travel Management Rule requires that the Forest Service "shall monitor the effects of motor vehicle use on designated roads, trails, and areas" (36 CFR 212.57). Monitoring on the Magdalena Ranger District will include:

- Annual condition surveys of randomly selected roads.
- Annual accomplishment reports of all district road construction, reconstruction, and maintenance.
- Monitoring 30 percent of the heritage resources located within motorized dispersed camping corridors designated for use under alternatives 1, 3, and 4 for a minimum of 5 years.
- Monitoring water and soil conditions through best management practice effectiveness monitoring (Cibola National Forest, Forest Plan, 1985).

Comparison of Alternatives

This section provides a comparative summary table and brief description of the environmental consequences of implementing each alternative, based on the analysis documented in chapter 3 of this environmental assessment. Table 1 provides a comparison based on road mileage designated by alternative and acres open to cross-country travel by alternative. Table 2 summarizes the environmental consequences of each alternative by resource area. See appendix C for a list of National Forest System roads that were not designated by alternative.

Table 1. Road mileages by alternative

Action Type	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Proposed Changes to the Magdalena Road System					
Miles of open National Forest System Roads to be restricted to administrative use only	0	378.2	0	367.1	477.0
Miles of closed roads changed to roads open to all vehicle use	0	14.7	0	16.9	10.6
Miles of unauthorized roads added to the system[1]	0	17.0	0	29.2	17.3
Miles of road reroutes (new construction)	0	4.5	0	6.4	3.7

Action Type	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Miles of road rights-of-way to be acquired	0	21.4	66.5	19.9	20.9
Miles of roads adjusted (subtracted) as a result of data cleanup	0	0	-27.1[2]	0	0
Miles of roads designated for motorized dispersed camping corridors	0	374.4	0	374.4	321.2
Acres of motorized dispersed camping corridors	0	25,465.7	0	25,465.7	21,944.1
Miles of roads designated for motorized big game retrieval	0	0	0	342.5	0
Acres of motorized big game retrieval	0	0	0	86,683.7	0
Acres of areas designated for motor vehicle use	0	0	0	756 (1 area)	0
Acres open to cross-country motorized travel	697,716	0	0	0	0
Resulting System					
Total miles of National Forest Service Roads designated for motor vehicles	1,171.4	850.8	1,210.8	876.7	746.9

[1] Unauthorized roads include decommissioned roads and user-created roads.

[2]These miles represent database errors that were identified after establishment of the baseline data and do not reflect a change in the transportation system. In alternative 2, these roads are not identified as system roads and are, thus, not designated for motor vehicle use; the miles are subtracted from the total miles to be designated (1,171.4 + 66.5-27.1). In alternatives 1, 3, and 4, these errors are accounted for under "Roads Restricted to Administrative Use." These database errors will be corrected prior to publishing the motor vehicle use map.

Table 2. Environmental consequences by alternative

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Recreation					
Developed Recreation	No change from the existing condition.	No change is expected from the existing condition.	No change is expected from the existing condition.	A 756-acre motorized recreation area would be designated.	No change is expected from the existing condition.
Dispersed Recreation	No change from the existing condition.	• Motorized cross-country travel would be prohibited. • Motorized dispersed camping would be restricted to specific areas. • Increased crowding may occur within motorized dispersed camping areas. • Some may perceive these restrictions as a means of closing the forest.	• Motorized cross-country travel would be prohibited. • Dispersed camping would be restricted to one car length from a designated road.	• Motorized cross-country travel would be restricted. • Motorized dispersed camping would be restricted to specific areas. • This alternative has more dispersed camping areas and an increased number of roads. This would allow camping close to customary areas and may minimize crowding.	• The effect of this alternative is similar to Alternatives 1 and 3. • Motorized cross-country travel would be prohibited. • Motorized dispersed camping would be restricted to specific areas. • This alternative provides for the least amount of motorized dispersed camping areas.
Hunting and Motorized Big Game Retrieval	Motorized cross-country travel for big game retrieval would likely continue, resulting in the continued creation of unauthorized routes on the district.	• Motorized cross-country big game retrieval would be prohibited. • This may result in a larger area for hunters who prefer solitude and /or limit the opportunities of those who rely on OHVs to hunt.	Motorized cross-country big game retrieval would be prohibited.	• Motorized cross-country big game retrieval would be allowed within 0.5 mile on either side of designated roads. • The proximity of these corridors to private land and wilderness may result in vehicle trespass. • This may reduce the opportunities for hunters seeking a quiet experience.	• Motorized cross-country big game retrieval would be prohibited. • This may result in a larger area for hunters who prefer solitude and/or limit the opportunities of those who rely on OHVs to hunt.

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wilderness	No change from the existing condition.	• Potential of invasive species introduction. • Noise impact at or along the boundary. • Reduction in motorized trespass.	• Potential of invasive species introduction. • Noise impact at or along the boundary. • Potential for motorized trespass.	• Potential of invasive species introduction. • Noise impact at or along the boundary. • Reduction in motorized trespass. • Greater potential for vehicular trespass in big game retrieval zones near the boundary.	• Potential of invasive species introduction. • Noise impact at or along the boundary. • Reduction in motorized trespass.
Visual Quality	No change from the existing condition.	Little change anticipated.	Little change anticipated.	• Little change anticipated. • There may be short-term impacts from big game retrieval/camping corridors. • Motorized recreation will affect the immediate area.	Visual enhancement over time.
Designated Roads and Trails	No change from the existing condition.	• No designated motorized trails. • Designated roads open to all vehicle classes. • No cross-country travel. • Seasonal road closures. • Favorable for full-size vehicles. • Least favorable for OHV/ATV/UTV operators.	• No designated motorized trails. • No cross-country travel. • Seasonal road closures.	• No cross-country travel. • Designate 756-acre area for motorized recreation. • Seasonal road closures. • Favorable for OHV/ ATV/UTV operators.	• No designated motorized trails. • Designated roads open to all vehicle classes. • No cross-country travel. • Seasonal road closures. • Fewer available roads. • Most restrictive to OHV users. • No opportunity for technical OHV operators.

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Motorized Dispersed Camping	No change from the existing condition.	• 374.4 miles (25,465.7 acres) of designated corridors. • Some established areas were not considered due to resource concerns.	No change from the existing condition.	• 374.4 miles (25,465.7 acres) of designated corridors. • Some established areas were not considered due to resource concerns.	• 321.2 miles (21,944.1 acres) of designated corridors. • Some established areas were not considered due to resource concerns.
Transportation					
Road Maintenance	Road maintenance needs would continue to far exceed the funding available for road maintenance.	• Road maintenance costs would decrease from the baseline condition by 12%. • The reduced maintenance costs would remain substantially higher than the forecasted budget for maintaining roads in the analysis area.	Road maintenance costs would increase by approximately 3%.	• Road maintenance costs would decrease from the baseline condition by 10%. • The reduced maintenance costs would remain substantially higher than the forecasted budget for maintaining roads in the analysis area.	• Road maintenance costs would decrease from the baseline condition by 15%. • The reduced maintenance costs would remain substantially higher than the forecasted budget for maintaining roads in the analysis area.
Public Safety	• The road system would remain relatively safe for prudent drivers. • If maintenance funding continues to decline, roads would deteriorate over time and become less safe.	• Some roads may experience more concentrated use. • Road management could change if vehicle conflicts became a problem. • Maintenance costs would decrease by a relatively small amount and result in better maintenance of designated roads and a somewhat safer road system.	• Some roads may experience more concentrated use. • Road management could change if vehicle conflicts became a problem. • Maintenance costs would increase, which could hasten deterioration of road system condition.	• Some roads may experience more concentrated use. • Road management could change if vehicle conflicts became a problem. • Maintenance costs would decrease by a relatively small amount, which would result in better maintenance of designated roads and a somewhat safer road system.	• Some roads may experience more concentrated use. • Road management could change if vehicle conflicts became a problem. • Maintenance costs would decrease by a relatively small amount and result in better maintenance of designated roads and a somewhat safer road system.

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Access	1,171.4 miles of road are presently open to motor vehicles.	850.8 miles would be designated for motor vehicle use. This is 27% fewer miles than are presently available for use (baseline condition).	1,210.8 miles would be designated for motor vehicle use. This is 3% more miles than are presently available for use (baseline condition).	876.7 miles would be designated for motor vehicle use. This is 25% fewer miles than are presently available for use (baseline condition).	746.9 miles would be designated for motor vehicle use. This is 36% fewer miles than are presently available for use (baseline condition).
Heritage Resources					
Damage to Historic Properties by the Designated System	• Travel along all roads, existing or other, would have the potential to impact 890 known historic properties. • Motorized cross-country travel would continue, potentially impacting all known and unknown historic properties.	• This alternative would result in a 79% reduction in the number of historic properties impacted by the existing road system. • The effect to historic properties from the proposed designation of non-system roads would be mitigated prior to the road being shown on the MVUM per Appendix I of the P.A.[1]	• Travel along the existing system would continue to impact 137 known historic properties. • Cross-country travel would be prohibited under this alternative reducing the potential effect to known and unknown historic properties.	• This alternative would result in a 64% reduction in the number of historic properties impacted by the existing road system. • The effect to historic properties from the proposed designation of non-system roads would be mitigated prior to the road being shown on the MVUM per Appendix I of the P.A. [1]	• This alternative would result in a 79% reduction in the number of historic properties impacted by the existing road system. • The effect to historic properties from the proposed designation of non-system roads would be mitigated prior to the road being shown on the MVUM per Appendix I of the P.A[1]
[1] Standard Consultation Protocol for Travel Management Route Designations, Appendix I of the Region 3 Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities.					
Contemporary Tribal Use and TCPs					
Traditional Cultural Properties and Traditional Use	• There is a potential to effect places and properties of cultural and religious significance and traditional use of the areas by practitioners. • There would be no change to access for traditional use on the district.	• There would be a reduced potential to effect places or properties of cultural and religious significance. • Vehicular access to some resources would be affected by prohibition of cross-country travel. • There would be some effect to hunting practices due to the need to change the method of game	• There would be a reduced potential to effect places or properties of cultural and religious significance. • Vehicular access to some resources would be affected by prohibition of cross-country travel. • There would be some effect to hunting practices due to the need to change the method of game	• There would be a reduced potential to effect places or properties of cultural and religious significance. • Vehicular access to some resources would be affected by prohibition of cross-country travel. • There would be a reduced effect to hunting practices as there would be less need to change the	• There would be a reduced potential to effect places or properties of cultural and religious significance. • There would be a greater effect to the access and use of a cultural significance site. • There would be some effect to hunting practices due to the need to change the method of game

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	• This alternative does not reduce the potential for the disruption of traditional cultural and religious activities.	retrieval. • There would be a reduced potential for the disruption of traditional cultural and religious activities.	retrieval. • There would be a reduced potential for the disruption of traditional cultural and religious activities.	method of game retrieval. • There would be a reduced potential for the disruption of traditional cultural and religious activities.	retrieval. • There would be a reduced potential for the disruption of traditional cultural and religious activities.
Vegetation Management					
Vegetation Management	No change to vegetation management projects.	No change to vegetation management projects.	No change to vegetation management projects.	No change to vegetation management projects.	No change to vegetation management projects.
Vegetation Removed	No change from the existing condition.	The construction of 4.5 miles of reroutes around private property would remove 19 acres of vegetation.	No change from the existing condition.	• The construction of 6 miles of reroutes around private property would remove 25 acres of vegetation. • The designation of a 756-acre motorized recreation area would have negative impacts on vegetation and increase the potential for invasive plants establishment.	No vegetation would be removed under this alternative.
Social and Economic					
Local Economy	There would be no change to the existing condition.	This alternative would not affect the economic sectors that are supported by motorized recreation, motorized dispersed camping, or hunting.	There would be no change to the existing condition under this alternative.	This alternative would not affect the economic sectors that are supported by motorized recreation, motorized dispersed camping, or hunting.	This alternative would not affect the economic sectors that are supported by motorized recreation, motorized dispersed camping, or hunting.

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wildlife and Rare Plants					
Potential indirect wildlife displace-ment due to motor-ized dispersed camping and big game retrieval	697,716 acres	25,466 acres	0 acres	112,150 acres	21,944 acres
Average route density resulting in wildlife displacement and habitat loss	2.0 miles per square mile	0.9 mile per square mile	1.4 miles per square mile	1.0 miles per square mile	0.8 mile per square mile
Law Enforcement					
Enforcement	Law enforcement priorities and patterns would likely remain unchanged. Patrols would continue to be infrequent. Patrols would focus on heavily-trafficked areas.	• A reduction in the miles of system roads available to the public for motorized use may facilitate patrols. LEOs may be able to identify roads being used and not designated, allowing them to focus patrols on areas where illegal activities may occur. • The designation of motorized dispersed camping corridors would facilitate the enforcement of closure orders.	Law enforcement priorities and patterns would likely remain unchanged. Patrols would focus on heavily-trafficked areas.	• Increase in the number of roads for motorized use and designation of motorized big game retrieval corridors may require an increase in LEO patrols. • The designation of roads available to motorized use may allow LEOs to identify roads being used that are not designated, and to focus patrols on areas where illegal activities may occur. • The designation of motorized dispersed camping corridors would	Effects would be similar those identified in alternative 1.

Resource	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
				facilitate the enforcement of closure orders.	
Range					
Permitted Range Activities	No change in permitted range management activities.	No change in permitted range management activities.	No change in permitted range management activities.	No change in permitted range management activities.	No change in permitted range management activities.
Fire and Fuels					
Fire Suppression and Fire Risk	There would be no change in the existing road system. Initial attack response time to fires would remain the same.	• The use of all Forest Service system roads for administrative purposes, including fire patrols and suppression, would continue no matter what alternative was selected. • Fewer miles of roads open to the public may result in fewer human-caused fire ignitions occurring. • Fewer roads may also hinder initial attack response time due to decreased road travel and less frequent road maintenance on non-designated roads.	There would be no change in the existing road system. Initial attack response time to fires would remain the same.	• The use of all Forest Service system roads for administrative purposes, including fire patrols and suppression, would continue no matter what alternative was selected. • More miles of roads open to the public may result in more human-caused fire ignitions occurring. • More roads may also hinder initial attack response time due to increased road travel and more frequent road maintenance on designated roads.	• The use of all Forest Service system roads for administrative purposes, including fire patrols and suppression, would continue no matter what alternative was selected. • More miles of roads open to the public may result in more human-caused fire ignitions occurring. • More roads may also hinder initial attack response time due to increased road travel and more frequent road maintenance on designated roads.

Chapter 3. Affected Environment and Environmental Consequences

This section summarizes the physical, biological, social, and economic environments of the affected analysis area and the potential changes to those environmental conditions due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in table 2 (chapter 2).

Although there is not a "no acton alternative" for this project, the effects of taking no action (baseline conditions) are discussed at the beginning of each resource analysis section. These effects are used as the baseline for comparing the effects of the action alternatives.

The Council on Environmental Quality (CEQ) guidance on the considerations of past actions in the cumulative effects analysis notes that "agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions" (CEQ memo, 2005). The discussion of cumulative effects included in all the resource analyses in this chapter do not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. To understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, the analyses rely on the current resource setting and conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that are difficult to quantify that have affected the environment and might contribute to cumulative effects. These existing conditions are described under the baseline component of the "Environmental Consequences" section of each specialist's report.

Other present and reasonably foreseeable future actions are considered in the analysis of cumulative effects and listed in appendix D.

Analysis of Unauthorized Roads

The following analysis is based on interdisciplinary specialist reports that address the site-specific analysis of unauthorized roads. Each of the resource sections that follow considers the addition of these roads in their discussion of effects in the action alternatives.

Recreation

The following analysis is based on the recreation specialist report prepared by Tyler Albers, landscape architect/forest trails manager and Herbert Ray, district recreation technician. This report is on file in the project record.

Affected Environment

The Magdalena Ranger District is located in Socorro, Catron, and Sierra Counties in New Mexico. The district has four separate and distinct mountain ranges: the Bear/Gallinas, Datil, Magdalena, and San Mateo Mountains, which are vastly spread apart by large grassland basins. The communities of Alamo Band Navajo Indian Reservation, Datil, Magdalena, Dusty, and Monticello are in close proximity to the Magdalena Ranger District. These communities use lands managed by the Forest Service for uses such as: recreation, firewood gathering, grazing, piñon picking, water sources, and hunting. There are many communities located within a 2-hour drive of the Magdalena Ranger District, including: the Albuquerque metropolitan area, Socorro, Pie

Town, Belen, Los Lunas, and Truth or Consequences. These communities primarily utilize the Magdalena Ranger District for recreation activities.

Recreation on the Magdalena Ranger District is growing, partly because of the overflow of recreationists from the Albuquerque metropolitan area. The district has 6 developed campgrounds, 1 developed trailhead, and 34 undeveloped trailheads as well as numerous opportunities for dispersed recreation. The district manages 193 miles of forest system trails, which are mainly used for hiking, horseback riding, and mountain biking. Recreation use is primarily overnight use from hunters, campers, backpackers, and rock climbers. The district's day use activities include hunting, biking, pleasure driving, horseback riding, gathering forest products, rock climbing, and short day hikes. Hunting is popular throughout the district. The Magdalena Ranger District has 37 authorized special use permits for outfitter guides.

The Langmuir Research Site is comprised of 30,486 acres within the Magdalena Mountains. Motorized and mechanical uses are restricted to the existing designated road system within the Langmuir Research Site through Public Law 96–550, December 19, 1980, "Roads shall be limited to those necessary for scientific research activities and other reasonable activities as determined by the Secretary. Motor vehicle use shall be restricted to roads designated in the plan." All motorized vehicle use is restricted to National Forest System Road 235 within the boundaries of the Langmuir Research area. This designation will not be revisited during this project analysis because it complies with the Travel Management Rule.

Developed Recreation

The Magdalena Ranger District contains six developed campgrounds, one developed group shelter, one developed trailhead (Mesa). All but three (Water Canyon Campground, Water Canyon Group Campground, and Water Canyon Group Shelter) facilities are located in the San Mateo Mountains.

The district has 1 developed and 34 undeveloped trailheads accessible to the public. The main motorized travel routes into Hardy Springs, East Fork Sawmill, Post, and Shipman Trailheads, located on the Magdalena Mountains and southern San Mateo Mountains are currently inaccessible to the public due to road easement issues. The Forest Service does not have legal easements on the off forest access roads, and these roads have been gated by the local landowners.

Dispersed Recreation and Dispersed Camping

The district has many dispersed recreation opportunities including: hunting, hiking, dispersed camping (both backpack and car camping), pleasure driving, forest product gathering, wildlife viewing, rock climbing, biking, and horseback riding. Recreation use in the Magdalena area is growing, due to the population growth in the middle Rio Grande Valley. Attractions such as New Mexico Institute of Mining and Technology and the Bosque Del Apache National Wildlife Refuge (U.S. Fish and Wildlife Service) draw tourists to the area.

The district does not have any designated mountain bike trails. Web based searches for mountain biking in the area identify multiple rides in and near the national forest in the Magdalena, North San Mateo, and Bear/Gallinas Mountains. Horseback riding opportunities exist throughout the Magdalena Ranger District on designated pack/stock trails.

Off-highway vehicle (OHV) use occurs across the district although no designated OHV trails/routes have been established. OHV users tend to travel on the roads and do not travel cross country throughout the district. There is evidence of OHV users trespassing into the wilderness areas in several locations.

Motorized dispersed camping offers solitude and primitive recreation experiences that are generally not available in developed recreation sites. There is evidence of extensive motorized dispersed camping throughout the district. District personnel have observed that motorized dispersed camping occurs between 100 and 300 feet from the roads and is most frequent during hunting season.

Most of the motorized dispersed camping tends to occur in the same areas. Some of these areas may expand, but it is unlikely that many new areas would develop since factors such as terrain, privacy, and suitability for camping change little over time.

Hunting and Motorized Big Game Retrieval

The U.S. Forest Service defines bison, bear, elk, and mule deer as big game species dependent on a forest environment. For purposes of this decision document, only elk and mule deer will be considered as big game. Bison are not found on the Magdalena Ranger District, and bear populations have not warranted large harvest limits.

The Magdalena Ranger District is divided into two game management units (GMUs) by New Mexico Department of Game and Fish: Unit 13, which includes the Datil and Bear/Gallinas Mountains and Unit 17, which includes the Magdalena and San Mateo Mountains (New Mexico Big Game and Trapper Rules and Information, 2010–2011 License Year).

Unit 13 (Datil and Bear/Gallinas is included as a portion of this unit) is designated for elk, mule deer, antelope, bear, turkey, and cougar hunting during the 2010–2011 hunting season. The number of permits varies per species and type of hunt is shown in table 3.

Table 3. New Mexico Game Management Unit 13 permits for 2010–2011

Animal	No. of Permits Issued	Type of Permit	Season of Hunt
Elk	300	Bow	9/1–10; 9/11–18; 9/19–24
	413	Muzzleloader/Bow	10/9–13; 10/16–20; 10/23–27; 11/20–24, 12/4–8
	120	Youth, Any Legal Sporting Arm	11/26–30; 12/26–30
Deer	300	Bow	9/1–24; 1/1–15; 2011
	500	Muzzleloader/Bow	10/30–11/3
	1,100	Any Legal Sporting Arm	9/25–10/3; 11/6–10; 11/13–17
Antelope*	2	Mobility Impaired	7/30–8/1
	100	Any Legal Sporting Arm	10/2–4
	15	Bow	8/14–22

Animal	No. of Permits Issued	Type of Permit	Season of Hunt
Bear	§	Bow	9/1-24
	§	Any Legal Sporting Arm	8/16-31; 9/25-11/30
Turkey		Over the Counter	4/15-5/10
Cougar	Ω	Any Legal Sporting Arm	10/1-3/31

*Antelope Management Unit 12 includes the Datil and Bear/Gallinas units of the Magdalena district.

§ Total harvest limit allowed is 77 bears or 31 females between Units 12, 13, 15, 16, 17, 18, 20–24, 26, and 27.

Ω Total harvest limit is 46 sustainable mortality/12 females between Units 13, 14, and 17.

Unit 17 (San Mateo and Magdalena Mountains are included as a portion of this unit) is designated for deer, elk, antelope, bear, and cougar hunting during the 2010–11 hunting season. The unit receives most of its use during the months of August through November. The number of permits varies per species and type of hunt is shown in table 4.

Table 4. New Mexico Game Management Unit 17 permits for 2010–2011

Animal	No. of Permits Issued	Type of Permit	Season of Hunt
Elk	200	Bow	9/1–10; 9/11–18; 9/19–24
	422 including youth hunt	Muzzleloader/bow	10/9–13; 10/16–20; 10/23–27; 12/4–8; 12/11–15
	120	Youth, Any Legal Sporting Arm	11/26–30; 12/26–30
Deer	450 including youth hunt	Any Legal Sporting Arm	11/6–10; 11/13–17; 11/25–28; 12/4–5; 12/11–12
	400	Bow only	9/1–24; 1/1–15; 2011
	200	Muzzleloader/bow	10/30–11/3
Antelope *	30	Bow	8/14–22
	2	Mobility Impaired, Any Legal Sporting Arm	7/30–8/1
Bear	§	Bow	9/1–24
	§	Any Legal Sporting Arm	8/16–31; 9/25–11/30
Turkey		Over the Counter	4/15–5/10
Cougar	Ω	Any Legal Sporting Arm	10/1–3/31

*Antelope Management Unit 20 includes the San Mateo and Magdalena units of the Magdalena district.

§ Total harvest limit allowed is 77 bears or 31 females between Units 12, 13, 15, 16, 17, 18, 20–24, 26, and 27.

Ω Total harvest limit is 46 sustainable mortality/12 females between Units 13, 14, and 17.

The Magdalena Ranger District is a very popular area for hunting. In addition to the general hunting public, there are 30+ outfitters and guides who perform their hunting services on this district. The impacts from hunting (such as increased dispersed motorized camping, vehicular traffic, and big game retrieval) to the natural resources are evident throughout the district. District employees have noted hunting camps returning to the same location year after year. Impacts from

motorized big game retrieval are difficult to target, but once a hunter drives a vehicle cross country on the fragile landscape of this district, the tire tracks become visible and inviting to other motorized vehicle users.

Wilderness

The Apache Kid Wilderness (44,530 acres) and Withington Wilderness (19,075 acres) are managed to provide a quality visitor experience, as the unique character of the wilderness is preserved and protected. The pristine character and natural processes are retained, with minimal evidence of human influence. Opportunities for solitude and ecological, scientific, educational, scenic, and historical aspects of the wilderness have been retained. Authorized outfitter/guide services are allowed where the use is compatible with management direction. Most roads near the wilderness boundaries provide access to the trailheads.

Congress designated both wilderness areas in 1980 in the New Mexico Wilderness Act. The 1967 Wilderness Act prohibits the use of motorized or mechanical transport or equipment in designated wilderness areas. As a result, the wilderness areas are outside of the project analysis area.

Roads and Trails

Roads are important for providing access to recreation opportunities and as a recreation resource on the Magdalena Ranger District. Roads provide opportunities for sightseeing, exploring the district, hunting, and accessing developed and dispersed recreation opportunities. The more primitive roads provide for challenging OHV driving skills.

Driving for pleasure is a frequent recreation activity identified by 10 percent of the respondents in the Cibola's 2001 National Visitor Use Monitoring surveys. In 2006, when the Cibola National Forest's mountain districts were analyzed separately from the grasslands, 19.9 percent said they drove for pleasure on the mountain districts. (USDA 2006)

All of the district's NFS roads are currently open to all vehicles. In addition to the NFS roads, unauthorized roads and a number of roads that are listed in the roads database as decommissioned are still in use. Often there is no obvious difference between system roads, unauthorized roads, and roads listed as decommissioned, but still in use. The system roads are not always marked with route markers or other signs that would indicate that they are system roads. Unauthorized routes are often well defined and receive a moderate amount of use and are not easily discernible from system routes. This is also true for some decommissioned roads that were not successfully decommissioned and are still being used.

Trail use is the primary dispersed recreation use. The Magdalena Ranger District's trail system represents 31 percent of the Cibola's trail system. The district has 193.6 miles of the National Forest System's 618 miles of trails identified in the database. Many forest system trails in the San Mateo Mountains either lead to, or are connected to, trails that lead into the Withington or Apache Kid Wilderness areas. In addition, many trails in the Magdalena Mountains lead into the Langmuir Research Site. None of the 193.6 miles of trails on the district are managed for motorized recreation. The trails are mainly utilized for hiking or horseback riding (as many trails lead to the Withington Wilderness, Apache Kid Wilderness, and Langmuir Research Site which prohibits motorized and/or mechanized vehicles).

The trails budget is based on a forestwide allocation and distribution to the districts and is determined on an annual basis, based on needs and priorities. The annual trail budget for the Cibola National Forest averages $140,000. The system is operated and maintained with the same funds, including those trails where motorized use has been accepted. As more districts designate motorized trails through Travel Management Rule decisions, the districts could be managing more trails but without an increase in budget.

Motorcycle Trials. There have been multiple requests proposed by a trials motorcycle club in Truth or Consequences, New Mexico, for an area designated for trials riding. Motorcycle trial riding is a non-speed event performed on specialized motorcycles and is very popular in the United Kingdom and Spain, however, there are participants around the globe including New Mexico. Motorcycle trials consist of technical obstacle courses where the rider navigates a motorcycle through technical terrain while attempting to avoid placing a foot to the ground. Trial motorcycles are distinctive in that they are extremely lightweight, lack seating (they are designed to be ridden standing up) and have suspension travel that is short, relative to motocross or enduro motorcycles. Motorcycle trials is often utilized by competitors of other motorcycle sports (such as motocross or street racers) as a way to cross train, as trials teaches great throttle, balance, and machine control.

Scenic Resources/Visual Quality Management

Please refer to appendix E for a map of the visual quality objectives for the Magdalena Ranger District.

The Bear/Gallinas Mountains are a large, sprawling, volcanic range that rises from the grassland basins. The foothills are gently rolling hills of piñon and junipers, with bands of ponderosa pines at higher elevations. The Bear/Gallinas Mountains are one section of the low, volcanic ranges surrounding the Plains of San Agustin (Julyan 2006). They are located within the Datil-Mogollon physiographic section which is a transition zone between the Colorado Plateau and the Basin and Range physiographic sections (USDA Forest Service 1999).

The landscape is predominantly natural appearing, but there is evidence of roads throughout the mountains. Near the district boundary, private inholding ranch lands influence the view. Grazing is common; cattle are part of the landscape throughout the Bear/Gallinas. The Alamo Band Navajo Indian Reservation borders the Bear/Gallinas Mountains to the north and the town of Magdalena to the south. The built environments of these communities are considered low density, but do affect the scenery.

The Datil Mountains are a small range on the northwest edge of the Plains of San Agustin. These mountains are known for their grey-pink-lavender rock canyons and dramatic rock columns, which were created by volcanic processes. From the higher elevations in the Datil Mountains, steep hills with dense conifer populations can be observed for miles. Even more striking is the view from the east, where a huge fault scarp created an uplift of vertical cliffs (Julyan 2006). The Datil Mountains are located in the Datil-Mogollon physiographic section which is a transition zone between the Colorado Plateau and the Basin and Range physiographic sections (USDA Forest Service 1999).

Within the Datil Mountains is the dramatic ridge of the Sawtooth Mountains. These isolated, buttelike peaks soar above the sage-covered flatlands and provide a climactic view from a

distance (Richie 2007). From within the Sawtooth Mountains, the landscape varies from intricately carved peaks, towering, freestanding formations, sheer-walled box canyons, colorful badland pockets, and hidden stands of magnificent, old-growth conifer forest (Richie 2007). The Datil Mountains are directly north of the town of Datil. The built environment is very low density and the only developed area in the proximity of these mountains. The landscape of the Datil Mountains is natural appearing, but roads and grazing activities can be distinguished throughout the district.

The Magdalena Mountains are highly valued for their scenic quality. The volcanic terrain is dominated by broad structural basins and scattered fault-block mountain ranges. They are located in the Datil-Mogollon physiographic section, which is a transition zone between the Colorado Plateau and the Basin and Range physiographic province (USDA Forest Service 1999).

The Magdalena Mountains are characterized by the variety of landscape types that change with the elevation and aspect. Lower elevations are open grasslands, transitioning to piñon and juniper woodlands. The ponderosa pine forests are found at the higher elevations, eventually mixing with the spruce-fir to the very top of the mountain ridge which is primarily tall, stately spruce, Douglas-fir, and white fir with patches of aspen providing magnificent fall colors.

The landscape is predominantly natural appearing. Recreation development is minimal, but is evident along National Forest System Road 235. These developments include Water Canyon Campground, Water Canyon Picnic Site, and Mesa Trailhead. Research facility development is apparent along the southern ridge of the Magdalena Mountains. The Magdalena Ridge Observatory and Langmuir Laboratory for Atmospheric Research are located at the end of NFSR 235. The majority of the lands adjacent to the district's boundary around the Magdalena Mountains are undeveloped. The town of Magdalena is located on the northern end of the range and is a very low density development.

Roads and trails are evident throughout the Magdalena Mountains. While roads and occasionally trails add a linear element when viewed from a distance, they are also the transportation system which provides access to outstanding scenic overlook points. NFSR 235 to South Baldy Peak provides dramatic views near the top of the ridge. There are expansive views across the Rio Grande Valley to the east and the San Mateo Mountains to the west.

The San Mateo Mountains' scenic quality is a significant factor of the area's recreation opportunities. The San Mateo Mountains are a large, steep, volcanic range towering over the western edge of the Rio Grande Valley. The topography is unforgiving and consists of dark volcanic cliffs and high mountain peaks. The lower elevations are alluvial basin grasslands which transform through piñon/juniper, ponderosa, and spruce/fir forests as elevations rise. They are located within the Datil-Mogollon physiographic section, which is a transition zone between the Colorado Plateau and the Basin and Range physiographic sections (USDA Forest Service 1999).

The San Mateo Mountains are an extremely remote mountain range. The Apache Kid and Withington Wilderness areas are located in the San Mateo Mountains. Roads terminate at the wilderness boundaries, where undeveloped trailheads create a gateway to the wilderness. The landscape is natural appearing with many vista locations throughout the canyons and ridgelines. The view is far reaching from the top of Blue Mountain, San Mateo Peak, Mt. Withington, and many other peaks throughout the San Mateo Mountains.

Outside of the wilderness boundaries are 4 developed campgrounds and 19 undeveloped trailheads. Recreation development exists in Bear Trap Canyon along NFSR 549. Hughes Mill and Bear Trap Campgrounds provide scenic opportunities within Bear Trap Canyon in the northwest region of the San Mateo Mountains. These campgrounds also provide access to multiple trails which traverse the Withington Wilderness. Springtime Campground is located on the southern end of the San Mateo Mountains below Vick's and San Mateo Peaks. Springtime Campground serves as a portal to the Apache Kid Wilderness. Panoramic views of the San Mateo Mountains can be seen from Luna Park Campground on the southern end of the district boundary (USDA Forest Service 1999).

Grazing activities and roads are evident outside of the wilderness areas of the San Mateo Mountains. Bordering the Magdalena Ranger District in the San Mateo Mountains are many large ranches. It is common for these ranches to have allotment grazing permits on lands managed by the district.

The 1985 Forest Plan utilized the Forest Service Visual Management System to determine visual quality objectives for all National Forest System lands within the Cibola National Forest (USDA Forest Service 1974). Visual quality objectives (VQOs) are designed to integrate the public's concern for scenic quality (sensitivity levels) with the diversity and scenic attractiveness of the natural features (variety classes). These objectives describe the degree of acceptable alteration of the natural landscape based upon the importance of esthetics (USDA Forest Service 1974).

VQOs are used to describe the degree of alteration that may occur to the visual resource on lands within the Magdalena Ranger District management areas:

- **Preservation –** This visual quality objective allows ecological change only. Management activities, except for very low visual impact recreation facilities, are prohibited.
- **Retention –** This visual quality objective provides for management activities which are not visually evident. Under the retention objective, activities may only repeat form, line, color, and texture which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
- **Partial Retention –** Management activities must remain visually subordinate to the characteristic landscape. Associated visual impacts in form, line, color, and texture must be reduced as soon after project completion as possible but within the first year.
- **Modification –** Management activities may visually dominate the characteristic landscape. However, landform and vegetative alterations must borrow from naturally established form, line, color, or texture so as to blend in with the surrounding landscape character. The objective should be met within 1 year of project completion.
- **Maximum Modification –** Management activities of vegetative and landform alterations may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. Alterations may be out of scale or contain detail which is incongruent with natural occurrences as seen in the foreground or middle ground.

The VQOs specified in the Forest Plan for the Magdalena Mountains analysis area are approximately half modification and half partial retention. The partial retention area is consistent with the Langmuir Research Site. There is a small area of retention in the Water Canyon area (a visual quality objective map is included with this report).

The San Mateo Mountains are predominantly partial retention according to the VQO data. There are areas outside of the Withington and Apache Kid Wildernesses that are categorized as modification and maximum modification.

The VQOs for the Bear/Gallinas Mountains are predominantly maximum modification. Along NM 169, there is a corridor of modification and along U.S. 60, there is an area of partial retention. This indicates that with the exception of the partial retention areas, other management considerations are given a higher priority than scenic quality for most of the Bear/Gallinas Mountains.

The VQOs for the Datil Mountains are also predominantly maximum modification. The U.S. 60 corridor is categorized as partial retention, with portions being retention. This partial retention/retention corridor signifies the importance of scenic quality within the view shed of the Datil community.

Analyzing roads and trails in relation to scenic quality is complex. The roads and trails are a "viewer platform" where people experience the landscape, and are often used to define sensitivity levels and distance zones. Roads and trails are also linear elements in the landscape, so the impact they have to the view is also considered. For example, U.S. 60 through Datil contains scenic views. There is a high concern for scenic quality from this road, so views within a half-mile of this road in specific areas are a concern or sensitivity level of 1 (highest sensitivity level). In the Forest Plan the visual quality objective for the U.S. 60 corridor is partial retention/retention. Table 5 represents VQO classifications acres designated by the Cibola 1985 Forest Plan for the Magdalena Ranger District (visual quality objective maps).

Table 5. VQO classifications for the Magdalena Ranger District (in acres)

Visual Quality Objective	Magdalena Ranger District	Magdalena Mountains	San Mateo Mountains	Bear/ Gallinas Mountains	Datil Mountains
Maximum Modification	290,339	0	33,387	129,944	127,008
Modification	168,216	53,045	89,478	18,729	6,964
Partial Retention	361,219	45,049	285,062	2,902	28,206
Retention	2,610	426	0	0	2,184
Preservation	0	0	0	0	0

Other visual resource management direction in the Cibola Forest Plan: Acceptable variations in VQO classifications from the acreages presented in the standards and guidelines for specific management areas are as follows:

- **Preservation**: No change
- **Retention**: + or - 2 percent in foreground, + or - 5 percent in middle ground and background.
- **Partial Retention**: + or - 5 percent in foreground, + or - 10 percent in middle ground and background.
- **Modification**: + or - 10 percent in all zones. Manage for the visual quality objectives of retention or partial retention for developed site plan perimeter using a definition of characteristic landscape which includes manmade features.

Inventory for existing visual condition (EVC) and visual absorption capability (VAC):

- **EVC** is the existing condition of the landscape.
- **VAC** is the landscape's ability to handle changes that detract from visual qualities without a major impact.

Recreation Opportunity Spectrum

Please refer to appendix E for a map of the Recreation Opportunity Spectrum for the Magdalena Ranger District.

People tend to choose settings for their outdoor recreation activities to realize a desired set of experiences. The Forest Service uses a classification system called the Recreation Opportunity Spectrum (ROS) to define and manage a range of recreational settings and opportunities on NFS lands. The ROS classes describe a desired condition for each ROS class: primitive, semiprimitive motorized, semiprimitive nonmotorized, roaded natural, rural, and urban. The ROS User's Guide (USDA Forest Service 1982) and a Forest Service report on ROS (USDA Forest Service 1979) provide guidelines for defining ROS classes and managing within each ROS class.

The following are desired conditions for all ROS classes:

1. They are fully integrated in forest land management planning.
2. They reflect current management direction and use patterns.
3. They are compatible with resource values. ROS classes provide the framework for defining types of recreation opportunities and identifying what recreational experience the Magdalena Ranger District might be able to provide.

Classes are defined based upon three settings:

1. Physical (including size, remoteness, and evidence of humans)
2. Social (including number and type of encounters)
3. Managerial (including regimentation, control, and facilities)

The four ROS classes associated with the Magdalena Ranger District travel management analysis area is described as follows:

- **Rural (R)** – A substantially modified natural environment. There is evidence of resource modification and utilization practices, and facilities are often designed for larger numbers of people. Campgrounds often include paved roads, electricity, and other conveniences.
- **Roaded Natural (RN)** – Characterized by a predominantly natural-appearing environment with moderate evidence of human activity. Resource modification and utilization practices are evident but harmonize with the natural environment. May have a mosaic of highly modified areas with pockets of unmodified lands. Developed sites provide for some user comfort as well as site protection, but harmonize with the natural environment.
- **Semiprimitive Motorized (SPM)** – Similar setting to the SPNM except this area provides a motorized back-country experience where trails and primitive roads are designed for high-clearance, four-wheel drive vehicles. There is a moderate probability of

experiencing solitude and a high degree of self-reliance and challenge in using motorized equipment. These areas are predominantly natural, lacking some human modification, except when necessary for site protection.

- **Semiprimitive Nonmotorized (SPNM)** – Nonmotorized back-country area with a predominantly natural-appearing environment, without evidence of resource modification and utilization practices. Provides opportunities for self-reliance and challenge, with a low concentration of users and a high degree of interaction with the natural environment. Recreation developments are rustic and rudimentary and primarily provided for the protection of the resources rather than the convenience of users.

Table 6 represents the acres designated for the ROS classifications in the Cibola 1985 Forest Plan for the Magdalena Ranger District (ROS Maps – Magdalena, San Mateo, Bear/Gallinas and Datil Mountains).

Table 6. ROS classifications for the Magdalena Ranger District (in acres)

ROS Classifications	Magdalena Ranger District	Magdalena Mountains	San Mateo Mountains	Bear/ Gallinas Mountains	Datil Mountains
Rural	108	108	0	0	0
Roaded Natural	161,428	14,605	91,913	30,404	24,506
Semiprimitive Motorized	331,457	34,765	100,509	106,719	89,464
Semiprimitive Nonmotorized	334,060	49,013	206,111	28,425	50,511

- The Langmuir Laboratory and Magdalena Ridge Observatory within the Langmuir Research Site has a rural classification.
- Withington Wilderness is primarily in the semiprimitive nonmotorized ROS classification.
- Apache Kid Wilderness is primarily a primitive ROS area and is characterized as an unmodified natural environment. Motorized and mechanized use within these areas is not permitted (USDA Forest Service 1985).

Acceptable variations in ROS classifications from the acreages presented in the Forest Plan standards and guidelines for specific management areas are as follows:

- Primitive: No change
- Semiprimitive Nonmotorized: ±15%
- Semiprimitive Motorized: ±15%
- Roaded Natural: ±15%
- Rural: ±15%

The Forest Plan also directs, “Where road construction would result in a loss of semiprimitive nonmotorized acreage, action will be taken to close the road and restore its surface at completion of the project when possible. Semiprimitive nonmotorized areas shall be managed for dispersed recreation opportunities.” (USDA Forest Service 1985)

Environmental Consequences

Baseline Conditions

Developed Recreation

Developed recreation use and visitor experience would continue as described in the existing conditions/ affected environment throughout the Magdalena Ranger District.

Dispersed Recreation and Dispersed Camping

Dispersed camping would continue as described in the affected environment. The district would remain open to motorized cross-country travel and unrestricted motorized dispersed camping. Motorized recreation may increase over time, leading to the development of additional unauthorized routes. Most of the motorized dispersed camping tends to occur in the same areas. Some of these areas may expand, but it is unlikely that many new areas would develop since factors such as terrain, privacy, and suitability for camping change little over time.

Hunting and Motorized Big Game Retrieval

Cross-country travel for motorized big game retrieval and to hunt and scout would continue to be allowed within the New Mexico Department of Game and Fish regulations. Additional unauthorized routes would likely continue to be created due to the high levels of hunting throughout the Magdalena Ranger District.

Wilderness

Visitor experiences in Apache Kid Wilderness and Withington Wilderness would continue as described in the affected environment. Motorized cross-country travel would continue outside the wilderness areas, and there is the potential for motorized vehicle trespass into wilderness. The noise caused by the potential trespass could disrupt the sense of solitude, which is an important aspect of the wilderness recreation experience.

Roads and Trails

Current management of roads and trails would continue as described in the affected environment. All 1,171.4 miles of system roads would be available for use. All 193.6 miles of existing system trails would continue to be managed for nonmotorized use. There are three areas where motorized use is prohibited:

- Apache Kid Wilderness: 66 miles of trail
- Withington Wilderness: 13.4 miles of trail
- Langmuir Research Area: 31.7 miles

Motorized use of the remaining 82.5 miles could occur, but the district would continue to manage these trails for nonmotorized use. Maintenance of these trails would occur as budget and priorities permit. Motorized cross-country travel would continue to be allowed on 697,716 acres of the district outside of the wilderness and research area. Unauthorized roads and trails would continue to develop where the vegetation and topography provides fewer barriers to motorized cross-country travel. However, overall impacts to recreation use and activities are not expected to noticeably change.

Scenic Resources and Visual Quality Objectives

The VQOs in the forest plan are being met. Where the VQO is classified as retention, in general steep slopes and vegetation have reduced the development of unauthorized routes. Most retention areas occur in canyons with large volcanic walls, such as Thompson Canyon in the Datil Mountains. As a result, the VQO of retention would likely still be met if baseline conditions were to continue.

There may be additional motorized cross-country travel, increasing the development of unauthorized roads and trails, disturbing the grasses and shrubs creating additional linear features as seen from the roads across the landscape. Where the VQO is classified modification, the objective would not likely be exceeded, because the disturbance from unauthorized roads and trails is not anticipated to dominate the landscape. Since this area has been open to motorized cross-country travel since at least 1985, many of the areas where this type of use was possible have already been disturbed and unauthorized roads and trails have been established.

Recreation Opportunity Spectrum

The ROS objectives on the Magdalena Ranger District are currently being met. Several motorized user created routes that impede on the wilderness boundary are impacting the primitive and semiprimitive nonmotorized objectives assigned to wilderness areas. This motorized trespass will continue as long as motorized user-created routes cross the wilderness boundary.

Effects by Alternatives

Alternative 1

Developed Recreation

No change to developed campground recreation sites, trailheads, or visitor experience while using these sites is anticipated from the existing condition in this alternative. The need for new facilities has not risen during the Magdalena Ranger District's travel management process.

Dispersed Recreation and Dispersed Camping

The primary change to dispersed recreation will be the restriction of motorized cross-country travel throughout the district. Motorized access throughout the district will be limited to designated routes. Some of the public will perceive the designated routes as a means of closing the forest for their use. Their customary areas of visitation may be inaccessible by motorized travel but the forest is still accessible for nonmotorized transportation. A strong education/information campaign will be needed to gain compliance with the Travel Management Rule.

Under this alternative, motorized vehicles will be allowed to park one vehicle length along the side of any designated open road. Once this parking requirement is met, dispersed campers can establish their camp any distance from the road. In addition to the one car length requirement, dispersed camping corridors 300 feet wide will be designated along both sides of 374.4 miles, for a total of 25,465.7 acres within the Magdalena Ranger District. The designated corridors do not cross into private land nor are they designated within 300 yards of any manmade water structure used for livestock or wildlife in accordance with New Mexico Department of Game and Fish specifications. Motorized dispersed camping on the district occurs throughout the year, with high use periods being the fall hunting seasons. People wishing to drive cross country and disperse

camp outside of the designated corridors would need to travel to other public lands where motorized cross-country travel is allowed.

Factors used to identify the location for the camping corridors included: site popularity, observed use frequency, input from New Mexico Department of Game and Fish, and potential or existing impact to the resource(s). Motorized dispersed camping areas have been designated along the entire length of the selected roads (appendix B). There may be areas along the identified roads which are not suitable for motorized dispersed camping due to terrain. The corridors identified will be monitored in accordance with CFR 36 212.57. All these areas are located near main roads and will be accessible for law enforcement and fire prevention patrols.

Several areas of known dispersed camping—particularly the areas along National Forest System Road (NRSR) 2, NFSR 235, and NFSR 123—were not considered due to environmental or cultural concerns. These sites have been popular for several years and users could feel displaced and become discouraged from camping on the district. At a minimum, these previously utilized areas will need to be signed, blocked, and revegetated to discourage further use.

Prohibiting motorized cross-country travel would benefit some forms of nonmotorized recreation. There may be improved bird watching or wildlife viewing in areas where there are fewer roads designated and, therefore, less noise disturbance. Additionally, roads that are not designated could still be used for hiking, horseback riding, and mountain biking. This may provide for additional nonmotorized recreation alternatives. There are no motorized trails currently on the district, and no motorized trails will be designated through this alternative. Due to the variety of opportunities for motorized recreation presented by the expansive size of the district and the road network proposed in this alternative, the need for motorized trails was not expressed. All public motorized travel will occur on National Forest System Roads. All roads designated for motor vehicle use will accommodate the following modes of transportation: state licensed highway legal vehicles, full-sized 4-wheel drive high-clearance vehicles, all terrain or utility vehicles (ATV/UTV), and motorcycles.

Hunting and Motorized Big Game Retrieval

This alternative would prohibit motorized big game retrieval on the district. This prohibition would also include the associated activities such as cross-county scouting and hunting from all forms of motorized transportation. Travel would be restricted to open system roads. For bow hunters and those who prefer more solitude and less noise intrusion, there will be more areas in which to hunt. Hunters would need to rely on pack stock or themselves for game retrieval. Table 7 shows the results of a New Mexico Department of Game and Fish survey conducted in 2009–2010 of hunter success rates based on species, number of permits issued, response rate, and the number of animals harvested. (New Mexico Game and Fish, 2010.)

According to New Mexico Department of Game and Fish, fewer roaded areas provide higher quality hunting experiences. There may be greater associated harvest opportunity depending on the management objectives for the game species. Roadless areas in New Mexico, including wilderness areas, provide some of the highest quality elk hunting opportunities and provide habitat that sustain elk populations for surrounding areas (“Wildlife, Habitat, and Hunting: New Mexico’s Roadless Areas,” 2006). By prohibiting motorized big game retrieval, the harvest opportunities are expected to increase.

Table 7. Hunter success rates

Game Management Unit	Big Game Species	Number of Permits Issued	Survey Response Rate	Reported Number Animals Harvested	Success Rate
13	Mule Deer	2,023	81.0%	272	16.1%
	Elk	1,053	84.0%	278	27.0%
17	Mule Deer	1,099	86.1%	325	33.5%
	Elk	757	87.0%	139	19.0%

Hunters who have relied on motor vehicles to hunt, scout, or retrieve animals off of roads may feel that this alternative reduces their opportunities and the quality of their hunting experiences. They may be displaced to areas off the district where motorized cross-country travel is permitted, or they may choose not to hunt. Others will adjust to the changed management and change their hunting practices.

Wilderness

By prohibiting motorized cross-country travel, a reduction in motorized vehicle trespass within the Withington and Apache Kid Wilderness areas is expected with this alternative. Opportunities for solitude within the wildernesses may increase due to eliminating unauthorized routes and minimizing trespassing.

Roads and Trails

There are no motorized trails currently on the Magdalena Ranger District, and no motorized trails will be designated through this alternative. Due to the variety of opportunities for motorized recreation presented by the expansive size of the Magdalena Ranger District and the road network proposed in this alternative, the need for motorized trails was not expressed. All public motorized travel will occur on National Forest System Roads. All roads designated for motor vehicle use will accommodate the following modes of transportation: state licensed highway legal vehicles, full-sized 4-wheel drive high-clearance vehicles, all terrain or utility vehicles (ATV/UTV), and motorcycles.

Table 8. Alternative 1 – Miles of NFS roads designated for all motor vehicles

Use Type	Miles
Existing miles of National Forest System Roads	1,171.4
Miles of roads designated for administrative use only	-378.2
Miles of currently closed NFS road designated for motor vehicle use	14.7
Miles of unauthorized road added to system	17.0
Miles of new road construction	4.5
Miles of road added to system as a result of easements acquired	21.4
Total miles of road designated for motor vehicle use	850.8

Off-highway vehicle operators will find challenges along maintenance level 2 roads managed for high clearance vehicles throughout the district, but may have greater conflict with general vehicle

traffic along the main arterial roads as they prefer to avoid vehicles operating at higher speeds. Motorcyclists will be the least accommodated in this alternative, as no single track trails will be created or authorized. Motorized operators looking for technical opportunities will find few choices under this alternative as multiple users will access the same routes.

Opening 14.7 miles of currently closed NFS roads and 17.0 miles of unauthorized roads will create an opportunity for improved resource management, resource protection, and connections for loop road experiences. The 378.2 miles of NFS roads restricted to administrative use only are typically roads used for range, wildlife habitat, and fire management. No need for recreational activities to exist on these restricted roads was expressed.

Trailheads and wilderness trails in the southern San Mateo Mountains are currently inaccessible due to road easement issues. The Forest Service does not have legal easements on the off-forest access roads which have been gated by the landowners. This alternative's 4.5 miles of new road construction will create public access around private land to improve motor vehicle access to the southern San Mateo Mountains.

As a majority of the forest visitors use the major arterial district routes, potential conflict between the nonmotorized and the different motorized groups can be mitigated through an education/information program to include public contact/meetings and signage at developed recreation facilities and trailheads.

Scenic Resources and Visual Quality Objectives

Since most of the routes being considered for designation are existing routes, little change to scenic quality is anticipated in this alternative. A total of 378.2 miles of NFSRs will be restricted to administrative use which means they will not be designated for motor vehicle use nor displayed on the motor vehicle use map. Since they will continue to receive motor vehicle use by permittees and for other administrative uses, the visual impacts will remain the same as the baseline. Where routes are not used, over time the visual contrast of the road's bare soil will be reduced when grasses and shrubs grow in the tread. This would enhance the natural-appearing quality of the landscape and would be consistent throughout the Magdalena Ranger District in areas with the VQOs of retention and partial retention.

There are 4.5 miles of new road construction to address rights-of-way issues. These roads would be designed and constructed to meet Forest Service road standards. These changes would meet the visual quality objective of modification, where the changes would be evident but would not dominate the view.

The unauthorized roads and currently closed roads proposed to be opened in this alternative are not expected to make an impact on scenic quality. These roads currently exist and are evident on the landscape, but do not dominate the scenic character.

Motorized dispersed camping can result in some localized reduction in visual quality where sites are frequently used and soil compaction reduces vegetation coverage. However, it is likely that few new sites would develop as a result of alternative 1 and the proposed dispersed camping corridors. Popular sites within the corridor will continue to be visually evident where some bare soil is visible from nearby roads and trails. When viewed at the district scale, the localized impacts of motorized dispersed camping corridors would be consistent with VQOs classified as modification. Where an established motorized dispersed camping area is not designated, over

time the visual contrast of the site's bare soil would be reduced as grasses and shrubs grow. This would enhance the natural-appearing quality of the landscape.

Recreation Opportunity Spectrum

The ROS objectives on the Magdalena Ranger District are currently being met. There would be no effects to ROS under this alternative.

Alternative 2

Developed Recreation

This alternative does not include motorized dispersed camping corridors. This may result in some displacement of campers to developed recreation sites, which would lead to increased use at these recreation sites.

Dispersed Recreation and Dispersed Camping

Motorized dispersed recreation would change under this alternative. Motorized cross-country travel would be prohibited and motorized activities would be limited to National Forest System roads. Prohibiting motorized cross-country travel would benefit some forms of nonmotorized recreation due to a reduction in disturbances from noise.

No motorized dispersed camping corridors are considered under this alternative and motorized camping would only be allowed up to one vehicle length from currently open NFS roads where it is safe to do so and where it does not cause environmental damage. The restriction of motorized cross-country travel coupled with no motorized dispersed camping corridors may affect those seeking motorized opportunities. The lack of motorized dispersed camping corridors could lead to the displacement of campers to other State or Federal lands where motorized dispersed camping is permitted. It could also lead to increased use of developed recreation sites. There may initially be a need for increased patrols and enforcement of commonly used dispersed camping areas that are not designated.

Hunting and Motorized Big Game Retrieval

Motorized big game retrieval (MBGR) would be prohibited under this alternative. This restriction would provide a larger area for hunters who prefer solitude and minimal noise intrusion. Less roaded areas provide high quality hunting experiences and may be associated with greater harvest opportunity depending on the harvest objectives for the game species (NMDGF 2006). However, hunters who have relied on motor vehicles to hunt, scout, or retrieve animals off of roads, may feel that this reduces their opportunities and the quality of their hunting experiences. They may be displaced to areas off the Magdalena Ranger District where motorized cross-country travel is permitted, or they may choose not to hunt. Others will adjust to the changed management and change their hunting practices.

Wilderness

There will be little change to visitors' experiences in the Apache Kid and Withington Wilderness areas in this alternative. Restricting motorized cross-country travel may prevent some vehicle trespass into wildernesses and may improve the sense of solitude that is an important aspect of wilderness recreation.

Roads and Trails

This alternative would continue the current management of National Forest System roads. All 1,210.8 miles of NFS roads open to the public would continue to be available for motorized use. However, not all system roads would be accessible because some can only be accessed by crossing private lands where the Forest Service does not have a legal right-of-way. There is a potential to displace recreational users of these roads that lack legal access. These roads would not appear on the MVUM until a legal right-of-way is obtained. In addition, this alternative would prohibit cross-country travel, displacing motorized recreationists who travel cross country.

The district does not have any motorized trails, and no motorized trails will be designated through this alternative. Due to the variety of opportunities for motorized recreation presented by the expansive size of the district and the road network proposed in this alternative, the need for motorized trails was not expressed. All public motorized travel will occur on National Forest System roads. All roads designated for motor vehicle use will accommodate the following modes of transportation: state licensed highway legal vehicles, full-sized 4-wheel drive high-clearance vehicles, all terrain or utility vehicles (ATV/UTV), and motorcycles.

Scenic Resources and Visual Quality Objectives

Little change would be anticipated to scenic resources in this alternative. The VQOs in the Forest Plan are being met. Where the VQOs are retention, steep slopes and vegetation have generally reduced the development of unauthorized routes. Most retention areas in the Magdalena Ranger District occur in canyons with large volcanic walls, such as Thompson Canyon in the Datil Mountains. As a result, the VQO of retention would likely still be met under this alternative.

The restriction on motorized cross-country travel may result in the decrease of unauthorized routes that disturb grasses and shrubs and create additional linear features seen from the roads across the landscape. Where the VQO is classified as modification, the VQO would not likely be exceeded, because the disturbance from unauthorized roads and trails would be reduced as a result of the prohibition of motorized cross-country travel.

Since this area has been open to motorized cross-country travel since at least 1985, many of the areas where this use was possible have already been disturbed and unauthorized roads and trails have been established. This is consistent with the management objectives of modification because the unauthorized roads do not dominate the landscape. There is potential for the disturbed areas to return to a natural-appearing landscape over time due to the cross-country motorized travel restriction.

Recreation Opportunity Spectrum

The recreation opportunity spectrum (ROS) objectives on the district are currently being met. Several motorized user-created routes that impede on the wilderness boundary are impacting the primitive and semiprimitive nonmotorized objectives assigned to wilderness areas. This motorized trespass will continue as long as the motorized user-created routes cross the wilderness boundaries.

Alternative 3

Developed Recreation

No change to developed campground recreation sites or visitors' experiences while using these sites is anticipated from the existing condition. No new facilities are planned for the Magdalena Ranger District.

Dispersed Recreation and Dispersed Camping

Motorized cross-country travel would be prohibited across the district, but motor vehicles would be allowed off specified roads for motorized big game retrieval and dispersed camping. When compared to baseline conditions, dispersed recreation activities dependent on motorized travel may be impacted by the reduction in miles of roads designated for motor vehicle use and the prohibition of motorized cross-country travel. Nonmotorized recreation activities may benefit from the overall decrease in available routes where quiet and a sense of solitude are an important part of the user's experience. Although this alternative would decrease the miles of road designated for motor vehicle use from the baseline conditions, it offers more motorized opportunities than alternatives 1 and 4.

This alternative includes motorized dispersed camping corridors within 300 feet of either side of 374.4 miles of NFS road (appendix B). The motorized dispersed camping corridors throughout the district would allow more opportunities to camp across the unit, accommodating the current pattern of use. Although this alternative provides more dispersed camping opportunities, some users may feel restricted within these specific corridors and may be displaced from the unrestricted dispersed camping they enjoy.

Hunting and Motorized Big Game Retrieval

Motorized travel for big game retrieval would be allowed in the Magdalena Ranger District up to 0.25 mile on either side of the roads specifically identified in the alternative 3 maps (appendix B). This alternative provides for motorized big game retrieval along approximately 342.5 miles of roads. Authorized cross-country MBGR must be limited to those persons with a legally harvested and properly tagged big game species. Those authorized for cross-country MBGR should take a relatively direct and safe route that minimizes resource effects when retrieving their harvested animal, and they should take the minimum number of trips to accomplish retrieval. Only one vehicle would be allowed for cross-country MBGR per harvested animal. (USDA 2008)

The New Mexico Department of Game and Fish (NMDGF) assigned 1,053 elk permits and 2,023 mule deer permits for Unit 13, which includes the Datil and Bear/Gallinas area, for the 2009–2010 license year. Unit 17, which includes the Magdalena and San Mateo units, was assigned 757 elk permits and 1,099 mule deer permits. The amount of issued permits for Units 13 and 17 are typically higher than other units across the State. New Mexico Department of Game and Fish conducted a survey in 2009–2010 of hunter success rates based on species, number of permits issued, response rate, and the number of animals harvested that is shown in table 7. (New Mexico Game and Fish, 2010.)

The big game success rates in Units 13 and 17 vary from 16.1 percent to 33.5 percent. It is estimated 10–20 percent of the total hunting permits for Units 13 and 17 will generate a short-term impact on the District. There are many variables in estimating how many hunters use motorized means to retrieve game. Bow hunters typically pack out their harvested big game due to the terrain and remote nature of their hunts. Other factors include: weather, harvested animals' proximity to an open road, size of animal, and preparedness of the hunter. An NMDGF

publication reports roads where motorized vehicles are allowed, reduced big game use of adjacent habitat from the road edge to more than 0.5 mile away is occurring (NMDGF 2006). This means harvested animals are typically further from roads, so many successful hunters may use motorized means to retrieve their big game. Short-term impacts from motorized big game retrieval will include damaged ground vegetation from tires and from skidded big game. There is potential for these visible impacts to become an inviting route to other motorized users.

For hunters seeking a nonmotorized experience, this alternative may impact the quality of their hunt within and near areas where motorized big game retrieval is permitted. Due to the number of hunting permits available on Units 13 and 17, there is also a chance that motorized big game retrieval would disrupt the wildlife for other hunters.

Wilderness

By prohibiting cross-country travel, a reduction in motorized vehicle trespass within the Withington and Apache Kid Wilderness areas is expected with this alternative. Opportunities for solitude within wilderness may increase due to the elimination of unauthorized routes and minimizing trespass issues.

Roads and Trails

This alternative benefits motorized recreation opportunities across the district. The designation of a 756-acre motorized area in the San Mateo Mountains would give OHV enthusiasts an area for technical OHV opportunities. This motorized area would be delineated on the motor vehicle use map (MVUM) and would be physically delineated on the ground using topography and signage. The area would be open to all vehicles for cross-country travel. This alternative would result in more miles of NFS road designated for all vehicles than alternatives 1 and 4, thus increasing access to more portions of the district.

A total of 6.4 miles of new roads would need to be constructed to reroute existing NFS roads around private land. The mileage of new road construction is increased in this alternative to access the additional unauthorized routes and currently closed roads that is proposed. The expected effects to these reroutes are the same as those described in alternative 1. By adding more unauthorized roads and opening additional closed roads compared to alternatives 1 and 4, this alternative creates more loop road opportunities for recreational enjoyment.

A total of 367.1 miles of roads would be restricted to administrative use. They would not be designated for motor vehicle use and would not be displayed on the MVUM. National Forest System roads restricted to administrative use only is typically roads used for range, wildlife habitat, and fire management. No need for recreational activities to exist on these restricted roads was expressed.

This alternative does not designate trails for motorized use. All roads designated as open will accommodate the following modes of transportation: state licensed highway legal vehicles, full-sized 4-wheel drive high-clearance vehicles, all terrain or utility vehicles (ATV/UTV), and motorcycles. Historically, trails on the Magdalena Ranger District have not been designated or managed for motorized use. The majority of the nonmotorized trails on the district would not be sustainable if motorized use were allowed due to the topography.

The 876.7 miles of roads open to all motorized vehicles in this alternative provide many different opportunities for OHV recreation. The terrain, distances, and changes in scenery available on the Magdalena Ranger District vary dramatically and offer a quality experience for many users.

This alternative will provide the best experiences for the OHV, ATV/UTV and motorcycle operator. The designated motorized area will be open to all vehicles. This area will offer OHV opportunities for enthusiasts looking for technical OHV challenges. The motorized area addresses the need for a motorcycle trials technical riding area. The local communities would benefit from a designated motorized area and this motorized area would also become a destination for trials riders from around the state.

Table 9. Alternative 3 – Miles of NFS roads designated for all motor vehicles

Use Type	Miles
Existing miles of National Forest System roads	1,171.4
Miles of roads designated for administrative use only	-367.1
Miles of currently closed NFS road designated for motor vehicle use	16.9
Miles of unauthorized road added to system	29.2
Miles of new road construction	6.4
Miles of road added to system as a result of easements acquired	19.9
Total miles of road designated for motor vehicle use	876.7

With this alternative, the Magdalena Ranger District will provide visitors with a variety of motorized opportunities. This alternative would designate 25.9 more miles of road for motor vehicle use than alternative 1 (the proposed action).

This alternative would improve motorized access in the San Mateo Mountains. Currently the lack of access/rights-of-way through private land has prohibited users from accessing the southwest portion of the San Mateos. This alternative proposes constructing new roads to reroute access around private land and then connecting to additional proposed roads, which will give the public legal access to forest lands.

Although this alternative proposes more designated open National Forest System roads than alternatives 1 and 4, nonmotorized users should not be affected. The proposed motorized area is located in an area where nonmotorized users do not frequent. Also, the addition of the proposed road construction would establish access to nonmotorized trailheads on the southwest portion of the Apache Kid Wilderness, which will give users more nonmotorized opportunities.

Scenic Resources and Visual Quality Objectives

The effect to scenic resources in this alternative is very similar to alternative 1. The primary change is designating corridors for big game retrieval. There may be short-term visual impacts from motorized big game retrieval where grasses and shrubs are damaged by vehicles. If there is a one-time entry, this impact should last less than a few months. If other vehicles also use the route, the damage to vegetation could be more evident for a longer period of time. The changes would be within the thresholds set by their respective visual quality objectives.

Recreation Opportunity Spectrum

Recreation opportunity spectrum objectives on the Magdalena Ranger District are currently being met. There would be no effects to ROS under this alternative.

Alternative 4

Developed Recreation

Opportunities for motorized dispersed camping corridors are reduced in this alternative as compared to the baseline and alternatives 1 and 3. This may result in a slight increase in use at developed campgrounds.

Dispersed Recreation and Dispersed Camping

The prohibition of motorized cross-country travel and reduction in miles of National Forest System Roads designated for motor vehicle use may affect motorized dependent dispersed recreation activities more profoundly than the other alternatives. Motorized dispersed camping will be designated on 321.2 miles (21,944.1 acres) adjacent to system roads. The motorized dispersed camping corridors throughout the district would allow more opportunities to camp across the unit, accommodating the current pattern of use. Typically, dispersed camping corridors encompass camping locations which have been impacted and will continue to be used. The use of these established locations tends to decrease the impacts of dispersed camping in nonimpacted areas. The number of available corridors in the district will be reduced in size and number. This will result in the reduction of motorized camping corridors compared to alternative 1.

Hunting and Motorized Big Game Retrieval

Motorized big game retrieval would be prohibited on the district. Hunters' vehicles would be restricted to NFS roads that are designated for motor vehicle use and displayed on the MVUM. This alternative could enhance opportunities for hunters who prefer to hunt away from the presence and noise of motor vehicles. Since there is a reduction in the miles of roads being designated, motorized big game retrieval would become a greater challenge, with the potential for longer haul routes by foot or on horseback.

Wilderness

A reduction in motorized vehicle trespass within the Withington and Apache Kid Wilderness areas is expected with this alternative.

Roads and Trails

This alternative responds to potential natural and heritage resource impacts, resulting in a 41 percent reduction in the number of roads designated for motor vehicle use compared to baseline conditions. No motorized trails will be designated on the district due to the lack of need for motorized trail opportunities. Opening 10.6 miles of currently closed NFS roads and 17.3 miles of unauthorized roads, will create an opportunity for improved resource management, resource protection, and connections for loop road experiences. The 477 miles of NFS roads restricted to administrative use only are typically roads used for range, wildlife habitat, and fire management. The need was not expressed for recreational activities to exist on these restricted roads.

Trailheads and wilderness trails in the southern San Mateo Mountains are currently inaccessible due to road easement issues. The Forest Service does not have legal easements on the off forest access roads, which have been gated by the local landowners. The 3.7 miles of new road construction included within this alternative will create public access around private land. This will improve motor vehicle access to the southern San Mateo Mountains, which are currently inaccessible.

Table 10. Alternative 4 - Miles of NFS roads designated for all motor vehicles

Use Type	Miles
Existing miles of National Forest System roads	1,171.4
Miles of roads designated for administrative use only	-477.0
Miles of currently closed NFS road designated for motor vehicle use	10.6
Miles of unauthorized road added to system	17.3
Miles of new road construction	3.7
Miles of road added to system as a result of easements acquired	20.9
Total miles of road designated for motor vehicle use	746.9

Scenic Resources and Visual Quality Objectives

Over time, this alternative is expected to enhance scenic quality across the Magdalena Ranger District. There are fewer roads designated for motorized use compared to alternative 1. While 477 miles will be restricted to administrative use, they will continue to receive some levels of motor vehicle use, and the visual impacts will remain the same as described in alternative 1. Where routes are not used, the visual contrast of the road's bare soil will be reduced over time as grasses and shrubs grow in the tread. This would enhance the natural-appearing quality of the landscape. This would be consistent in areas across the district with the VQOs of retention and partial retention.

There are fewer corridors designated for motorized dispersed camping compared to the other alternatives. Where motorized dispersed camping is prohibited, the visual contrast of the more popular sites will be reduced over time as grasses and shrubs grow in the disturbed areas. This would enhance the natural-appearing quality of the landscape at those locations. In addition, prohibiting motorized big game retrieval will also reduce visual contrast and enhance the natural-appearing quality of the landscape.

Recreation Opportunity Spectrum

Recreation opportunity spectrum objectives on the Magdalena Ranger District are currently being met. There would be no effects to ROS under this alternative.

Cumulative Effects Area

The cumulative effects area for the recreation analysis includes other public and private lands where motorized recreation is available within a 3-hour drive of the Magdalena Ranger District. A 3-hour drive is a reasonable amount of time people would be expected to drive for a day's recreation. These lands include: other national forests, Bureau of Land Management (BLM), Albuquerque/Bernalillo County Open Spaces, and private OHV areas. Motorized vehicles are not allowed in the Apache Kid and Withington Wilderness areas and, therefore, they are not part of the cumulative effects area.

The Travel Management Rule applies to all national forest lands. The Santa Fe, Gila, Lincoln, and Carson National Forests have recently completed travel management projects or are currently undergoing analysis with the goal of producing a motor vehicle use map (MVUM) for all units by the end of 2013. The Cibola National Forest has completed the travel management process and is

implementing decisions on the Sandia, Black Kettle, Mountainair, Mt. Taylor, and Kiowa and Rita Blanca Ranger Districts.

The BLM's Rio Puerco (Albuquerque) and Socorro Field Offices manage lands near the Magdalena Ranger District. The Rio Puerco Field Office manages an OHV use area near San Ysidro. The Socorro Field Office is revising their resource management plan. A draft of the revised plan indicates that they are considering managing Gordy's Hill Special Recreation Management Area for OHV use. The Quebradas Backcountry Byway is open to high-clearance vehicles. Albuquerque Open Space manages the Montessa Park for OHV use, including an open play area that permits motorized cross-country travel.

There are several large OHV areas within the cumulative effects area that are located on private land and New Mexico State lands. The most popular areas are located on the western edge of Rio Rancho where there are two privately-run motocross parks (Sandia Motocross Park and Moriarty Motocross) open for OHV use.

Cumulative Effects

By prohibiting motorized cross-country travel, management of motorized recreation is changing on the Magdalena Ranger District with all action alternatives. All of the alternatives provide for continued motorized recreation in a variety of settings, providing a variety of experiences and challenges. The Travel Management Rule directs forests to designate roads, trails, and areas for motorized use. Complying with the Travel Management Rule will result in a net loss of motorized recreation opportunities since restricting use to a designated system will include the loss of cross-country travel.

The cumulative effects area that was determined for the recreation analysis in this EA are those areas within a 3-hour drive of the district. This includes the Albuquerque metro area. There has been no indication through employee observations, public comments, or online research that the Magdalena Ranger District is a regional or national destination for motorized recreation. Most of the observed use is from local communities and Albuquerque. This distance was determined based on CEQ guidance (40 CFR 1508.7) and the distance that most people drive for motorized recreation on the district. While management is changing on national forests within this area, there will still be motorized recreation available throughout the cumulative effects area, as well as BLM and other lands.

There are cumulative effects when this net reduction in motorized recreation is coupled with other travel management projects within the cumulative effects area. The Sandia Ranger District completed the travel management process in 2009 and a designated system is in place. The predominant OHV recreation that is provided is motorcycle single track in the Cedro area. There is also some full-size vehicle use and ATVs and UTVs can use most of the designated maintenance level 2 roads in the Cedro area. Motorcyclists would likely prefer the Sandia Ranger District's opportunities with the single track trails, and may be displaced to the Cedro area. There has not been a large number of motorcycle riders observed on the Magdalena Ranger District, so this should not result in a noticeable increase on the Sandia Ranger District.

The Mt. Taylor Ranger District signed a decision for travel management on April 14, 2011. This decision provides additional motorized recreation opportunities on the forest by including a motorized trail system for vehicles less than 65 inches in width as well as a system of trails for

motorcycles only. Depending on the alternative selected for this project, some motor vehicle users—such as OHV riders—may be displaced to other State and Federal lands where motorized trails exist, such as the Mt. Taylor Ranger District.

The Mountainair Ranger District signed a decision for travel management on May 7, 2012. This decision focuses on providing motorized access for all types of vehicles throughout the district. Based on the analysis presented in the EA and the comments received, it is evident that the Mountainair Ranger District is valued for multiple forms of recreation, many of which are facilitated by motorized access to areas on the district. Although motorized trails were considered under the selected alternative, the comments received indicated a preference for these routes remaining open to all motor vehicles. Therefore, all routes being designated with this decision will be roads open to all classes of vehicles. The designated system will provide a variety of motorized recreation opportunities by including routes that vary in difficulty. This will provide four-wheel drivers with a diversity of terrain and challenges.

Opportunities on the Mountainair Ranger District are typically the same in comparison to the action alternatives for this project. Once a decision is made for Magdalena Ranger District, the outcome is not expected to displace motorized users from Magdalena Ranger District to the Mountainair Ranger District.

Transportation

The following analysis is based on the transportation specialist report prepared by Richard Graves, forest roads manager. This report is on file in the project record.

The Magdalena Ranger District of the Cibola National Forest proposes to implement the national Travel Management Rule (36 CFR 212), which requires the Forest Service to provide for a system of National Forest System (NFS) roads, National Forest System trails, and areas on National Forest System lands designated for motor vehicle use. The result of this effort will be a motor vehicle use map (MVUM) for the Magdalena Ranger District. This map will display the roads and trails designated for motor vehicle use, by vehicle class and the period of allowed use, if appropriate.

The road system is the primary focus of this report, which discusses the current state of the road system in the analysis area and the changes that would occur with each of the alternatives analyzed. Please refer to the recreation report for a discussion of the trail system.

The travel analysis process (TAP) was conducted for the Magdalena Ranger District. The TAP provides a technical, science-based evaluation of the district's motorized transportation system. It involves a broad-scale, comprehensive review of the transportation system. The TAP provides critical information for designating and managing a system of motorized roads and trails that:

- Is safe and responsive to public needs and desires,
- Conforms to the "Cibola National Forest Land and Resource Management Plan,"
- Is efficiently administered,
- Has minimal negative environmental effects, and
- Is in balance with available funding for needed management actions.

The direction provided in Forest Service Manual (FSM) 7700, Chapter 7710, requires that the responsible official consider the following roads-related criteria when designating roads for motor vehicle use:

- Need for maintenance and administration of roads,
- Availability of resources to satisfy the maintenance and administration needs,
- Public safety, and
- Access needs.

These criteria are discussed in detail in this report.

Methodology

Tabular data for the roads in the analysis area were obtained from the Forest Service infrastructure database (Infra). The geographic information system (GIS) application ArcMap was used to obtain road lengths and to display road locations.

The analysis area for this project is generally located within the Magdalena Ranger District boundary. Some roads located outside the district boundary were considered for motor vehicle use designation. An interdisciplinary team (ID team) consisting of specialists from several resource areas evaluated each National Forest System (NFS) road in the analysis area, as well as some unauthorized roads (refer to the "Baseline Condition" section for the definition of an unauthorized road), in determining which roads to propose for designation. For each road evaluated, the ID team considered information from three sources:

1. Magdalena Ranger District TAP,
2. Additional knowledge of the roads gained since the TAP was completed, and
3. Comments submitted during the public scoping period.

The Magdalena TAP identifies the risks and benefits associated with each NFS road and several unauthorized roads. Risks to natural and cultural resources were weighed against benefits relating to:

- Recreation access,
- Access for resource administration and protection,
- Emergency access, and
- Tribal access to areas of cultural significance and traditional use.

More unauthorized roads exist than were evaluated for this analysis. Some of these roads are known to the Forest Service, and there are undoubtedly others that the Forest Service is not aware of. The Travel Management Rule does not require that all existing unauthorized roads be documented or that all known unauthorized roads be evaluated for motor vehicle use designation.

Baseline Condition

The Magdalena Ranger District of the Cibola National Forest is comprised of four mountain ranges:

1. **The Bear/Gallinas Mountains** are a north-south trending range northwest of the village of Magdalena. Primary access to this range is by State Highway 169. Two inventoried roadless areas (IRA) are located within the Bear Mountains: Goat Spring and Scott Mesa. Refer to the section in this chapter titled "Inventoried Roadless Areas" for discussion of roads located in IRAs.
2. **The Datil Mountains** lie west of the district office, approximately 40 miles along U.S. Highway 60. The range consists of two subranges: Crosby Mountains and Sawtooth Mountains. These ranges are accessed via U.S. Highway 60. Two IRAs are located within the Datil Mountains: Datil and Madre Mountain.
3. **The Magdalena Mountain** range is a north-south trending range and is immediately south of the village of Magdalena. State Highway 107 provides access to the west side of the mountain range, while the east side of the range is accessed from U.S. Highway 60. The Langmuir Research Site and Ryan Hill IRA are located in this mountain range.
4. **The San Mateo Mountains** are the largest of the four mountain ranges and have a north-south trend. The Apache Kid Wilderness and Withington Wilderness are located in this range, as are the Apache Kid Contiguous, San Jose, and White Cap IRAs. Access to this mountain range is provided by State Highways 52, 107, and 1 to the west, east, and south respectively.

There are 1,218 miles of NFS roads (system roads) in the analysis area. Of this total, 1,171 miles (approximately 96 percent) are open to motor vehicle traffic. In addition, there are no restrictions on motorized cross-country travel. The forest road system does not include private roads or roads under the jurisdiction of a State, county, or local public road authority.

Because motor vehicle travel in the analysis area—both on and off system roads—is largely unrestricted, many miles of unauthorized roads exist throughout the analysis area. In this analysis, the term "unauthorized road," means:

- A road created by repeated off-road motorized travel along the same path, without the knowledge and approval of the Forest Service;
- A temporary road constructed by the Forest Service for a particular project that was not decommissioned when it was no longer needed;
- A road that was once a system road and was decommissioned; or
- A road that was decommissioned but the decommissioning treatment proved to be ineffective.

Unauthorized roads that were created without the knowledge and approval of the Forest Service were likely not planned and designed to consider potential environmental impacts. Some of these roads may be in acceptable locations and may be good additions to the road system. However, it is likely that some of them adversely affect the surrounding environment through degradation of wildlife habitat, vegetation or soil productivity, or disturbance to archaeological sites. In addition, the potential for the spread of noxious weeds is increased as a result of unrestricted motorized travel.

Road Maintenance Needs and Resources to Satisfy Needs

The Forest Service uses the term maintenance level (ML) to describe the service provided by, and maintenance required for, a specific road. A road is assigned a maintenance level on the basis of the intended use of the road and the criteria that influence how the road will be operated and maintained. The maintenance level also provides an indication of the level of comfort the user would expect to experience while operating a vehicle on the road.

The Forest Service uses five maintenance levels: ML 1 road, which requires the least amount of maintenance effort to an ML 5, which requires the greatest. Refer to the glossary for complete descriptions of the maintenance levels. Table 11 provides a summary of the road miles by maintenance level in the analysis area with estimated maintenance costs. ML 1 roads are closed to all motorized traffic. MLs 2, 3, and 4 roads are open to all motor vehicles. There are no ML 5 roads in the analysis area.

Table 11. Road miles by maintenance level

Maintenance Level*	Miles	Maintenance Cost/Mile	Total Annual Maintenance Cost
1	46.7	$61	$2,849
2	1,086.2	$855	$928,701
3	85.0	$8,530	$725,050
4	0.2	$30,570	$6,114
Total	**1,218.1**		**$1,662,714**

* There are no ML 5 roads in the analysis area.

The average annual maintenance costs per mile of road by maintenance level were determined for the Magdalena Ranger District TAP. Funding for Cibola National Forest road system maintenance in Fiscal Year (FY) 2012 was approximately $740,000. The Cibola's road system consists of approximately 3,700 miles of roads, so the number of system road miles in the analysis area represents approximately 33 percent of the total number of forest system road miles. Using the simple ratio of miles in the analysis area to the total number of miles on the forest, the proportion of the total road maintenance budget available to maintain system roads in the analysis area is approximately $243,000. This figure represents only 15 percent of the funding necessary to maintain roads in the analysis area in a manner consistent with their assigned maintenance levels. This substantial shortfall in road maintenance funding has resulted in a large backlog of deferred road maintenance needs. Deferred maintenance can be generally defined as routine maintenance that was not completed when scheduled.

Public Safety

The primary concern regarding public safety as it relates to road system use is the potential for accidents, whether involving single vehicles or multiple vehicles. The latter could involve any combination of large commercial vehicles, full-size passenger vehicles, or off-highway vehicles. More safety features are typically incorporated into the design and management of higher standard forest roads (MLs 3–5) than are incorporated into the design and management of lower standard roads. These features include:

- Wider roadway widths with more frequent turnouts;

- Signing to warn users of potential hazards along the roadway;
- Guardrails, where appropriate; and
- More frequent maintenance to provide a relatively smooth road surface free from potentially hazardous irregularities.

Maintenance level 2 roads are typically lower standard roads managed for use by high-clearance vehicles. They generally have narrower road widths with fewer turnouts. Surface smoothness is not a consideration in the design or maintenance of the road. Roadway geometry and surface condition typically result in lower travel speed, which reduces the likelihood of accidents.

The potential for accidents between commercial and noncommercial vehicles is mitigated by the appropriate use of signing and control of public access in the vicinity of project activities. If necessary, roads can be temporarily closed by forest orders to limit interactions between commercial and noncommercial vehicles.

Access Needs

Access to National Forest System lands is needed or desired for several reasons:

- Administrative use,
- Access to private property for property owners,
- Access to forest resources, for both commercial and noncommercial purposes,
- Recreation use, and
- Access to grazing allotments for grazing permittees.

As motorized travel in the analysis area on and off system roads is largely unrestricted, access to National Forest System lands is currently hampered only where the Forest Service lacks the right-of-way across private property.

Environmental Consequences

Alternative 1 is the proposed action. Alternative 3 was created in response to public comments requesting more access, primarily for recreation purposes, than is provided in the proposed action. Alternative 4 addresses public comments requesting less access, primarily for the purpose of resource protection. Alternative 2 provides for more access than any of the other alternatives, designating almost all of the existing open system roads for motor vehicle use. In the following tables, each of these alternatives is compared to the baseline condition (baseline).

Summary of Road System Effects

In table 12, the values in the “Miles of closed road changed to open road” row are the miles of ML 1 roads that would be reopened and designated for motor vehicle use. The maintenance level for these roads would be changed to ML 2, and they would be maintained for high-clearance vehicles. The values in the “Miles of new road construction” row are the total miles of reroute construction proposed to bypass private property. The miles of road added to the system as a result of easements acquired represent road segments that are not under Forest Service jurisdiction. The Forest Service would pursue easements for these segments (please see table 1 in chapter 2) to gain legal access to system roads beyond. No roads would be closed (maintenance

level changed to ML 1) under any of the alternatives. Roads that are presently open to motor vehicles but would not be designated for motor vehicle use in an alternative, would be restricted to administrative use only.

Table 12. Road system by alternative

	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Miles of closed road changed to open road	0	14.7	0	16.9	10.6
Miles of new road construction (reroutes)	0	4.5	0	6.4	3.7
Miles of unauthorized routes[1] added as NFS roads	0	17.0	0	29.2	17.3
Miles of road added to system as a result of easements acquired	0	21.4	66.5	19.9	20.9
Miles of road restricted to administrative use only	0	-378.2	-0	-367.1	-477.0
Miles of road designated for motor vehicle use	1,171.4	850.8	1,210.8*	876.7	746.9

[1] Consists of previously decommissioned roads and other documented non-system roads.

For alternatives 1, 3, and 4, the value in table 12 for miles of road designated for motor vehicle use equals the sum of the baseline road miles open to motor vehicle use (MLs 2, 3, and 4), the miles of closed road changed to open road, and the miles of road added to the system (rows 2, 3, and 4) minus the miles of road restricted to administrative use only. For alternative 2, the value for miles of road designated for motor vehicle use equals the sum of the baseline road miles open to motor vehicle use and the miles of road added as a result of easements acquired minus the miles of road that would not be designated for motor vehicle use. *There are 27.1 miles of road that would not be designated for motor vehicle use in alternative 2 (see alternative 2 maps). These roads connect with and are located beyond closed roads or unauthorized roads. No closed roads would be opened nor unauthorized roads added to the system in alternative 2, so the affected open system roads would remain inaccessible.

Table 13 displays the estimated annual road maintenance costs by alternative. The maintenance level for closed system roads that would be reopened and designated for motor vehicle use would be changed from ML 1 to ML 2. All roads added to the system (unauthorized roads and reroutes) would be maintained at an ML 2 standard.

A modified maintenance cost was used for the ML 2 roads that would not be designated for motor vehicle use. Because the traffic volume on these roads would be lighter and the required maintenance frequency, therefore, reduced, a maintenance cost of $300 per mile was used for these roads (ML 2mod in table 13)

Table 13. Road miles and estimated annual maintenance costs by alternative

	Maintenance Level[1]						
Alternative	1	2	2_{mod}[2]	3	4	Total Miles	Total Annual Maintenance Cost
Baseline	46.7	1,086.2	0	85.0	0.2	1218.1	$1,662,714
1	32.0	765.6	378.2	85.0	0.2	1261.0	$1,501,164
2	46.7	1,152.7	0	85.0	0.2	1284.6	$1,719,571

Alternative	Maintenance Level[1] 1	2	2_{mod}[2]	3	4	Total Miles	Total Annual Maintenance Cost
3	29.8	791.5	367.1	85.0	0.2	1273.6	$1,519,844
4	36.1	661.1	477.0	85.0	0.2	1259.4	$1,441,707

[1] There are no ML 5 roads in the analysis area.

[2] Values represent miles of ML 2 road not designated for motor vehicle use. A modified unit maintenance cost was used to reflect a reduced frequency of use and corresponding reduction in maintenance required.

In table 14, the values in the "Unauthorized Roads" column are the costs associated with the work required to improve the condition of unauthorized roads that would be added to the system to an ML 2 standard. The main criteria for meeting this standard are:

1. The road must be passable by a high-clearance vehicle, and
2. Concerns regarding the existence of, or potential for, resource damage caused by the road must be addressed.

No consideration is given to accommodating use by standard passenger cars. The values in the "New Construction (Reroutes)" column are the total estimated costs of constructing the reroutes proposed in an alternative (refer to table 13 for mileage).

Table 14. Cost of work required to add routes as NFS roads

Alternative	Unauthorized Roads	New Construction (Reroutes)	Total Cost
Baseline	$0	$0	$0
1	$7,410	$66,770	$74,180
2	$0	$0	$0
3	$18,220	$96,780	$115,000
4	$7,470	$56,150	$63,620

Public Safety

Baseline Condition

In the near future, the road system in the analysis area would continue to be relatively safe for prudent drivers. Because the vast majority of system roads are maintained for high-clearance vehicles, speeds would remain relatively low, and the likelihood of accidents between vehicles would continue to be low. If road maintenance budgets continue to decline, as anticipated, the frequency of road maintenance may need to be adjusted, and road conditions may deteriorate over time. Eventually, this deterioration could result in a road system that is less safe for all users.

Alternative 2

Compared with the baseline condition, more roads would be designated for motor vehicle use than are presently available. The accompanying additional road maintenance needs would consume more of the already limited funding and could hasten deterioration of portions of the

road system in the analysis area. The emphasis in prioritizing use of available funding would be on maintaining ML 3 and ML 4 roads.

Alternatives 1, 3, and 4

In these alternatives, fewer roads would be designated for motor vehicle use compared with the baseline condition, which would result in a decrease in road maintenance needs. The majority of the resulting savings in road maintenance costs would likely be directed toward satisfying the maintenance needs of roads designated for motor vehicle use. The result of this redirected funding would be a designated road system that is safer for public travel. However, the anticipated funding would be insufficient to adequately maintain the entire road system as it would exist under any of these alternatives. Because fewer roads would be designated for motor vehicle use, some roads may experience more concentrated use than currently exists. If the concentration of use were to increase to the extent that conflicts between vehicles become a problem, changes in management of the affected roads would be made as necessary.

All of the unauthorized roads proposed for designation would be added to the system as ML 2 roads. They would not be added to the system or displayed on the motor vehicle use map (MVUM) until the work necessary for them to meet ML 2 standards has been completed. ML 2 roads are maintained for passage by high-clearance vehicles, and users of these roads should not expect to encounter signs warning of potential hazards. As a result, travel speeds are inherently slow and users tend to be more cautious, which means that the likelihood of accidents involving multiple vehicles is relatively low.

Road Maintenance Needs and Resources to Satisfy Needs

Baseline Condition

Road maintenance needs would continue to far outweigh the funding available to satisfy these needs. With the likelihood that funding will continue to decrease—or at best—remain the same, in coming years, deferred maintenance needs would continue to increase. In addition to the many miles of unauthorized road that already exist in the analysis area, continued unrestricted motor vehicle use would likely result in the creation of more unauthorized roads. A portion of these roads would likely cause resource damage and may need to be treated to mitigate the damage. The cost of this treatment would further reduce the funding available for maintaining system roads.

Alternative 2

According to table 14, the increase in road system miles associated with this alternative would result in an increase in the annual maintenance cost of approximately 3 percent. The increased maintenance cost would result in an increase in the number of road miles that are not adequately maintained, and the deferred maintenance backlog would become even larger. The prohibition of motorized cross-country travel in this alternative would likely limit the creation of new unauthorized roads.

Alternatives 1, 3, and 4

Table 14 indicates a decrease in maintenance costs for alternatives 1, 3, and 4 compared with the baseline condition of 10 percent, 9 percent, and 13 percent, respectively. These reduced

maintenance costs, however, would remain substantially higher than the forecasted budget allotment for maintaining the roads in the analysis area ($243,000 or less) consistent with their assigned maintenance levels. The estimated costs of the work associated with adding unauthorized roads to the system and constructing reroutes (table 15) would further reduce the funding available for road maintenance in the short term, unless additional funding is made available for this work.

Access Needs

Permits could be issued for access on system roads that would be restricted to administrative use only. Reasons for obtaining a permit would include allowing access to private property for property owners and access to grazing allotments for permittees.

Baseline Condition

Access to National Forest System lands via system roads in the analysis area would be unchanged and would continue to be hampered only by the lack of rights-of-way across private property.

Alternative 1

Compared with the baseline condition, 27 percent fewer miles of road would be designated for motor vehicle use than are presently available for use (table 12). To improve forest access, 4.5 miles of reroutes connecting the following roads are proposed in this alternative (alternative 1 maps):

- NFS Roads 537A and 540 in the southeastern part of the Datil Mountains;
- NFS Roads 214 and 218 in the eastern part of the Magdalena Mountains;
- NFS Roads 37 and 222 in the eastern part of the Magdalena Mountains;
- NFS Roads 271 and 282 in the northwestern part of the Magdalena Mountains; and
- Two sections of NFS Road 47 in the southwestern part of the Magdalena Mountains.

The proposed reroutes, as well as roads beyond the reroute segments that would not be accessible without the reroute, would not appear on the motor vehicle use map (MVUM) until the reroutes have been constructed. The unauthorized roads that would be added to the system (17 miles) also would not appear on the MVUM until the work necessary to improve their condition to meet the standards of an ML 2 road has been completed.

Easements across multiple road segments would be pursued to gain legal access to system roads proposed for designation. Acquiring these easements would result in 21.4 miles of road added to the system. The road segments for which the easements would be pursued and the roads located beyond these segments that would be designated for motor vehicle use would not appear on the MVUM until the necessary easements have been acquired.

Alternative 2

Compared with the baseline condition, 3 percent more road miles would be designated for motor vehicle use than are presently available (table 12). All open system roads would be designated for motor vehicle use, except those located beyond closed system roads or unauthorized roads. No

closed roads would be opened, no unauthorized roads would be added to the system, and no reroutes would be constructed.

Easements across multiple road segments would be pursued to gain legal access to system roads proposed for designation. Acquiring these easements would result in 66.5 miles of road added to the system. The road segments for which the easements would be pursued and the roads located beyond these segments that would be designated for motor vehicle use would not appear on the MVUM until the necessary easements have been acquired.

Alternative 3

Compared with the baseline condition, 25 percent fewer miles of road would be designated for motor vehicle use than are presently available for use (table 12). To improve forest access, 6.4 miles of reroutes connecting the following roads are proposed in this alternative (alternative 3 maps):

- NFS Roads 537A and 540 in the southeastern part of the Datil Mountains;
- NFS Roads 214 and 218 in the eastern part of the Magdalena Mountains;
- NFS Roads 37 and 222 in the eastern part of the Magdalena Mountains;
- NFS Roads 271 and 282 in the northwestern part of the Magdalena Mountains;
- Two sections of NFS Road 47 in the southwestern part of the Magdalena Mountains; and
- NFS Roads 894A and 896 in the southwestern part of the San Mateo Mountains.

The proposed reroutes, as well as roads beyond the reroute segments that would not be accessible without the reroute, would not appear on the motor vehicle use map (MVUM) until the reroutes have been constructed. The unauthorized roads (29.2 miles) also would not appear on the MVUM until the work necessary to improve their condition to meet the standards of an ML 2 road has been completed.

Easements across multiple road segments would be pursued to gain legal access to system roads proposed for designation. Acquiring these easements would result in 19.9 miles of road added to the system. The road segments for which the easements would be pursued and the roads located beyond these segments that would be designated for motor vehicle use would not appear on the MVUM until the necessary easements have been acquired.

Alternative 4

Compared with the baseline condition, 36 percent fewer miles of road would be designated for motor vehicle use than are presently available for use (table 12). To improve forest access, 3.7 miles of reroutes connecting the following roads are proposed in this alternative (alternative 4 maps):

- NFS Roads 537A and 540 in the southeastern part of the Datil Mountains;
- NFS Roads 214 and 218 in the eastern part of the Magdalena Mountains;
- NFS Roads 37 and 222 in the eastern part of the Magdalena Mountains; and
- NFS Roads 271 and 282 in the northwestern part of the Magdalena Mountains.

The proposed reroutes, as well as roads beyond the reroute segments that would not be accessible without the reroute, would not appear on the motor vehicle use map (MVUM) until the reroutes have been constructed. The unauthorized roads (17.3 miles) also would not appear on the MVUM until the work necessary to improve their condition to meet the standards of an ML 2 road has been completed.

Easements across multiple road segments would be pursued to gain legal access to system roads proposed for designation. Acquiring these easements would result in 20.9 miles of road added to the system. The road segments for which the easements would be pursued and the roads located beyond these segments that would be designated for motor vehicle use would not appear on the MVUM until the necessary easements have been acquired.

Cumulative Effects

All Alternatives

The list of ongoing and future foreseeable projects considered for cumulative effects is appendix D of this document. None of the activities associated with these projects is expected to change the route designations associated with this project. As a result, there would be no cumulative effects from the combination of route designations proposed with this project and activities associated with ongoing or future foreseeable projects.

Heritage Resources

The following analysis is based on the heritage resources specialist report prepared by Matt Basham, District Archaeologist. This report is on file in the project record.

Affected Environment

The Magdalena Ranger District can be divided into four noncontiguous geographic units: Magdalena Mountains; San Mateo Mountains; Bear/Gallinas Mountains, and Datil Mountains. Interspersed within the mountains are expansive grassy plains, including the Plains of San Agustin, located some 20 miles west of the village of Magdalena, New Mexico. The geographic variability of the district undoubtedly contributes to the long duration of human occupation in the area, and partially accounts for the distribution of archaeological sites on the district. The cultural landscape of the district contains evidence of human occupation that extends back 14,000 years.

The Magdalena Ranger District has 1,081 cultural resources recorded in the New Mexico Cultural Resources Inventory System. Approximately 50 percent of those sites are prehistoric, 28 percent historic, with the rest representing multicomponents or unknown components. The sites are widely distributed across the district, with concentrations occurring in areas that were suitable for occupation.

Across the district, site density is low—defined as 20 or less sites per square mile. Sections of the district have moderate to high archaeological site density. Moderate site density is defined as 20 to 40 sites per square mile, and high site density is 40 or more sites per square mile. Site density on the district tends to be lower in areas situated at high altitudes in the mixed conifer vegetation zone. Areas of the district located in the piñon-juniper zone or historic mining areas will most likely have higher site density.

Evaluation of site density on the Magdalena Ranger District is tied to the district's distribution of survey. The district archaeologist used Geographic Information System (GIS) layers for known cultural resource sites and valid cultural resource surveys for site density evaluation. A valid cultural resource survey consists of systematic ground examination using professional archaeologists to intensively examine transect swaths that do not exceed 15 meters in width. The GIS layer shows that 51,563 acres have been surveyed to this standard, resulting in approximately six percent of the district having been surveyed. Survey on the district corresponds to land management activities such as timber sales, fuels projects, fire management activities, range projects, roads and infrastructure maintenance, and wildlife management.

Heritage Resources Protocol for Travel Management

The Cibola National Forest meets its Section 106 responsibilities under a region-wide programmatic agreement (PA) signed by the Forest Service, State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation. This agreement serves in lieu of procedures set out in 36 CFR 800. The "R3 First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities" allows for the development of protocols related to specific undertakings. In 2006, the Forest Service, in consultation with the tribes, SHPOs, and Advisory Council, developed a protocol for travel management route designation (appendix I: "Standard Consultation Protocol for Travel Management Route Designation").

Per the Region 3 protocol with the New Mexico State Historic Preservation Office regarding travel management, some existing roads and areas do not require heritage resource survey. No additional Section 106 survey is needed for the following areas:

- Existing system roads and trails already open for motor vehicle use. The Forest Service and SHPO have agreed that the integrity of sites located within an existing system road have already been compromised by construction, maintenance, and driving of the road.
- Existing associated constructed features such as pullouts, trailheads, and turnouts.
- Pull-off parking alongside existing roads within a vehicle length.
- Existing fixed-distance corridors where motorized use has been previously authorized in approved forest plans or covered by past decisions.
- Specific limited-use authorizations such as those for game retrieval or firewood gathering that are already covered by separate NEPA decisions.

The Region 3 protocol requires that some roads be surveyed to determine the effects of the alternatives on heritage resources. All unauthorized roads, decommissioned roads, and new road construction and areas will be inventoried. The areas considered in the Magdalena travel management proposed action and alternatives that require heritage resource survey are motorized dispersed camping corridors. An off-highway vehicle use area proposed in alternative 3 would require a heritage resource survey.

Analysis Methods

Cultural resources include both archaeological sites on district lands, as well as the heritage of extant communities in and around the Magdalena Ranger District. Unlike other resources on the district, archaeological resources are considered nonrenewable—they cannot be regenerated or replaced. Archaeological resources are a testament of past human behavior represented by sites,

buildings, structures, artifacts, ruins, objects, rock art, dendroglyphs, architecture, and natural features. Indeed, in the preamble of the National Historic Preservation Act (NHPA), Congress recognized that "the spirit and direction of the Nation are founded upon and reflected in its historic heritage" and "the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people." Simply stated, the past is who we are and why we are the way we are.

The potential for impacts to cultural resource sites in the existing condition is separated into direct and indirect impacts from unauthorized routes and motorized dispersed camping corridors. The potential for impacts is measured as a change from the baseline condition (existing road system plus unrestricted cross-country travel).

To determine the numbers of cultural resource sites, the district archaeologist intersected GIS data for existing unauthorized routes and motorized dispersed camping corridors for each alternative with known site boundaries. For sites that are less than 100 meters in maximum dimension (length or width) size, site boundaries are represented in most cases in the GIS data as circles representing the site's maximum dimension. Route intersections were buffered using the same method as found in the standard road maintenance protocol that was consulted upon with the New Mexico State Historic Preservation Office (Benedict 2005). The widths account for the area of direct impact from vehicular travel in each class of route, plus a maintenance buffer of 98 feet (30 meters) off centerline for a total width of 196 feet (60 meters). Motorized dispersed camping corridors were buffered 300 feet (91 m) off centerline for a total width of 600 feet (182 m).

Table 15. Potential for impacts to cultural resource sites by alternative presented as a decrease from the baseline

Measure: Number of Sites	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Potential vehicular impacts within unauthorized routes	890	188	137	322	183
Percent of change from baseline condition	—	79%	85%	64%	79%

Vehicular Impacts within Routes

No additional Section 106 consultation is required for the designation of existing open system routes. In consultation with the New Mexico State Historic Preservation Officer, it was agreed that the integrity of these sites was compromised and the potential for substantial impacts to cultural resource sites from designating existing system routes was low ("First Amended Programmatic Agreement, Appendix I.II.A").

For unauthorized routes that will be added to system, where there is a potential for substantial impacts to cultural resource sites, the site will be protected or avoided. In some instances, a route—or a portion of a route—will be excluded from the motor vehicle use map (MVUM). Alternatively, when avoidance is not possible, the site within the route can in some cases be protected from vehicular impacts by plating the surface. Plating consists of placing a protective covering, usually consisting of geotextile and sediment to raise the grade of the route over the surface of the site, so that vehicular travel takes place on the surface of the plate rather than on the surface of the site. However, plating or the intentional burial of a site is often an irreversible action that would require periodic monitoring to ensure the plating is working. In other cases, a

section of a road may be rerouted to avoid sites. Where no other protection measures can be employed, data recovery may be needed to minimize adverse effects.

Vehicular Impacts within Motorized Dispersed Camping Corridors

The potential effects from motorized dispersed camping corridors that cause direct impacts include: vehicles dislocating artifacts; forming ruts, the erosion of archaeological material; repeated traveling on tracks that end up creating road systems; establishing vehicular access to significant archaeological sites, and the potential for subsequent looting of surface and subsurface archaeological materials. Disturbance of archaeological contexts impacts the preservation of artifacts and limits the ability of archaeologists to learn about the past from these disturbed sites. Additionally, roads that access archaeological sites can potentially facilitate looting activities (e.g. theft of artifacts) and vandalism, although no evidence of this has been observed on the district. For designated corridors where substantial impacts to cultural resources are identified, all or portions of a corridor will be excluded from the MVUM, so the site or sites with a potential for substantial impacts are excluded from a corridor. In situations where delisting the corridor or portions of the corridor are not feasible, on-the-ground protective closures will be enacted.

Motorized Big Game Retrieval

Motorized big game retrieval for purposes of the following discussion consists of mule deer and elk only. The greatest extent of potential impacts from big game retrieval is limited to the number of public permits issued for big game on units located on Magdalena Ranger District lands, and the number of takes or successful hunts. The New Mexico Department of Game and Fish (NMDGF) assigned 1,053 elk permits and 2,023 mule deer permits for Game Management Unit (GMU) 13, which includes the Datil and Bear/Gallinas area, for the 2009–2010 license years. Unit 17, which includes the Magdalena and San Mateo units, was assigned 757 elk permits and 1,099 mule deer permits. It is subjective to assume that the off-road route chosen by a hunter to retrieve downed big game will intersect a cultural resource site, and there is no way to analyze a hypothetical circumstance.

However, it is logical to assume that the probability of intersecting cultural resources increases in areas of higher archaeological site density. That being said, there is a higher probability of intersecting a cultural resource by retrieving downed game in GMU 13 because it is located in the northern part of the district where archaeological site density is highest. In addition, GMU 13 sold more permits (3,076) and had more successful hunts (550). By comparison GMU 17, located in an area with lower archaeological site density, sold 1,856 public permits and reported 464 successful hunts.

This activity is similar in its spatial extent and impact to districtwide or areawide personal use firewood collection. Personal use firewood collection often requires one or more cross-country trips to retrieve green or dead and down wood. In 2011 (the last complete year for which data is available), the Magdalena Ranger District issued 1,042 districtwide or areawide permits for the collection of dead and down or live green firewood. The 1,042 permits accounted for 2,084 cords of wood. The permitting process provides for a half-cord per load or trip, which means that 1,042 permits could potentially result in 4,168 cross-country trips on the district. It has been programmatically determined that there are no substantial impacts to cultural resource sites from personal use district-wide firewood collection (“Region 3 Programmatic Agreement Appendix

A.II.P"). Because motorized big game retrieval is similar in impact, and similar in yearly occurrence, to district-wide or area-wide firewood permits, it is reasonable to assume that there will be no substantial impact to heritage resource sites from motorized big game retrieval. Limited trips for motorized big game retrieval, spread out across such a large area will have a low potential to affect cultural resources.

Heritage Resource Survey

In alternatives 1, 3, and 4, a heritage resource survey is required for:

- All unauthorized roads to be added to the system;
- Closed roads to be reopened;
- New roads to be constructed around private land; and
- Motorized dispersed camping corridors identified for motor vehicle use proposed.

The OHV area proposed in alternative 3 would need to be surveyed. Corridors will be evaluated for the level of survey needed. Corridors with high site densities will be surveyed 100 percent. Corridors with low site densities may be surveyed to less than 100 percent. The locations of the proposed reroutes have not been identified at this time.

A heritage resource survey is not required for motorized big game retrieval corridors. Due to the highly dispersed nature and the one-time-in/one-time-out requirement, it is unlikely that this activity would impact heritage resources. They will need to be surveyed for heritage resources prior to being added to the motor vehicle use map (MVUM). The responsible government official may provide for a system of roads, trails, and areas designated for motor vehicle use in a decision notice/finding of no significant impacts prior to completion of all required heritage resource surveys.

Appendix I of the Region 3 programmatic agreement allows the Forest Service to complete the Section 106 process in phases. Compliance with the National Historic Preservation Act (NHPA) requires extensive literature review and field evaluation of the direct effects of designating a motorized system of routes and corridors. Site-specific effects are described in compliance documentation completed for the inventory, evaluation, and mitigation of effects to cultural resources completed to meet the requirements of Section 106 of NHPA as defined in 36 CFR 800 and the Region 3 programmatic agreement. Development of the protocol was completed in consultation with the Advisory Council on Historic Preservation, the State Historic Preservation Officers of Arizona, New Mexico, Oklahoma, and Texas, southwestern tribal communities, and the USDA Forest Service. Completion of these requirements will occur in phases and will be reflected on the motor vehicle use map (MVUM). Only routes and areas meeting the requirements of Section 106, as articulated in the protocol, will be included on the MVUM.

In November and December 2010, contractors surveyed 4,302 acres of roads and corridors identified in the proposed action (alternative 1). In many instances, the surveyed routes and corridors are the same for each alternative with some minor deviations. All of the areas requiring survey were identified during a pre-field investigation of the heritage resource records for the Cibola National Forest. Roads and areas that have been 100 percent surveyed to standard previously were excluded from additional survey. All of the remaining areas not covered by

previous survey will be surveyed in phases, over 3 years, to meet the Forest Service's Section 106 obligations. Corridors will be evaluated for the level of survey needed based on site density.

No survey was completed for alternative 2. Per the Region 3 programmatic agreement with the SHPO, "Appendix I: Standard Consultation Protocol for Travel Management Route Designation," the Forest Service and SHPO have agreed that the integrity of most sites located within an existing road system have already been compromised by construction, maintenance, and driving of the road. No additional survey is required before these roads can be shown on the MVUM.

The areas surveyed for each alternative are described in table 16, the "Miles Surveyed" column includes previous surveys as well as locations that were newly surveyed for this project.

Table 16. Areas surveyed by alternative

Area Surveyed	Total Miles	Miles Surveyed
Alternative 1		
Dispersed camping corridors	374.4	43.3
Closed roads (ML 1)	14.7	14.7
Unauthorized roads	17	13.8
Road reroutes	4.5	0
Alternative 3		
Dispersed camping corridors	374.4	43.3
Closed roads (ML 1)	16.9	14.7
Unauthorized roads	29.2	15.52
Road reroutes	6.4	0
Motorized big game retrieval	342.5	0
Alternative 4		
Dispersed camping corridors	321.2	43.3
Closed roads (ML 1)	10.6	10.6
Unauthorized roads	17.3	14.1
Road reroutes	3.7	0

Environmental Consequences

Evaluation of Effects by Alternative

Baseline Conditions

There is no substantial impact to cultural resource sites from vehicular impacts within existing system routes. It has been programmatically determined that the integrity of sites has already been substantially compromised and the SHPO and Advisory Council agree that the existing road system is unlikely to have an effect on cultural resources ("First Amended Programmatic Agreement, Appendix I.II.A.")

There is a potential for vehicular impacts to 890 known sites within existing unauthorized routes and unrestricted motorized cross-country travel. The degree of potential impact is contingent on

where the route passes through the cultural resource site. Because of the nature of how archaeologists establish archaeological site boundaries (either through the observed distribution of artifacts or the location of features and architecture), not every instance of a route intersecting a site will result in substantial impacts. In some cases, it is possible for a route to intersect a cultural resource site boundary without damaging contributing elements and features of that site. Site specific evaluations and mitigations will be completed in the NHPA process

All Alternatives

Archaeological resources are negatively impacted by both unmanaged motor vehicle use and by the location of some system roads. In most cases, continued driving on system roads may not affect heritage resources because the damage has already occurred. However, routine road maintenance cannot be performed on some segments of the roads due to the presence of heritage resources within the road prism, making continued use of these roads difficult. This has resulted in some segments of road becoming degraded or impassable.

There is no substantial impact to cultural resource sites from vehicular impacts within the existing system routes. It has been programmatically determined that the integrity of sites has already been substantially compromised and the SHPO and Advisory Council agree that the existing road system is unlikely to have an effect on cultural resources ("First Amended Programmatic Agreement, Appendix I.II.A"). Potential substantial impacts to sites resulting from the addition of unauthorized routes to the system and designating them for motor vehicle use will be mitigated.

There is a low potential for impacts to cultural resource sites from vehicular impacts, or from indirect impacts including surface and subsurface disturbance, within motorized dispersed camping corridors. Those motorized dispersed camping corridors previously surveyed will be evaluated for the level of Section 106 survey needed prior to being added to the motor vehicle use map (MVUM).

Monitoring sites will take place, and if impacts are observed, the dispersed camping corridor will be removed from the MVUM until mitigation is completed. All or portions of corridors where there is a potential for substantial impacts to sites will be excluded from the MVUM. If sites cannot be avoided, any adverse effect will be minimized through data recovery.

Substantial vehicular impacts will be eliminated. The potential for indirect effects such as the erosion of soils onto the site from high intensity use, would remain because the designation of a road includes parking a vehicle on the side of the road where it is allowed to do so without causing damage to Forest Service resources or facilities. These indirect effects would be substantially reduced from the existing condition, as it is assumed that the largest portion of motorized dispersed camping will continue to occur within designated motorized dispersed camping corridors.

The potential impacts to cultural resource sites as incremental changes from the baseline condition (the existing road system plus unrestricted motorized cross-country travel) is shown in table 15. In alternative 2, the existing road system will impact the fewest number of cultural resource sites (n = 137) representing an 85 percent decrease from the baseline condition. This is because alternative 2 eliminates unrestricted motorized cross-country travel, as do all the action alternatives, but includes no fixed distance motorized dispersed camping or motorized big game retrieval corridors.

By contrast, the data show that alternative 3 will impact the greatest number of cultural resource sites (n = 322) representing only a 64 percent incremental decrease from the baseline condition. This is because alternative 3 contains more fixed distance motorized dispersed camping corridors in addition to including motorized big game retrieval opportunities not present in the other alternatives.

The data show that potential impacts for alternative 1—the Proposed Action—and alternative 4 are similar in that both represent a 79 percent incremental decrease from the baseline condition. However, none of the cultural resource sites identified in this analysis will be adversely affected as a result of designated National Forest System roads for motor vehicle use because those effects will be mitigated prior to that route or corridor being listed on the MVUM.

Cumulative Effects

There are several present and foreseeable future project planned on the Magdalena Ranger District (see appendix D). Section 106 consultation had already been completed, or would be required to being completed for these projects, and any site located within the project areas would be protected and avoided to ensure that they will not be a no adverse effect to cultural resources. Given that there is no adverse effects expected for these project, or from the Travel Management Rule being enacted, implementation of any of the alternatives would not contribute to cumulative effects.

Contemporary American Indian Uses/Tribal Consultation

The following analysis is based on the contemporary American Indian uses/tribal consultation specialist report prepared by Cynthia Benedict, tribal relations program manager. This report is on file in the project record.

Tribal Consultation

The Cibola National Forest routinely consults with five American Indian tribes that may have used and may continue to use lands managed by the Magdalena Ranger District for traditional cultural and religious activities. These include the: Pueblos of Acoma and Zuni; Navajo Nation; Mescalero Apache Tribe; and Ft. Sill Apache Tribe. In addition, the forest consults with the Alamo Band, a chapter of the Navajo Nation.

The tribes and Alamo Navajo Band have been consulted regarding travel management planning on the Magdalena Ranger District, through both the Section 106 consultation process and the NEPA process. The Travel Management Rule and the forest's planning effort were first introduced to the tribes in a project consultation letter in February 2009. Consultation meetings were held in 2009 with the Pueblos of Acoma and Zuni, Navajo Nation, and Alamo Band. These meetings were preliminary as the proposed action had not yet been developed. Ysleta del Sur Pueblo responded to the forest that it had no concerns or objections to the undertaking and further consultation was not needed. The Pueblos of Acoma and Zuni, as well as the Navajo Nation confirmed their interest in consultation on this undertaking. During consultation, the Alamo Band indicated that its tribal members use national forest lands for the collection of firewood and piñon nuts. The band expressed concern that the travel restrictions would affect the tribal members' ability to drive off road for resource collection.

The travel management planning process was highlighted in the forest's annual Section 106 project consultation letter that was sent to the tribes in February 2010. In followup consultation, the Navajo Nation indicated that the tribe generally supports the idea of eliminating cross-country travel as it tends to create new roads and damage plants and makes it more difficult for traditional practitioners to conduct their activities in privacy. Attempts to set up a meeting in 2010 with the Pueblo of Acoma to consult regarding this undertaking were unsuccessful. Consultation with the Pueblo of Zuni was closed in the fall of 2010 due to a lack of funding at the Zuni Heritage and Historic Preservation Office.

The scoping letter and report was sent to all five tribes and the Alamo Band in July 2010. No written comments were received from tribes as a result of scoping. Information regarding sites of cultural and religious significance and traditional use in general that was used in this analysis was obtained through consultation over an extended period, and prior to the timeframes for travel management planning on the Magdalena Ranger District.

Affected Environment

The lands managed by the Magdalena Ranger District are culturally significant for the area tribes, including the Pueblo of Acoma, Pueblo of Zuni, Navajo Nation, Mescalero Apache Tribe, and Ft. Sill Apache Tribe. These lands have long standing and ongoing historical, cultural, and religious importance to these tribes. The lands have been used and continue to be used for a variety of traditional cultural and religious activities. Some of the tribes have acknowledged and identified places and properties of cultural and religious significance.

Environmental Consequences – Contemporary American Indian Uses

Baseline Conditions

The continuation of existing conditions would provide necessary access for traditional practitioners and allow them to continue to use the area for traditional cultural and religious activities. No tribe has indicated that the current road system is inadequate for their continued use of national forest lands for cultural and religious activities.

Continuing unrestricted motorized cross-country travel has the potential to affect places and properties of cultural and religious significance and traditional use of the area by practitioners. Continuation of the existing condition does not reduce potential disruption of traditional cultural and religious activities, because motorized cross-country travel may draw unnecessary attention to sensitive areas and/or activities that practitioners need to conduct in privacy. One tribe has also indicated that in general, driving cross country creates roads and damages vegetation.

Alternative 1

The designation of National Forest System Road (NFSR) 59, NSFR 59A, NFSR 235, NFSR 140, and NFSR 511 would continue to provide general access, benefiting contemporary tribal uses. Even though the Forest Service will not pursue right-of-way access across private land to NFSR 140, County Road 19 would still provide access into the general area. No tribe has indicated that the routes proposed for designation are inadequate for their continued use of national forest lands for traditional cultural and religious activities.

Under this alternative, motorized cross-country travel would be prohibited, although motorized dispersed camping corridors would be included in the designation of 374.4 miles of NFS roads. The Navajo Nation and Alamo Band of Navajo provided specific comments regarding motorized cross-country travel. The Navajo Nation expressed support for restricting motorized cross-country travel based on its potential for causing resource damage, and the need for practitioners to conduct traditional activities in privacy. The Alamo Band of Navajo expressed concern that restricting motorized travel would affect tribal members' ability to drive off road for resource collection. The band uses the district for permitted firewood collection and personal use collection of piñon nuts. Activities authorized under permit would not be subject to the travel management designations. Under this alternative, the Alamo Band might be required to change its collection method for piñon nuts, because of the prohibition of motorized cross-country travel.

Designating corridors for motorized camping may have the effect of consolidating public use closer to the roads. This has the potential to reduce disruption of traditional cultural and religious activities, as these activities are generally done further away from roads to ensure privacy.

The prohibition of motorized cross-country travel would affect some tribes who have previously indicated the need for hunters to collect an animal whole. It would require those hunters to change their method of big game retrieval. However, it would likely be a benefit for other tribes because it would reduce the risk of disruption of traditional cultural and religious activities and would likely improve the hunting experience for those who prefer nonmotorized opportunities.

In comparison to the baseline conditions, this alternative proposes fewer miles of road to be designated for all vehicles and designates specific corridors for motorized dispersed camping. As a result, there would be a reduced potential to effect places or properties of cultural and religious significance.

Alternative 2

This alternative involves the continued designation of those roads that are currently recognized as part of the forest's open system. Most of the roads that have been identified as important for ongoing access would be designated, thus allowing practitioners to continue to use the areas for cultural activities. Under this alternative, the Forest Service would pursue a right-of-way for NFSR 140 from State Highway 142. If the Agency is unsuccessful in its attempts to obtain a right-of-way, there are other routes available to access the general area. The forest also does not have legal access to NFSR 59A at its junction with Hwy 60. Under this alternative, the Forest Service would pursue a right-of-way for NFSR 59A. Acquisition of a right-of-way would not affect tribal use of the general area as it can be accessed via a different route.

Under this alternative, all motorized cross-country travel would be prohibited. The effects of prohibiting motorized cross-country travel would be the same as alternative 1. In comparison to the baseline conditions, this alternative proposes slightly fewer miles of road to be designated for all vehicles and places more restrictions on travel by prohibiting cross-country travel. As a result, there would be a reduced potential to effect places or properties of cultural and religious significance.

Alternative 3

All of the roads that have been identified to date as important for access would be designated, thus allowing practitioners to continue to use the areas for traditional cultural and religious

activities. In the case of NFSR 140, the forest does not have legal access to it from County Road 19, and under this alternative, the forest would not pursue a right-of-way. However, this alternative proposes to acquire a right-of-way to NFSR 892, and to construct a connector road between NFSR 894A and NFSR 896. These two actions would facilitate continued access into the area. In addition, NFSR 511 is proposed to be re-opened and designated for all vehicles. While access to the general area site is not dependent on NFSR 511, opening the road would provide greater options for access. The forest also does not have legal access to NFSR 59A at its junction with Hwy. 60. Under this alternative, the Forest Service would pursue a right-of-way for NFSR 59A. There are other options (routes) available to access the general area even if the Forest Service was unable to acquire legal access.

This is the only alternative that allows for motorized big game retrieval. Establishment of motorized big game retrieval corridors provides for less off-road driving than is currently allowed, and would likely be a benefit for some tribes because it would reduce the risk of disruption of traditional cultural and religious activities and would likely improve the hunting experience for those who prefer nonmotorized opportunities. One tribe has indicated that the animal must be taken whole, so restricting off-road travel to collect downed game would require tribal members to alter their method of big game retrieval and/or limit their hunt to within the retrieval corridors.

Motorized dispersed camping corridors would be designated under this alternative. The effects of designating motorized camping corridors would be the same as alternative 1.

Under this alternative, an area would be designated for motor vehicle use southeast of the Apache Kid Wilderness in the San Mateo unit. The designated area encompassing 756 acres would provide a place for off-highway vehicle (OHV) riding, but would also allow for unrestricted use of vehicles of all classes and sizes. To date, no sites of cultural and religious significance have been identified in or around the area proposed for designation. Traditional plant collection is known to occur in the San Mateo Mountains, but it is not known whether or not the activity in the motorized area would have any auditory effects upon traditional activities.

In comparison to the baseline conditions, which allows unrestricted motorized use, this alternative proposes fewer miles of road to be designated for all vehicles and places more restrictions on travel by allowing only the limited use of motor vehicles within 300 feet along both sides of 374.4 miles of NFS roads solely for the purpose of dispersed camping and within .25 mile of certain designated NFS roads solely for the purpose of retrieving legally downed elk and mule deer. As a result, there would be a reduced potential to effect places or properties of cultural and religious significance.

Alternative 4

Under this alternative, NFSR 59 and NFSR 235 would be designated for motor vehicle use, allowing continued access into the general area. Roads such as NFSR 59A, NFSR 140, and NFSR 511 would not be designated for motorized use. In the case of NFSR 59A, access into the general area could still be obtained through another route that would be designated. As a result of not designating NFSR 140 and NFSR 511, this alternative would have an effect upon a tribe's access to a culturally significant area because it would require the tribe to obtain a permit to use the roads.

In comparison to the baseline conditions, this alternative proposes the fewest miles of designated roads open to all vehicles and the fewest miles of motorized dispersed camping corridors. As a result, there would be a reduced potential to affect places or properties of cultural and religious significance, but a greater effect to the access and use of a culturally significant site. The effect of the designation of motorized camping corridors and the prohibition of motorized big game retrieval would have the same effect on traditional cultural properties as alternative 1.

Cumulative Effects – All Alternatives

For the purpose of analyzing cumulative effects to contemporary American Indian uses, the spatial boundary is the land managed by the Magdalena Ranger District. The temporal boundary covers 10 years from the date of the decision. To analyze beyond a 10-year time span would be speculative.

Several tribes have indicated that the lands managed by the Magdalena Ranger District are culturally significant and are used for a variety of traditional cultural and religious activities. Past and present actions—such as mineral development, development of electronic communication sites, commercial timber harvesting, livestock grazing, road construction, and private land development—have affected American Indian contemporary traditional uses. These developments have affected the tribes' ability to access areas of cultural significance, forced tribes to alter the methods and timing of cultural activities, and have introduced visual, audible, and atmospheric interference; disrupting or displacing prescribed traditional activities in a given area.

There are no other proposals or activities on the district that would have an additional effect on the tribes' ability to access traditional use sites or to conduct traditional activities. Because the travel management decision addresses the designation of roads and areas, none of the alternatives—when combined with past, present, and foreseeable actions—contribute to cumulative effects on the district.

Social and Economic Considerations

The following analysis is based on the social and economic specialist report prepared by Cynthia Geuss, land management planner and Delilah Jordahl, social scientist. This report is on file in the project record.

Affected Environment

Magdalena Ranger District is the largest district on the Cibola National Forest, composed of four separate and distinct mountain ranges located in southwest New Mexico. The ranges include the Datil, Bear, San Mateo, and Magdalena Mountains. With an area of approximately 900,000 acres, the district is located within three counties: Catron, Sierra, and Socorro, (UNM-BBER 2007). In 2010, all three counties had extremely low population densities:

- Catron County had 0.5 people per square mile,
- Sierra County had slightly less than 3 people per square mile, and
- Socorro County also had less than 3 people per square mile.

The population density for the three-county planning area decreased by 3.7 percent between 2000 and 2010 (UNM-BBER 2013). Table 17 reports the percent of each county under Cibola National

Forest management in 2007. There will be a slight variation in acreages reported in this table and table 27 “Payments in Lieu of Taxes” due to differences in reporting years and data source.

Table 17. Acreage by county; percent of county under forest management

County	Total Cibola NF Acres in County	Forest Service Managed Acres	Acres Under Other Ownership Within Forest Boundary	Cibola NF as a Percent of Total County Acres
Catron	223,493	158,039	217,915	5.03%
Sierra	21,172	18,869	2,303	0.78%
Socorro	832,720	614,805	65,454	19.57%

Source: UNM, BBER 2007, calculated using 2004 GIS data

Note: Acres under other ownership within the Magdalena proclamation boundary include the Alamo Navajo Indian Reservation and other privately owned land.

The three-county planning area is home to a rich scientific community including the New Mexico Institute of Mining and Technology in Socorro, a research laboratory for lightning and other weather related events, and two astronomical observatories. Among these, Langmuir Laboratory (the lab) is located on the district in the Magdalena Mountains near the summit of South Baldy Peak. The lab’s primary purpose is to study the cloud process that produces lightning, hail, and rain.

Langmuir Laboratory is a congressionally designated area and the facility operates under a special use permit with the Cibola National Forest. Public Law 96–550 passed by Congress in 1980, established 31,000 acres for the laboratory within the Cibola National Forest. The lab is affiliated with New Mexico Tech in Socorro, and employs approximately 10 full-time scientific personnel and 4 graduate students (NM Tech 2010a). Colocated at the Langmuir site is the Magdalena Ridge Observatory for astronomical research.

Demographic Conditions and Trends

This section highlights demographic and economic conditions and trends in the planning area. Current population levels create the demand for access to forest resources, and forecasts of future population levels can indicate whether there is potential for increasing demand for access for any number of uses, including recreation, traditional/cultural, or potential economic development. Age distributions provide insight into the proportion of individuals who typically have different access needs. Similarly, the racial composition of the population influences access demand for cultural and heritage uses and household income affects participation levels in recreation or subsistence uses.

Collectively, these three counties have a population (year 2011*) of approximately 33,538 people. All three counties are largely rural and sparsely populated. The city of Socorro is the largest population center with approximately 8,951 people (2010), followed by Truth or Consequences in Sierra County with about 6,475 people. Magdalena is a small village located west of Socorro and has a population of 938. Magdalena is the headquarters for the Magdalena Ranger District (U.S. Census, American fact Finder 2010).

The Alamo Navajo Indian Reservation is located between the Datil and Bear Mountains within the Magdalena district boundary. The Alamo Chapter had a population of approximately 1,800

persons in the years 2005–2009 and 1,085 persons in 2010 (American Community Survey, 2005–2009 Five Year Estimates, and ACS 2010). This represents a decrease of approximately 715 people, possibly due to lack of economic opportunities in the area, or in search of educational opportunities outside the area.

Table 18 shows the past, present, and projected population trends for each county in the planning area. From 2000 to 2011 the population of Catron County grew by 144 people, an increase of approximately 4.1 percent. For the same period, Sierra County lost 1,345 people, a 10.1 percent decrease in population. Socorro County lost 180 people, a decrease of about 0.8 percent. The three county area had a total decrease of 1,353 persons; about a 3.9 percent over the reporting period. In the three county planning area, only Catron County experienced growth in population (EPS-HDT, Profile of Demographics, County Region, 7/2/2013).

Table 18. Historical and projected populations for Socorro, Catron and Sierra Counties

	Historical			Projected		
County	**1980**	**1990**	**2000**	**2011***	**2020**	**2030**
Catron	2,720	2,563	3,543	3,687	4,459	4,000
Sierra	8,454	9,912	13,270	11,925	12,048	12,218
Socorro	12,566	14,764	18,078	17,926	18,008	17,621
Area Total	**23,740**	**27,239**	**34,891**	**33,538**	**48,809**	**54,561**

Sources: UNM-BBER 2013 and EPS-HDT 7/2/2013.

*Calculated by ACS using annual surveys conducted during 2007–2011 and are representative of average characteristics during this period.

As indicated in figure 2, the two most dominant age cohorts in the study area are 55 to 59 and 60 to 64 years old. This represents the older working age group dependent upon their employment status to support themselves and their families. Older populations are likely to have different needs and preferences related to forest use than younger populations.

However, the median age of a population is relevant for social and economic analysis of travel management planning. Table 19 lists the median age for planning area counties, the State, and the nation for year 2000 and 2007–2011 (estimate). The table provides a range of years for comparison to identify trends over time. The median age in all three counties has increased by 10 percent or more between 2000 and the 5-year 2007–2011 estimate.

Catron and Sierra Counties have substantially older median age populations than Socorro County, the State, and the nation. New Mexico Institute of Mining and Technology (New Mexico Tech), which emphasizes science and engineering, is located in the city of Socorro. The 2008 fall enrollment was 1,921 students, which may account for the consistently lower median age within Socorro County (NM Tech 2010). Catron County has the highest median age and the only population rate increase. This may reflect the development of seasonal and recreation homes built in the county between 2000 and 2010. Seasonal and recreation homes increased from 628 homes in 2000 to 1,120 homes in 2011 (UNM-BBER 2012). Between 2000 and 2007–2011 the median age in the county also increased more than 20 percent.

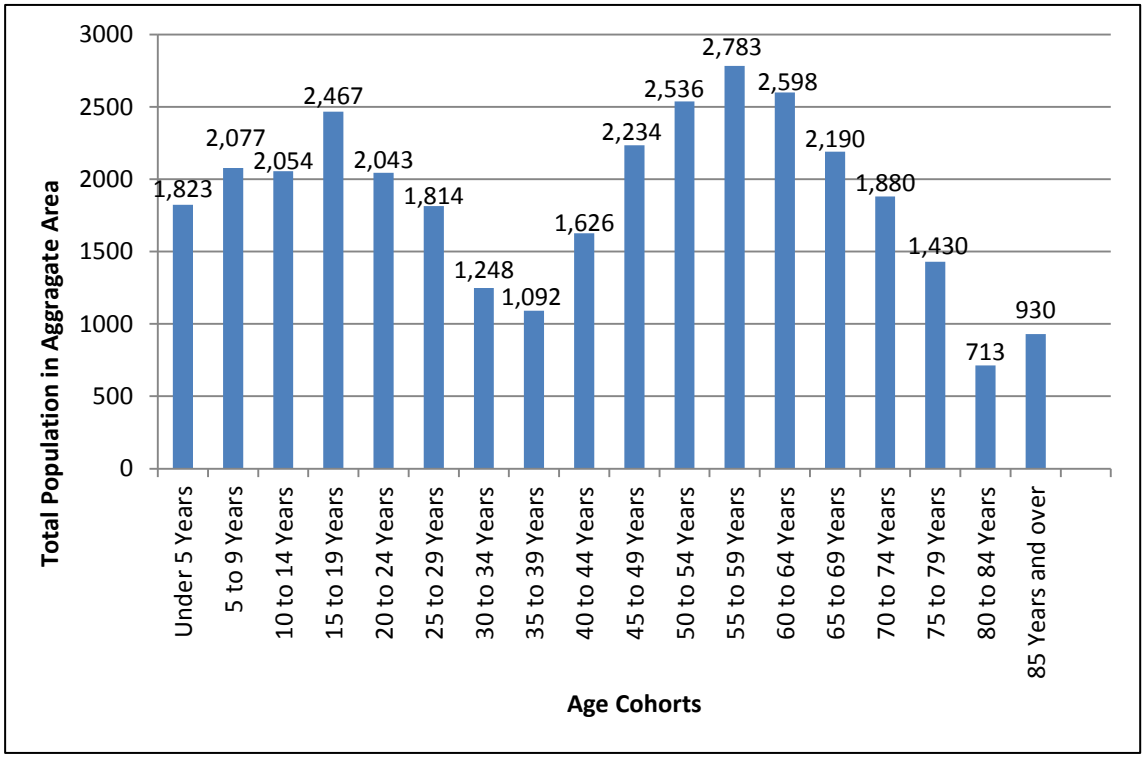

Figure 2. Age distribution in the planning area, 2011

EPS Headwaters Economics, accessed July 2013

Table 19. Median age by county, 2000 and 2007-2011*

Location	2000 Census	2007–2011 Census Estimate	Percent Change
Catron County	47.8	57.4	20.1%
Sierra County	48.9	53.8	10%
Socorro County	32.4	36.2	11.7%
New Mexico	34.6	36.5	5.5%
United States	35.3	37.0	4.8%

Headwaters Economics 2013. Note: * Calculated by ACS using annual surveys conducted during 2007-2011 and are representative of average characteristics during this period.

Between 2000 and 2007, the three-county reporting area lost 2.4 percent of the population under 18 years of age; 0.6 percent of the population 18 to 34 years of age, and 5.1 percent of the population 35 to 44 years of age. The decrease in these age groups reflects out-migration of younger adults and families looking for employment opportunities elsewhere. However, the three-county reporting area also experienced an 8 percent increase in people aged 45 and over during the same period. Some of that increase is due to in-migration as suggested above and also to aging. Issues concerning elderly and aging populations related to access to forest resources—particularly recreation—may be more pronounced in Catron and Sierra Counties (EPS-HDT 2013).

Table 20 reports age and disability data. All three counties in the planning area have a higher percent of disabled and elderly residents than both the State and Nation. Catron and Sierra Counties have the highest concentrations of elderly residents and the highest percentages of disabled residents. Socorro County, reflecting its' younger median age, is more closely aligned with the State and Nation, possibly because of the university located in the city of Socorro.

This is important to know because elderly and disabled residents may be more reliant on motorized access in order to participate in activities on the forest. Comments received during the scoping period identified limited motorized access as a concern of mobility-impaired people (due to age, disability, or both). Race, ethnicity, and poverty are described in tables 21–23 under "Environmental Justice."

Table 20. Elderly and disabled population

Location	Persons with a Disability, Age 5+ (2000*)		Persons 65 Years and Over (2009)
	Number	Percent	Percent
Catron County	718	20.3%	26.9%
Sierra County	3,996	30.1%	29.6%
Socorro County	3,591	19.9%	13.3%
New Mexico	338,430	18.6%	13.0%
United States	49,746,248	17.7%	12.9%

U.S. Census Bureau 2010

*The Census has not updated disability statistics for these counties since the 2000 Census

Environmental Justice

Executive Order (EO) 12898 directs Federal agencies to focus attention on the human health and environmental conditions in minority[1] and low income communities[2]. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects[3] on minority and low income populations.

Environmental justice means that, to the extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and

[1] Minority means a person who is a member of the following population groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (USDA DR5600-002, 1997).

[2] Low income population means any readily identifiable group of low income persons who live in geographic proximity to, and, if circumstances warrant, migrant farm workers and other geographically dispersed/transient persons who will be similarly affected by USDA programs or activities. Low income populations may be identified using data collected, maintained, and analyzed by an agency or from analytical tools such as the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty (USDA DR5600-002, 1997).

[3] Human health and/or environmental effects as used in this Departmental Regulation include interrelated social and economic effects (USDA DR5600-002, 1997).

adverse manner by government programs and activities affecting human health or the environment.

Environmental justice is the fair treatment and meaningful involvement of people of all races, cultures, and incomes, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of environmental justice is for Federal agency decision makers to identify impacts that are disproportionately high and adverse with respect to minority and low income populations,[4] and identify alternatives that will avoid or mitigate those impacts.

The emphasis of environmental justice is on health effects and/or the benefits of a healthy environment. The Council on Environmental Quality (CEQ) has interpreted health effects with a broad definition: "Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low income communities, or Indian Tribes…when those impacts are interrelated to impacts on the natural or physical environment."

As defined by the U.S. Census Bureau, race and ethnicity are two different concepts; thus, people of Hispanic origin may identify with any race. Therefore, the percentages in tables 21 and 22 do not total 100 percent.

According to the U.S. Census data reported in tables 21 and 22, in 2010 those self-identifying as White maintained a majority in all three counties. No individual minority group exceeds 50 percent of the population within the affected area; nor does the aggregate of all minority populations within the affected area meet the environmental justice criterion as meaningfully greater than the minority population percentage in the general population. Although there are Indian tribes in the affected area, there would be no disproportionate environmental impact on any tribal or minority community as a result of implementing any of the four travel management alternatives proposed for Magdalena Ranger District.

Table 23 reports per capita income, the number of individuals below the poverty level, and poverty rates in 1999 and the 5-year estimate for 2006–1010. In 1999, all three counties had poverty rates higher than the State of New Mexico. Between 1999 and 2006–2010, the poverty rates for Socorro and Catron Counties decreased, the State of New Mexico remained the same, but the poverty rate for Sierra County increased. This suggests that a substantial proportion of the existing population should be considered a low income group. It is unlikely that decisions regarding travel management would have disproportionate environmental effects upon this population. However, Magdalena Ranger District should assess possible effects on low income populations when making management decisions.

[4] **Minority population**: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above stated thresholds.

Table 21. Ethnic composition by county, 2010 Census

	Total Non-Hispanic White	Total Non-Hispanic	Total Hispanic or Latino
Catron County	2,832	3,016	709
Sierra County	8,205	8,636	3352
Socorro County	6,711	9,202	8,664
Total for 3-County Area	**17,748**	**20,854**	**12,725**
Percent for 3-County Area	52.9%	62.1%	37.9%
Percent of State Total	52.9%	62.1%	37.9%
*New Mexico	833,810	1,105,776	953,403

Source UNM-BBER 2013. Note: Race and ethnicity are two different concepts. People of Hispanic origin may identify with any race. Therefore, the percentages in table 9 do not sum to 100 percent.

Table 22. Racial composition by county, 2010 Census

	White Alone	African American	American Indian, Alone	Asian or Pacific Islander	Other Alone	Two or More Races	Total
Catron County	3,344	16	99	7	142	117	3,725
Sierra County	10,265	49	199	52	1,032	391	11,988
Socorro County	13,424	188	2,082	227	1,442	503	17,866
Total for 3-County Area	27,033	253	2,380	286	2,616	1,011	33,579
Percent for 3-County Area	80.5%	0.8%	7.1%	0.9%	7.8%	3.0%	
Percent of State Total	80.5%	0.8%	7.1%	0.9%	7.8%	3.0%	
*New Mexico	1,407,876	42,550	193,222	30,018	308,503	77,010	2,059,179

Source UNM-BBER 2013. Note: Race and ethnicity are two different concepts. People of Hispanic origin may identify with any race. Therefore, the percentages in table 9 do not sum to 100 percent.

Table 23. Percent of population living below the poverty threshold and per capita income (2010 dollars)

	1999			2006-2010*		
	Per Capita Income	Persons Below poverty	Percent of Persons Below Poverty Level	Per Capita Income	Persons Below poverty	Percent of Persons Below Poverty Level
Catron County	$18,255	860	25%	$20,895	556	15%
Sierra County	$19,658	2,706	21%	$16,667	2,631	23%
Socorro County	$16,783	5,539	32%	$17,801	4,703	27%
New Mexico	$22,587	328,933	18%	$22,966	361,771	18%

UNM-BBER 2013

*American community survey, 5-year estimate.

Economic Conditions and Trends

Employment, Income, and Unemployment

Employment and income statistics are important indicators of economic health. Table 24 lists the median household income for the planning area counties, the state and the nation. All counties in the planning area continue to have median household incomes below the state and the nation; this suggests that economic changes may have a more pronounced effect on the economic well-being of the area. However all three counties have experienced increased median household income since 2008. Catron County increased the most, about 13 percent.

Table 24. Median household income

	Median Household Income (2008)	Median Household Income (2007–2011)*
Catron County	$29,127	$37,857
Sierra County	$27,580	$28,373
Socorro County	$32,387	$34,148
New Mexico	$43,719	$44,631
United States	$52,029	$52,762

Sources: U.S. Census Bureau 2010, Census Quick Facts, (ACS), 5-Year Estimates 2013

Total personal income is comprised of labor and nonlabor income. Labor income is the wage or salary received by an employee or sole proprietor. Nonlabor income includes rent, dividends and interest, and transfer payments (e.g., Social Security). Table 25 identifies the division of labor and nonlabor income in the three planning area counties as compared to the State and Nation.

In many places nonlabor income can be the single largest component of personal income, and also the largest source of new personal income. With the baby boom generation reaching retirement age, it is likely nonlabor income will continue to be a growing source of personal

income. Unlike most sources of labor income, nonlabor income—which often arrives in the form of a dividend check or retirement benefit—can be more difficult to see in a local economy. Because nonlabor income is often a large and growing source of personal income, it is important for public land managers to understand this portion of the economy.

When investigating nonlabor income, some important issues for public land managers include whether the area is attracting retirees and people with investment income, the role public lands play in attracting and retaining people with nonlabor income, how these people use or enjoy public lands, and whether these uses or ways of enjoying public lands are at odds with current uses or management (Headwaters Economics 2013).

Table 25. Share of labor and nonlabor income, 2011 (thousands of 2012 dollars)

	Labor Income (percent)	Nonlabor Income (percent)
Catron	48%	52%
Sierra	41%	59%
Socorro	58%	42%
Three County Average	51%	49%
New Mexico	62%	38%
United States	66%	34%
Catron	48%	52%

Source: Headwaters Economics, 2013

The three-county planning area is somewhat more reliant on nonlabor income than the State and Nation. Total personal income in New Mexico and the U.S. is composed of approximately two-thirds labor income and one-third nonlabor income. In contrast, Catron and Sierra Counties receive more nonlabor income than labor income. Of the three, only Socorro County receives more labor income than nonlabor income, and is more closely aligned with State and national averages.

Overall, this data suggests that the planning area has a high concentration of retirees and individuals reporting as unemployed. The reliance on nonlabor income may also indicate dependence on government transfer payments such as unemployment or social security benefits.

Nonlabor income may help to stabilize the economy, as it is not necessarily tied to employment status. However, nonlabor income can fluctuate based on asset market performance (e.g., investments in stocks and bonds) or changes in government policy (USDA, Gila National Forest 2010).

Table 26, reports the annual unemployment rate for the counties and State from 2000 through 2012. Catron County has the highest unemployment rate, consistently greater than the State, except for 2012 when it was the same. Sierra and Socorro Counties have maintained an unemployment rate approximately equal to or lower than the State average. The difference in these unemployment rates may reflect a larger working age population in Catron County as compared to retired and student populations in Sierra and Socorro Counties who would not be actively looking for work or reporting as unemployed.

Table 26. Annual unemployment rates by county and State (percent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Catron County	6.7	6.2	6.2	7.6	7.4	6.6	5.2	4.5	5.3	8.5	9.1	8.4	6.9
Sierra County	4.4	4.8	5.4	5.7	5.9	5.4	4.4	3.3	4.1	5.4	6.2	6.4	6.2
Socorro County	5.1	5.3	5.1	5.1	5.0	4.5	3.7	3.0	3.6	5.0	5.6	5.6	4.9
New Mexico	5.0	4.9	5.5	5.9	5.8	5.2	4.1	3.5	4.5	7.2	7.9	7.5	6.9

Source: U.S. Bureau of Labor Statistics, June 2013.

Payments in Lieu of Taxes

Payments in lieu of taxes (PILT) are Federal payments to local governments that help offset losses in property taxes due to nontaxable Federal lands within their boundaries. PILT payments help local governments carry out vital services such as firefighting and police protection, construction of public schools and roads, and search and rescue operations. The formula used to compute the payments is based on population, receipt sharing payments, and the amount of Federal land with the county.

The payments shown in table 27 have been adjusted to reflect only Cibola NFS acres within each county. PILT payments are in addition to other Federal revenues such as oil and gas leasing, livestock grazing, and timber harvesting that the Federal government transfers to the states. Table 27 shows the total number of Cibola NFS acres in each county and the associated PILT payments made in 2012. These payments are made annually for tax-exempt lands administered by all agencies of the Department of the Interior, Forest Service, Federal water projects, and some military installations (USDI 2010).

Table 27. Payments in lieu of taxes, 2012

	Cibola NFS Acres	PILT Payments
Catron County	158,869	$483,970
Sierra County	18,963	$311,180
Socorro County	620,886	$482,147

Note: Payments adjusted to reflect contribution by Cibola NF acres.
Source: U.S. Department of the Interior, www.doi.gov/pilt, 2013; USFS Land Area Records (LAR), accessed 6/26/2013.

Environmental Consequences

Overview of Issues and Indicators

A number of issues were identified as a result of the analysis of comments received during the scoping period. Most issues fell under two larger categories: loss of recreation opportunities including OHV use and big game retrieval due to motorized designations; and potential negative impacts on cultural and natural resources due to designation of unauthorized or new roads for motorized use. The analysis of major issues together with the project objectives provided the

basis for formulating the alternatives. The alternatives are analyzed below according to the following social and economic indicators:

- **Social Indicators:** Population and population trends as they relate to the magnitude of future demand and need. These included the proportion of population who is older or may have physical access challenges, and the racial and ethnic composition of the planning area. The area of analysis is at the county level for Catron, Sierra, and Socorro Counties.
- **Economic Indicators:** Employment and income, as indicators of the proposal's effects on the tourism industry and general economy of the area. Recreation-based tourism is likely to be more sensitive to the proposed action and alternatives than other employment because of the Travel Management Rule's provision for written authorization applicable to livestock grazing and mining plans of operations (USDA, Gila National Forest 2010).

Social Consequences

Effects Common to All Alternatives

Firewood Gathering

For fiscal years 2009 and 2010, the Magdalena Ranger District issued 2,299 forest product permits worth $57,002.73 (USDA, Cibola NF 2010a). The majority of these permits were for firewood collection. However, these numbers also reflect permits and revenues for poles and Christmas tree cutting.

Firewood gathering on the forest is particularly tied to the livelihoods in parts of the three-county area. Wood fires continue to be used either aesthetically or as the primary heat source within homes. Approximately 48 percent of the housing units in Catron County rely on wood as the primary heating fuel type. In Sierra County approximately 4 percent of housing units use wood for heat, and approximately 18 percent of homes in Socorro County use wood as the primary heat source (U.S. Census Bureau 2010b). The use of wood for heating homes may be tied to the long-term customs, traditions, and culture of the community. Much of the firewood gathering on the district relies on motorized access for transport.

The elimination of cross-country travel and closing roads to motor vehicle use under all action alternatives may affect the ability of people to collect firewood for their homes. Although firewood gathering would continue under all alternatives, it will be limited to designated areas. Under all alternatives, the quantity of firewood available is not expected to decrease. However, a change in habits (i.e., where, when, and how firewood is collected) may be required. These changes will be required under all action alternatives (USDA Cibola National Forest, Jordahl 2011).

Elderly and Disabled Access

All of the alternatives will affect the ability to travel cross country by motorized vehicle and could have an effect on people with these concerns. The number of miles of motorized routes varies by alternative and could affect the ability of mobility-impaired people to reach their favorite places, if those places are not accessible in any other way (USDA Cibola National Forest, Jordahl 2011).

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

Under Section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. Consistent with 36 CFR 212.1, FSM 2353.05, and Title V, Section 507(c), of the Americans With Disabilities Act, wheelchairs and mobility devices, including those that are battery powered, that are designed solely for use by a mobility-impaired person for locomotion, and that are suitable for use in an indoor pedestrian area, are allowed on all NFS lands that are open to foot travel (USDA Cibola National Forest, Jordahl 2011).

Traditional and Tribal Uses

The Alamo Navajo Indian Reservation is situated partially within the Magdalena district boundary and the Acoma Pueblo is adjacent to the north, but outside of the planning area. The tribes would be considered low income minority populations dependent on district resources for recreation and subsistence uses, but changes to tribal social and economic activities as a result of travel management designation are predicated to be minor to none. Tribes will continue to have opportunities to gather culturally important materials on the forest under applicable Forest Service policies such as Forest Service Handbook 2409.18 on granting free permits to federally recognized tribes to gather forest products for traditional and cultural uses.

Environmental Justice, Summary of Effects by Alternative

While low income populations have a greater presence in the communities surrounding the Magdalena Ranger District than the general population of the State, none of the alternatives are expected to have disproportionately high and/or adverse human health or environmental effects.

There may be effects on the residents of Catron County related to firewood gathering. As noted in the "Environmental Consequences" section, approximately half of the homes in Catron County rely on wood as the primary heating source. This is consistent with the custom and culture of the area and the relatively low median household income suggests that affordable energy sources are fundamental to individuals' well-being. Under all action alternatives, motorized gathering would be limited to designated routes. However, the forest will provide access for all forest product permittees. These actions are likely to mitigate any potentially adverse effects on low income populations who depend on firewood or other forest products from Magdalena Ranger District. See the summary of social and economic effects by alternative and issue, itemized below (USDA Cibola National Forest, Jordahl 2011).

Alternative 1 — Proposed Action

- **Employment and Income**: Approximately 55 jobs and $1,454,773 in labor are supported by recreation. Two of these jobs and $37,015 in labor income are due to motorized uses.
- **Firewood Gathering:** Off-road gathering of firewood would be limited. However, no decrease in the supply of firewood is expected and no expected change in the number of

permits or the value of the firewood collected. However, gathering may change, requiring adjustment in how and when firewood is gathered.

- **Access for the Elderly and Disabled:** May limit access of elderly and disabled populations to some nonmotorized areas. However, in accordance with ADA, mobility devices that are suitable for indoor pedestrian use are permitted on all NFS lands open to foot travel. Furthermore, under all alternatives, diverse motorized options remain.
- **Nonmarket Effects:** Travel management has the potential to increase nonmarket values as a result of improved ecological health (ecosystem service values).

Baseline[5] and Alternative 2—Existing System Roads

- **Employment and Income:** Approximately 55 jobs and $1,454,773 in labor are supported by recreation. Two of these jobs and $37,015 in labor income are due to motorized uses.
- **Firewood Gathering:** No change from current condition.
- **Access for Elderly and Disabled:** No change from current condition.
- **Nonmarket Effects:** No change from current condition.

Alternative 3

- **Employment and Income**: Approximately 55 jobs and $1,454,773 in labor are supported by recreation. Two of these jobs and $37,015 in labor income are due to motorized uses.
- **Firewood Gathering:** Off-road gathering of firewood would be limited. However, no decrease in the supply of firewood is expected and no expected change in the number of permits or the value of the firewood collected. However, gathering may change, requiring adjustment in how and when firewood is gathered.
- **Access for Elderly and Disabled:** May limit access of elderly and disabled populations to some nonmotorized areas. However, in accordance with ADA, mobility devices that are suitable for indoor pedestrian use are permitted on all NFS lands open to foot travel. Furthermore, under all alternatives, diverse motorized options remain.
- **Nonmarket Effects:** Travel management has the potential to increase nonmarket values as a result of improved ecological health (ecosystem service values).

Alternative 4

- **Employment and Income:** Approximately 55 jobs and $1,454,773 in labor are supported by recreation. Two of these jobs and $37,015 in labor income are due to motorized uses.
- **Firewood Gathering:** Off-road gathering of firewood would be limited. However, no decrease in the supply of firewood is expected and no expected change in the number of permits or value of the firewood collected. However, gathering may change, requiring adjustment in how and when firewood is gathered.
- **Access for Elderly and Disabled:** May limit access of elderly and disabled populations to some nonmotorized areas. However, in accordance with ADA, mobility devices that

[5] Baseline is not considered an alternative. It is a description of existing conditions.

are suitable for indoor pedestrian use are permitted on all NFS lands open to foot travel. Furthermore, under all alternatives, diverse motorized options remain.

- **Nonmarket Effects:** Travel management has the potential to increase nonmarket values as a result of improved ecological health, i.e., ecosystem service values (USDA Cibola National Forest, Jordahl 2011).

Economic Consequences

No significant economic impacts are expected as a result of the proposed changes under any action alternative. The relationship between road miles and recreation use is unknown. Although travel management planning may reduce some recreation activities on the forest, it also has the potential to increase others. For example, outfitters may experience increased business in big game hunting due to improved wildlife habitat as a result of limitations on motorized access. Other forest activities, such as nonmotorized and wilderness recreation, may also be more attractive to recreationists, as conflict with off-road motorized users is less likely with travel management planning.

Methodology for Analysis of Recreation Economic Contribution

Incomplete and Unavailable Information

Insufficient information exists to accurately estimate changes in recreation use that would occur under implementation of the action alternatives analyzed in this report. Changes in road miles per alternative are used as a proxy for all changes contained in the alternative. It is not possible to incorporate camping corridor information nor to evaluate big game retrieval differences per alternative through Impact Analysis for Planning (IMPLAN), which is used to assess the relative size of sectors in a local economy and Recreation Economic Contribution Analysis (RECA). These differences need to be analyzed in a qualitative manner, gleaning information from other sources found in the affected environment.

Although certain trends in visitor use may be predicted from the guidelines set forth under each alternative, there are no methods and/or data available to estimate actual changes in motorized and nonmotorized recreation. The current visitor use data represent the condition under the no action alternative and are used to conduct an economic contribution analysis based on existing conditions. Those contributions serve as a baseline for comparison to the effects of action alternatives. Discussion of those effects is based on the jobs and income by activity and visit type and includes a qualitative assessment of potential economic implications.

IMPLAN Professional Version 3.0 (IMPLAN) and Recreation Economic Contribution Application (RECA) were used to assess economic impacts of the travel management alternatives. IMPLAN uses county-level input-output data to determine the extent to which activities contribute to the local economy. For this analysis, the local economy includes all counties containing or bordering the forest—Catron, Sierra, and Socorro Counties. IMPLAN considers direct, indirect, and induced impacts:

- **Direct impacts** include the economic value generated by the activity itself, such as the value of cattle grazed on the forest.

- **Indirect impacts** include the value generated by purchases to support that activity and the corresponding purchases to support those activities, in perpetuity. For example, indirect impacts would include the value of fencing purchased for ranching, the value of steel purchased to make the fencing, and so on.
- **Induced impacts** capture the value of economic activity generated from spending by employees that produce the direct and indirect goods. Ranch employees will purchase food, pay for electricity, etc., all of which generates additional value from the purchases (UNM-BBER 2007).

The outputs from IMPLAN are exported to RECA, which produces employment and income estimates relevant to travel management planning. RECA is only concerned with the economic effects of recreation-based spending. Therefore, this analysis does not give a complete picture of the economic contributions of activities on the forest. However, the information in RECA is directly relevant for decisions related to travel management planning.

The RECA estimates use National Visitor Use Monitoring (NVUM) estimates for the Cibola National Forest and Grasslands. Estimates are not available by ranger district. Based on discussions with the Cibola's recreation specialist, the NVUM estimates were adjusted to reflect the portion of use that can be attributed to the Magdalena Ranger District. The forest recreation specialist estimated that the Magdalena Ranger District receives 10 to 15 percent of total use on the Cibola. Therefore, use figures (and the associated employment and labor income) have been multiplied by 0.125 (average of 10 to 15 percent) to estimate use on the Magdalena Ranger District. The recreation specialist identified hunting as the most common visitor activity on the district. Therefore, the hunting participation figures for the Cibola NF have been multiplied by 0.3—reflecting the assumption that 30 percent of hunting on the forest occurs on the Magdalena Ranger District.

Visitor expenditures by segment type are estimated in Stynes and White (2010). The Cibola National Forest and Grasslands is a "high" expenditure forest. The average expenditures are applied to visitor estimates to determine the economic impact of various activities on the Cibola generally, and the Magdalena Ranger District in particular.

Population projections were produced by University of New Mexico, Bureau of Business and Economic Research (UNM-BBER 2007) using cohort-component modeling and Decennial Census data for 1980, 1990 and 2000.

Economic data attributed to Headwaters Economics comes from the Economic Profile System (EPS), which is software that allows users to create a socioeconomic profile at a variety of geographic scales from existing and publically available data sources. Data sources used by EPS include U.S. Census Bureau, Bureau of Labor Statistics, and the Regional Economic Information System (REIS) of the Bureau of Economic Analysis, U.S. Department of Commerce. The program is useful in evaluating rural areas because it uses statistically sound methods of interpolation to estimate population and economic information that is not available due to disclosure protections for areas with small populations.

Economic Modeling Limitations

A change in supply (motorized opportunities) will affect quantity demanded (visitation). However, the precise relationship between opportunities and visitation is uncertain. Given data

limitations, an assumption of linearity is least likely to bias the analysis toward either motorized or nonmotorized interests. If we assume a nonlinear relationship, we would need to know how the rate of change in visitation varies across the function (i.e., between current miles and zero). This information is unknown and cannot be ascertained given available resources.

The economic modeling makes the simplest and most defensible assumption (linearity). The numerical nature of the economic outputs can give a false sense of precision. Therefore, it is appropriate to heavily weigh the qualitative social and economic analysis in the evaluation of tradeoffs. The qualitative analysis emphasizes the mitigating factors that would lessen the economic consequences, such as the prevalence of substitution behavior and the potential increased demand for the services of outfitter guides.

Economic Effects by Alternative

Baseline Conditions

The baseline condition represents the transportation system and access allowed by the 1985 Forest Plan, as amended; meaning there would be no change from the current management direction. Under the baseline condition, National Environmental Policy Act (NEPA) regulations require environmental assessments to contrast the effects of action alternatives with baseline conditions (36 CFR 220.7(b) (2) (ii)). Baseline conditions are not compliant with the 2005 Travel Management Rule, which requires each national forest and grassland to provide for a system of roads, trails, and areas designated for motor vehicle use. The existing condition serves as a baseline for comparing the effects of other alternatives.

There are 697,716 acres currently open to motorized cross-country travel on the Magdalena Ranger District, which represents 88 percent of the Magdalena Ranger District (791,707 acres). As a result of unrestricted motorized cross-country travel, there has been a proliferation of unauthorized roads. Motorized dispersed camping is currently unrestricted in the areas open to motorized cross-country travel. There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District open to general motorized use, which includes passenger vehicles and high-clearance vehicles such as pickups or sport utility vehicles.

Economic Contribution of Recreation Under Baseline Condition

The economic contribution of recreation on the Magdalena Ranger District under the baseline condition is provided in tables 28–29. The tables are divided according to activity type (e.g., motorized or nonmotorized recreation). Within each table, the estimated jobs and labor income derived from those activities are listed. The total economic contribution of recreation on the Magdalena District is provided in table 28 and shows that nonmotorized recreation activities on the forest contribute approximately 14 jobs and $291,622 in labor income to the local economy annually.

Table 29 shows that motorized recreation activities on the forest contribute approximately two jobs and $37,015 in labor income to the local economy annually.

Table 30 shows that nature-related recreation activities on the forest contribute approximately 30 jobs and $934,300 in labor income to the local economy annually. Nature-related activities may have both motorized and nonmotorized components.

Table 28. Employment and labor income effects by activity type, nonmotorized on the Magdalena Ranger District

Activity		Employment	Income
Backpacking	Local	0	$1,163.25
	Nonlocal	0.125	2,232.63
Hiking/walking	Local	3.125	63,673.75
	Nonlocal	7.5	158,243.13
Horseback riding	Local	0	395.50
	Nonlocal	0	983.00
Bicycling	Local	0.875	17,591.50
	Nonlocal	2	43,718.63
Cross-country skiing	Local	0	876.75
	Nonlocal	0.125	1,836.13
Other nonmotorized	Local	0	260.50
	Nonlocal	0	647.50
Total Nonmotorized		**13.75**	**$291,622.25**

Source: IMPLAN 2009 and RECA 2010.

Table 29. Employment and labor income effects by activity type, motorized on the Magdalena Ranger District

Activity		Employment	Income
OHV use	Local	0.125	$1,615.88
	Nonlocal	0.125	2,073.88
Driving for pleasure	Local	0.5	9,120.75
	Nonlocal	0.625	13,722.38
Snowmobiling	Local	0	—
	Nonlocal	0	—
Other motorized	Local	0.25	4,590.63
	Nonlocal	0.25	5,891.63
Total Motorized		**1.875**	**$37,015.13**

Source: IMPLAN 2009 and RECA 2010.

Table 30. Employment and labor income effects by activity type, nature related on the Magdalena Ranger District

Activity		Employment	Income
Fishing	Local	0.75	$ 15,762.00
	Nonlocal	1.375	30,146.38
Hunting	Local	1.5	30,981.30
	Nonlocal	2.4	52,037.40
Nature related	Local	4.25	88,698.00
	Nonlocal	19.5	716,675.63
Total Nature Related		29.775	$934,300.70

Source: IMPLAN 2009 and RECA 2010.

Table 31 shows that all other (i.e., not accounted for above) recreation activities on the district contribute approximately nine jobs and $191,835 to the local economy annually.

Table 32 shows total employment and income in the three-county area that can be attributed to recreation on the Magdalena Ranger District.

Table 31. Employment and labor income effects by activity type, all other on the Magdalena Ranger District

Activity		Employment	Income
All other	Local	2.625	$ 55,081.63
	Nonlocal	6.5	136,754.25
Total All Other		9.125	$191,835.88

Source: IMPLAN 2009 and RECA 2010.

Table 32. Employment and labor income effects by activity type, all recreation on the Magdalena Ranger District

Activity	Employment	Income
Nonmotorized	13.75	$ 291,622.25
Motorized	1.875	37,015.13
Nature related	29.775	934,300.70
All other	9.125	191,835.88
Total	**54.525**	**$1,454,773.95**

Source: IMPLAN 2009 and RECA 2010.

In sum, recreation on the forest is estimated to support approximately 55 jobs and $1,454,773 in labor income in the local economy annually. However, these figures do not capture the entire economic value of recreation on the forest. Many visitors are willing to pay more than required to participate in recreational activities. The difference between willingness to pay and actual cost is

known as consumer surplus. Although consumer surplus is not captured in the market, it does represent a real economic value to the users.

Estimates of consumer surplus by recreation activity on the Magdalena Ranger District are not available; therefore, the total economic value of recreation on the forest cannot be measured. Nevertheless, it is important to note that the estimates of jobs and income do not completely capture the economic consequences of forest recreation.

Outfitters and guides are an important consideration in the context of the economic impacts of recreation. Thirty-two guides reported bringing clients to the Magdalena Ranger District in 2010. These guides reported $621,860 in client fees related to use of district lands. Many of the clients purchased goods and services such as motel rooms and groceries locally. This data should not be considered in addition to the above economic estimates, since NVUM surveys likely capture some outfitter guide use, so estimates are adjusted accordingly. However, this data does add clarity to the type of uses that exist on the district. As mentioned above, the impact of travel management on outfitter guides is difficult to discern. Although travel management decreases the number of roads and trails available for use (including guided use), it may also increase guide business related to big game hunting and retrieval.

Recreation is not the only activity on the forest that may be affected by travel management. In particular, firewood gathering is not considered in the above economic impact analysis. As Magdalena firewood reports reveal, in fiscal years 2009 and 2010, the district issued approximately 2,300 forest product permits and more than $50,000 of firewood, poles, and Christmas trees are collected in the ranger district annually. Both personal and commercial uses exist–for instance, firewood may be used to heat the permitee's home or sold to others.

Motorized dispersed camping and motorized big game retrieval were identified as major issues with potential social and economic considerations. These issues are analyzed in detail in the recreation specialist's report.

Direct and Indirect Effects of Baseline Conditions

Baseline conditions continue current management. The economic effects from this management are reflected in tables 29 through 32. The employment and labor income identified in these tables would continue to be supported.

The baseline condition on the Magdalena district limits opportunities for recreationists seeking quiet and solitude from motorized activities, but provides the greatest opportunities for on- and off-road motorized recreation. Hunting is one activity that may bring in nonlocal dollars and has some dependence upon motor vehicle use; and camping with a recreational vehicle may contribute to the local economy. Under the baseline condition, this would remain unchanged.

Alternative 1: Proposed Action

Alternative 1 is the proposed action that was presented in the "Scoping Report for Magdalena Ranger District Travel Management Proposed Action," dated July 22, 2010, with minor changes as a result of additional field review. These changes include refining the location of motorized dispersed camping locations and closing one road due to their locations within threatened species protected activity centers. When combined with previous decisions, these proposed changes would result in a motorized system with 850.8 miles of designated National Forest System roads.

Of these, 374.4 miles would allow the limited use of motor vehicles solely for the purpose of dispersed camping. Motorized big game retrieval off of the designated system would not be authorized.

Direct and Indirect Effects of Alternative 1

Alternative 1 proposes an approximately 30 percent decrease in open designated roads from 1,171.4 miles to 850.8 miles. Although the miles of roads and trails open to motorized travel is reduced relative to existing conditions (alternative 2), no economic consequences are anticipated. The relationship between designated road miles and forest visits is unknown. As table 29 shows, motorized recreation is estimated to contribute approximately two jobs and $37,000 in labor income to the local economy annually (this estimate does not include nature-related uses that may have motorized components, such as hunting). It is not expected that motorized uses will decrease under this alternative. Rather, motorized uses will continue on designated roads and trails. Therefore, jobs and incomes related to motorized uses are not expected to change (economic consequences are expected to continue the effects as identified in tables 29 through 32).

In addition, the decrease in available routes for motorized use may offer other economic benefits. Designating areas appropriate for motorized use may decrease resource use conflicts between motorized and nonmotorized recreationists, which may encourage nonmotorized visitors to recreate on the ranger district. Nonmarket values, such as ecosystem services, may be improved under alternative 1. Unlimited cross-country motorized travel contributes to soil and water degradation, habitat disruption and fragmentation, and the spread of invasive weeds. Although the value of ecosystem health is not captured in markets, the goods and services provided (e.g., clean water) have economic value.

Alternative 2

Under this alternative, public motorized use would continue on all currently open National Forest System roads (1,210.8 miles). Currently open system roads are those that are NFS roads and are available to the public for motorized use. However, not all system roads are accessible to the public; some can only be accessed by crossing private lands for which the Forest Service does not have legal right-of-way. This alternative would prohibit all cross-country travel.

Direct and Indirect Effects

The direct and indirect effects of alternative 2 would be similar to the baseline condition. Although local communities have service sectors that may be partially supported by tourism, there is little evidence that OHV use is a factor in bringing nonlocal dollars to the analysis area. Hunting is one activity that has some dependence upon motor vehicle use and may contribute nonlocal dollars to the Magdalena area economy. Under this alternative, vehicular access would be limited to open NFS roads, and there would be no off-road big game retrieval. Given that there are no measurable direct or indirect effects from this alternative, there would also be no measurable cumulative effects.

Alternative 3

This alternative responds to scoping issues concerned with loss or reduction of motorized recreation opportunities for larger 4-wheel drive vehicles or ATVs; lack of availability for motorized big game retrieval, and a designated motorized recreation area, which are absent in the

proposed action. This alternative would add approximately 25.8 miles of roads to those identified in the proposed action as designated as open to motorized use. It provides for a 756-acre motorized recreation area in the southern San Mateo Mountains and authorizes a 0.5 mile corridor on either side of 342.5 miles of designated roads for big game retrieval, and designates a 600-foot-wide corridor along 374.4 miles of designated roads for dispersed camping.

Direct and Indirect Effects of Alternative 3

Alternative 3 proposes an approximate decrease of 26 percent in open designated roads and trails, from the existing 1,171.4 miles of open roads to 876.7 miles. Although the miles of roads and trails open to motorized travel is reduced relative to existing conditions, no economic consequences are anticipated. The relationship between designated road miles and forest visits is unknown. As table 29 shows, motorized recreation is estimated to contribute approximately two jobs and $37,000 in labor income to the local economy annually (this estimate does not include nature-related uses that may have motorized components, such as hunting). It is not expected that motorized uses will decrease under this alternative. Rather, motorized uses will continue on designated roads. Therefore, jobs and incomes related to motorized uses are not expected to change (economic consequences are expected to continue the effects identified in tables 29 through 32.

In addition, the decrease in available routes for motorized use may offer other economic benefits. Designating areas appropriate for motorized use may decrease resource use conflicts between motorized and nonmotorized recreationists, which may encourage nonmotorized visitors to recreate on the ranger district. Nonmarket values, such as ecosystem services, may be improved under alternative 3. Unlimited cross-country motorized travel contributes to soil and water degradation, habitat disruption and fragmentation, and the spread of invasive weeds. Although the value of ecosystem health is not captured in markets, the goods and services provided (e.g., clean water) have economic value.

Alternative 4

Alternative 4 was developed in response to concerns that designating unauthorized, closed, decommissioned, or new roads may have negative effects on natural and heritage resources. In addition, dispersed camping corridors may lead to conditions similar to cross-country travel within and adjacent to the corridors. This alternative also responds to issues of reducing densities to improve wildlife habitat. This alternative would remove approximately 104.6 miles of roads from those identified in the proposed action that would be designated as open to motorized use. These roads would not be shown on the motor vehicle use map. This alternative proposes 321.2 miles of dispersed camping corridors, but would prohibit cross-country motorized big game retrieval.

Direct and Indirect Effects of Alternative 4

Alternative 4 has the fewest miles of designated roads among the considered alternatives. It provides for 746.9 miles of designated roads, which represents a 39 percent decrease in motorized roads from the existing roads alternative. However, as with alternatives 1 and 3—given the relatively small contribution of motorized recreation to the local economy and the imprecision inherent in estimating economic changes—no significant economic impacts are expected from alternative 4. As with alternatives 1 and 3, motorized recreation opportunities are still available on

the forest and a decrease in use is not anticipated. Rather, use is expected to be more concentrated on designated routes.

Due to the restrictions on motorized use under alternative 4, this alternative offers the highest protection of nonmarket/ecosystem service values.

Cumulative Effects

All national forests in the Southwestern Region are either in the process of travel management planning or implementing existing travel management plans. The Bureau of Land Management has also made decisions to designate routes for OHV use. All of the new decisions and the implementation of past land use and travel management decisions are generally resulting in fewer opportunities for cross-country OHV uses and fewer open routes for OHV use. These past decisions include the establishment of wilderness areas and other areas that prohibit motor vehicle recreation, reducing the motor vehicle access to the forest.

Although these past decisions are not part of current planning for the Magdalena Ranger District travel management plan, they are relevant because they are part of the cumulative effects of the travel management plan. Additionally, they are relevant to the discussion because much of the visitor data used in the "Social and Economics" section discussion was collected within these areas previously designated for non-motorized use recreation only. The selection of any alternative reduces cross-country access as required by the Travel Management Rule. However, the range of alternatives provides an array of motorized travel opportunities.

Law Enforcement

The following analysis is based on the law enforcement specialist reports prepared by Aban Lucero, northern zone patrol captain and Cliff Nicoll, ID team leader. This report is on file in the project record.

Affected Environment

One of the issues identified in scoping for this project was the Agency's ability to provide effective law enforcement for motor vehicle use on the Magdalena Ranger District. The motor vehicle use map (MVUM) would be the primary enforcement and information tool for travel management, but field law enforcement patrols would be critical to both sharing information, public education, and enforcing designations.

Travel management violations on the Magdalena Ranger District between 2000 and January 25, 2011, were extracted from the Law Enforcement Investigation Management Attainment Reporting System (LEIMARS) database (table 33).

Table 33. Travel management violations on the Magdalena Ranger District 2000–January 2011

Violation Type	Warning Notice	Incident Report	Citation Issued	Total
§ 261.12 (d) Blocking or restricting use of a road, trail, or gate.	0	0	0	0
§ 261.15 It is prohibited to operate any vehicle off National Forest System, State or county roads:				
(g) Carelessly, recklessly, or without regard for the safety of any person, or in a manner that endanger, or is likely to endanger, any person or property.	0	0	2	2
(h) In a manner which damages or unreasonably disturbs the land, wildlife, or vegetative resources.	0	1	0	1
In violation of State law established for vehicles used off road.	0	0	2	2
§ 261.52 Fire. When provided by an order, the following are prohibited: (e) Going into or being upon an area.	0	2	0	2
§ 261.54 National Forest System Roads. When provided by an order, the following are prohibited:				
(a) Using any type of vehicle prohibited by the order.	0	0	0	0
(d) Operating a vehicle in violation of the speed, load, weight, height, length, width, or other limitations specified by the order.	7	2	25	34
(e) Being on the road.	0	0	0	0
(f) Operating a vehicle carelessly, recklessly, or without regard for rights or safety of other persons, or in a manner or at a speed that would endanger or be likely to endanger any person or property.	0	0	1	1

The Magdalena Ranger District has minimal traffic violations. The most frequent violations during this period were operating a motor vehicle in violation of the posted regulations (34 violations) and operating a motor vehicle within an area closed due to fire (2 violations). There have been no recorded vehicle accidents on Forest Service roads in the district in the last 10 years. This does not mean that accidents have not occurred, only that they have not been reported or resulted in law enforcement involvement.

A 2007 report considered issues related to law enforcement on Forest Service lands based on interviews with law enforcement officers (LEOs). In the Southwestern Region, priority issues facing law enforcement professionals included off-road vehicle use and off-highway vehicle (OHV) activity on roadways. When asked what type of violations most commonly affect recreation visitors in the Southwestern Region, 24 percent of LEOs said motor vehicle violations including OHV/ATV violations, speeding, and reckless operation. This is compared to 33 percent of LEOs reporting this issue nationally. OHV management was identified as a challenge where 25 percent reported that past policing programs in this area had been unsuccessful (Chavez and Tynon 2007).

The district is patrolled by law enforcement officers and forest protection officers (FPOs). FPOs are employees trained to patrol and respond to petty offenses. The LEOs generally focus on the heavily trafficked areas of the district.

Illegal woodcutting, live tree theft, and rock theft have become a significant problem on the district. The current road system makes enforcement difficult. Roads are visible from long distances, making it difficult for law enforcement to approach people conducting illegal activities. The amount of roads in the Bear/Gallinas Mountains and in the San Mateo Mountains provides illegal woodcutters with numerous opportunities to leave the scene before another vehicle approaches. Patrolling the four mountain ranges is difficult due to their distance from the district office and other forest districts. Additionally, it is common for people conducting illegal activities to create their own access routes into the forest. These routes often come from private lands and are generally not known by law enforcement. Illegal woodcutting and rock theft result in resource damage such as cut fences, damaged gates, and the creation of new roads.

Environmental Consequences

Baseline Conditions

It is anticipated that law enforcement priorities would remain unchanged if the existing baseline condition were to continue. Patrols would continue to be infrequent and would focus on the district's heavily trafficked areas such as the main arterial roads and developed recreation sites. User conflicts would likely increase with increased use of the area and limited patrols.

Effects Common to All Alternatives

All of the action alternatives, with the exception of alternative 2, would reduce the miles of system roads designated for motor vehicle use. This may facilitate patrols by concentrating people on the major arterial roads and reducing the size of the area to be patrolled. Additionally, LEOs may be able to identify roads that are being used but are not designated, possibly indicating that illegal activities are occurring along the roads. This may allow LEOs to focus their patrols on specific areas and prevent some illegal activities.

Enforcement can be expanded through the use of FPOs. The action alternatives would necessitate more district employees becoming FPO certified in addition to other duties. Alternatives 1, 3, and 4 would include limited use of motor vehicles within 300 feet either side of designated roads for the purpose of motorized dispersed camping. In addition, motorized big game retrieval would be allowed within 0.25 mile of designated roads under alternative 3. These designations could facilitate patrols and the enforcement of closure orders, particularly those related to fire restrictions.

It would be important to emphasize information and education as well as enforcement for the first 2 to 3 years after the motor vehicle use map (MVUM) is released. Motor vehicle violations are expected to increase with more restrictive regulations, especially those associated with the MVUM.

Alternative 1

It is anticipated that law enforcement priorities and patterns would remain unchanged. Patrols on the district would continue to be infrequent. Patrols in the four mountain ranges would continue to focus on the district's heavily trafficked areas such as the main arterial roads and developed recreation sites. User conflicts would likely increase with increased use of the area, the reduction in miles available for motorized use, and limited patrols.

Alternative 2

It is anticipated that law enforcement priorities and patterns would remain unchanged. Patrols on the district would continue to be infrequent. Patrols in the four mountain ranges would continue to focus on the district's heavily trafficked areas such as the main arterial roads and developed recreation sites. Violations and the numbers of citations issued would likely increase, as motorized use would be restricted to the existing road system. Motorized cross-country travel and using unauthorized roads would be prohibited. The designations would not include the limited use of motorized use off any designated road for motorized dispersed camping or motorized big game retrieval, which would also be prohibited.

Alternative 3

This alternative differs from alternatives 1 and 4 because it includes the designation of an area for motorized use and allows motorized big game retrieval corridors. It would also result in more miles of system road being designated for motor vehicle use.

It is anticipated that law enforcement priorities and patterns would remain unchanged. Patrols on the district would continue to be infrequent. Patrols in the four mountain ranges would continue to focus on the district's heavily trafficked areas such as the main arterial roads and developed recreation sites.

Motorized big game retrieval may be difficult to enforce during popular hunting periods. Increased patrols would be necessary to ensure that motor vehicles are only being used to retrieve elk and mule deer in accordance with the Travel Management Rule and not for additional activities associated with hunting. Increased patrols during hunting season would also ensure that motorized dispersed camping is occurring in designated locations and that potential fire restrictions are enforced. During hunting season, patrols by the New Mexico Department of Game and Fish can supplement Forest Service enforcement. Hunters are required to follow Forest Service travel management regulations as part of their license requirements.

Alternative 4

It is anticipated that law enforcement priorities and patterns would remain unchanged. Patrols on the district would continue to be infrequent. Patrols in the four mountain ranges would continue to focus on the district's heavily trafficked areas such as the main arterial roads and developed recreation sites. Violations and the numbers of citations issued may increase, at least initially, as the number of miles of roads available for motorized use would be reduced, the number of miles of dispersed camping corridors would be reduced, and motorized big game retrieval would also be prohibited.

Cumulative Effects

There may be a need for increased patrols on the Magdalena district, particularly after the motor vehicle use map (MVUM) is released and people are learning about the new regulations. Alternative 3 would be the most complicated action alternative to enforce due to the miles of road designated; the establishment of a trails system that may require LEOs to use ATVs; and the designation of motorized big game retrieval corridors. Patrols on the Magdalena district may be reduced during periods of increased activities on other ranger districts. None of the other reasonably foreseeable future projects would have an effect on law enforcement.

Timber and Vegetation Management

The following analysis is based on the timber and vegetation specialist report prepared by Susan Schuhardt, district forester, with edits and modifications by Cliff Nicoll, ID team leader. The report is on file in the project record.

Affected Environment

The Magdalena Ranger District utilizes vegetation management to maintain forest densities at sustainable levels, as well as to maintain or enhance species composition and forest structure to achieve various resource objects. The resource objectives include, but are not limited to: enhancing wildlife habitat; providing livestock forage; mitigating the threat of uncharacteristic wildfire; preventing/slowing the spread of harmful insects or disease; maintaining watershed health; providing forest products to support local and regional communities; and enhancing scenic quality. Vegetation management includes activities such as prescribed burns, firewood sales, and timber harvests.

Half the district is comprised of piñon- juniper woodlands. Forest (mixed conifer and ponderosa pine) is the next most common vegetation type. Grasslands make up 13 percent of the district. Spruce-fir, aspen, and riparian vegetation types are rare, with less than 1 percent of the total area.

Table 34. Major vegetation types of the Magdalena district

Vegetation Type	No. of Acres	Percent of District
Grassland	105,228	13%
Chaparral	11,241	2%
Piñon-juniper	424,359	54%
Oak woodland	18,567	2%
Ponderosa	90,760	11%
Ponderosa/Gambel oak	27,265	3%
Mixed conifer	115,568	15%
Total	**792,991**	**100%**

A total of 81,741 acres on the Magdalena Ranger District is classified as tentatively suitable timber lands ("Cibola National Forest Land and Resource Management Plan" as amended 1996; "Determination of Tentatively Suitable Timber Lands on the Cibola National Forest," 1998). Tentatively suitable timber lands are defined as areas of conifer and ponderosa pine forest located outside of wilderness areas on slopes less than 40 percent that would likely regenerate after harvest. The majority of these areas are currently unhealthy and susceptible to uncharacteristic wildfire or insect/disease attacks.

There is a total of 442,926 acres of piñon-juniper and oak woodland that is managed for varying resource objectives and to provide special forest products, such as firewood, but is not considered tentatively suitable timber lands. These areas also tend to be unhealthy, with uniform tree distribution, high tree densities, and limited variation in tree size and age, which increases the likelihood of these stands being affected by uncharacteristic wildfires and insect/disease attack.

Personal use firewood is a tool used to achieve vegetation resource objectives such as improvement of forest health. Currently, firewood cutting is allowed on most of the district, except for closed areas. A special use permit is required to cut firewood. Demand for firewood is high and seems to be increasing. Future firewood projects are being planned. Special forest products are currently available on the district and include Christmas trees and vigas.

An unknown amount of wood is harvested through illegal woodcutting. Large diameter juniper and oak, and valuable snags, are often the target of wood theft. Smaller trees are sometimes cut to reach the larger, more valuable timber. This activity affects the vegetation by removing the larger trees and leaving the stands homogenous and prone to threats such as disease and fire. Additionally, illegal woodcutting creates new two-track roads that damage the soil, lessening soil productivity and vegetation coverage.

Two noxious weeds are on the district: Tamarisk is found in small ephemeral drainages and around springs on the north side of the district. There is also a small amount of cheatgrass on the north side. These plants out compete native plants for water, nutrients, light, and space. They can severely affect wildlife habitat, soil stability, and forage production if they are not controlled. Invasive/exotic plants are spread through human activities such as unrestricted motorized travel, foot traffic, and livestock grazing.

The road system is used administratively to access various vegetation management projects such as timber sales and by the public to access special forest products or firewood areas. The existing road system is adequate for conducting vegetation management projects and collecting miscellaneous forest products. Poor road conditions and wet weather can restrict access to areas during the year.

The Forest Service would continue to have access to all system roads, designated or not designated, for limited administrative use. This includes the use of roads for vegetation management projects. Access for future projects would be handled on a case-by-case basis under a separate National Environmental Policy Act (NEPA) analysis. Firewood would continue to be available in designated areas through special use permits. These permits will specify the access routes for the area. Special forest products would continue to be available. However, the public would not be allowed to drive off of designated routes to access these products. Special use permits may be available for limited off road driving to obtain these resources.

Environmental Consequences

Effects Common to all Alternatives

Alternatives 1, 3, and 4 would reduce the miles of roads designated for motor vehicle use and likely reduce the introduction and spread of invasive/exotic plants and increase the potential vegetation to re-establish itself.

Baseline Condition

There are 697,716 acres currently open to motorized cross-country travel on the Magdalena Ranger District, which represents 88 percent of the Magdalena Ranger District (791,707 acres). As a result of unrestricted motorized cross-country travel, there has been a proliferation of unauthorized roads. Motorized dispersed camping is currently unrestricted in the areas open to motorized cross-country travel.

There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District open to general motorized use which includes passenger vehicles and high-clearance vehicles, such as pickups or sport utility vehicles. The unrestricted use of motor vehicles on the district would provide for the continued loss of vegetation and a decrease in the viability of plant communities.

Alternative 1

A total of 4.5 miles of road construction around private lands is proposed. These reroutes would remove some vegetation and provide locations that could potentially be occupied by invasive species. Assuming a construction width of 35 feet for a maintenance level 2 road, approximately 19 acres of vegetation would be permanently removed. Also, 17 miles of unauthorized roads and 14.7 miles of closed roads would be designated for motorized use.

However, these changes are relatively small and are much less than the 378.2 miles of system roads that would not be designated for motorized use, but restricted to administrative use. They would provide continuing access to areas of the forest and allow for efficient vegetation management. There would be 374.4 miles of dispersed camping corridors, which reflects a relatively small change from current conditions. There would be no motorized cross-country travel, which would be beneficial to vegetative cover by providing for more vigorous plant communities.

Alternative 2

There would be no change to the current road system. Any roads without legal public access would not be designated. Cross-country motorized travel would not be permitted. The effects associated with this alternative to the management of timber and vegetative resources would remain unchanged.

Alternative 3

This alternative proposes to construct 6.4 miles of road around private lands. These changes would have a negative effect on vegetation by reducing surface vegetation. Assuming a construction width of 35 feet for a maintenance level 2 road, approximately 27 acres of vegetation would be permanently removed. Approximately 29.2 miles of unauthorized roads and 16.9 miles of closed roads would be designated for motorized use. However, these changes are relatively small and are much less than the 367.1 miles of system roads that would not be designated for motorized use, but designated for administrative use.

These changes would have a beneficial effect on the vegetation. This alternative includes designation of a 756-acre area of motor vehicle use, which could create negative impacts on the amount and kind of vegetation in the area. Bare soil would be exposed, creating ideal conditions establishing invasive weed populations.

Alternative 4

This alternative proposes to construct 3.7 miles of road around private lands. These reroutes would remove some vegetation. Assuming a construction width of 35 feet for a maintenance level 2 road, approximately 15.7 acres of vegetation would be permanently removed. Also, 17.3 miles of unauthorized roads and 10.6 miles of closed roads would be designated for motorized use. However, these changes are relatively small and are much less than the 477 miles of system roads

that would not be designated for motorized use, but designated for administrative use. They would provide continuing access to areas of the forest and allow for efficient vegetation management. There would be 321.2 miles of dispersed camping corridors, which is not much change from current conditions. The district would be closed to motorized cross-country travel, which would be beneficial to vegetative cover by reducing the size of areas impacted by motor vehicle use and allowing for an increase in plant vigor.

Cumulative Effects

Present or reasonably foreseeable projects on the Magdalena Ranger District include forest restoration thinning in the Fisher project and forest and grassland restoration and a prescribed burn in the Baney project. The district is also in the process of considering establishing new firewood areas of 400–600 acres per year in various locations. Since vegetation management projects are conducted administratively through special use permits, or by contract, any of the alternatives would be beneficial to timber and vegetation management. There are no effects associated with any of the alternatives to the management of timber and vegetative resources; therefore, they do not contribute to cumulative effects.

Wildlife Habitat and Special Status Species

The following analysis is based on the wildlife habitat and special status species specialist report prepared by Dave Heft, district wildlife biologist (retired), Beverly deGruyter, forest wildlife biologist, and Amada Ginithan, wildlife biologist. This report is on file in the project record.

Baseline Conditions

The travel management planning area (Magdalena Ranger District, excluding wilderness areas) has a wide variety of wildlife species associated with varied habitat types. In general, there are seven basic wildlife habitat types: mountain grassland; mountain shrub; piñon-juniper woodland; mixed conifer, ponderosa pine and pine/oak; spruce/fir, and a small amount of riparian habitat with small inclusions of other types such as deciduous forest (table 35).

There is a direct connection between vegetation types and wildlife use of sites in the area. Ponderosa pine, piñon-juniper, mixed conifer, riparian, and scattered mountain grassland areas are the primary habitats impacted by the existing motorized route network due to the higher percentage of routes in those habitats. Motorized cross-country travel is currently allowed throughout the analysis area, causing loss of all habitat types and displacement of associated species when and where that use occurs. Some decommissioned and unauthorized routes continue to be used, compounding this situation.

Table 35. Habitat acreages in the Magdalena District travel management analysis area

Habitat Type	Acres	Existing Route Density by Habitat Type (miles per square mile)
Mountain grasslands	96,991	2.62
Mountain shrub	16,647	0.48
Piñon-juniper woodland	394,417	1.02
Mixed conifer forest*	64,863	0.85
Ponderosa pine and pine/oak forest	103,254	1.85
Riparian or wetland**	21,114	6.6
Spruce/fir	22	0.86
Total Acres	697,308	—

*Deciduous forest is a subset of the mixed conifer habitat type. It is composed primarily of aspen that occur in mostly isolated patches or where large burns removed the mixed conifer overstory. Because it is isolated it has not been mapped.

**Much of the riparian habitat includes dry washes and other ephemeral drainages that are not considered true riparian areas, but were included to be consistent with RMAP (Riparian Mapping Project) and the watershed specialist report.

Loss of wildlife habitat can be correlated to road miles by converting road width and road distance into acres of habitat. Most single lane roads, level 2 and some level 3 roads, have a width standard of 12 feet. Most double lane roads, level 4 roads, have a width standard of 24 feet. For this analysis, an average width of 16.5 feet will be used. A road 16.5 feet wide and 1 mile long is equivalent to 2 acres. For the purpose of the wildlife species and habitat analysis, route density is defined as all motorized routes, including roads (system, unauthorized, and decommissioned) and trails.

For each of the habitats, analysis has focused on Cibola National Forest special status species including: management indicator species (MIS); threatened, endangered, candidate and sensitive species (TES); and high priority migratory birds. A separate report was prepared for each of the special status species and is available in the project record. This environmental assessment (EA) summarizes information contained in those reports.

Management Indicator Species

The “Cibola National Forest Land and Resource Management Plan” (LRMP) identified 13 management indicator species (MIS) to estimate the effects planned activities may have on forest-wide wildlife populations and habitat. Only those MIS whose habitat (vegetation) types occur within the project area were analyzed. Of the 13 MIS identified, 10 are found within the analysis area. Table 36 displays the 10 species and their habitats. The forest-wide MIS report (as revised in 2011) was used to prepare the project specific MIS report. Both reports are available in the project record.

Table 36. Management indicator species and existing habitat/population trend analyzed for this travel management analysis

Species	MIS Habitat Type	Acres in Analysis Area	Existing Forestwide Habitat Trend	Existing Forestwide Population Trend
Elk	Mountain grassland	96,991	Stable	Up
	Mixed conifer	64,863	Stable	Up
Mule deer	Mountain shrub	16,647	Down	Down
	Piñon-juniper	394,417	Stable	Down
Red-naped sapsucker	Deciduous forest (included in mixed conifer acres)	64,863	Stable	Up
Merriam's wild turkey	Ponderosa pine	103,254	Stable	Up
House wren	*Riparian	21,114	Up	Stable
Juniper titmouse	Piñon-juniper	394,417	Stable	Down
Pygmy nuthatch	Ponderosa pine	103,254	Stable	Stable
Hairy woodpecker	Mixed conifer	64,863	Stable	Up
Red-breasted nuthatch	Spruce-fir	22	Stable	Up
Black Bear	Spruce-fir	22	Stable	Stable
	Mixed conifer	64,863	Stable	Stable

*The riparian acres displayed here differ from the forestwide MIS report because dry washes and ephemeral drainages are included.

High Priority Birds/Important Bird Areas/Overwintering Areas

On the Cibola National Forest, populations of birds are monitored through the use of breeding bird surveys (BBS) on geographic areas to detect population and trend during the breeding period. There are two types of BBS surveys done on the Cibola and both types of survey routes are conducted on the district including:

- Magdalena (a U.S. Geological Survey BBS route in the Bear Mountains);
- Vick's Peak (a USGS BBS route in the San Mateo Mountains);
- Horse Mountain (a USGS BBS route in the San Mateo Mountains); and
- Three shorter BBS routes at Potato Canyon, Sawmill Canyon, and Copper Canyon.

In addition, there are two bird survey routes conducted for the San Juan and Deep Canyon allotments for Aplomado falcon potential prey species. The Cibola National Forest's 2012 "Breeding Bird Survey Report" provides a summary of the potential occurrence of high priority migratory bird species by habitat type. Those species potentially occurring in habitats similar to the analysis area on the Magdalena Ranger District were reviewed. There are no important bird areas (IBA) or important overwintering areas on the district. Refer to the high priority migratory

bird report in the project record for a complete description of species and habitats and effects of alternatives. Table 37 summarizes species and habitat analyzed.

Table 37. Priority bird species and associated habitat

Priority Bird Species	Habitat
Piñon jay	Piñon-juniper woodland is used most extensively by this species but flocks also breed in sagebrush, scrub oak, and chaparral communities.
Black throated gray warbler	This species can be found in piñon-juniper with some oak understory between 7,000 and 8,000 feet, but can also be common in more mesic piñon/juniper with a high canopy closure.
Band-tailed pigeon	This species may be found from piñon-juniper up through spruce/fir depending on availability of food that includes a wide variety of mast such as fruits and nuts, especially acorns and piñon pine nuts.
Gray flycatcher	This species is found in piñon-juniper woodland into the fringes of ponderosa pine, together with some understory of oak, mountain mahogany, etc., and often occur in semimixed xeric conditions.
Dusky grouse	Dusky grouse prefer open, shrubby high meadows in summer and coniferous forest in winter.
Flammulated owl	Flammulated owls occur in open, old-growth ponderosa pine, mixed conifer and spruce/fir areas with large snags.
Black-chinned hummingbird	This species is the foothills hummingbird that occurs up to about 7,000 ft.
Broad-tailed hummingbird	This mountain hummingbird is found from about 7,000 feet upward. It frequents meadows and open forest with a shrubby component and forbs.
Scaled quail	Primarily found in peripheral shrubby grasslands in the vicinity of canyon foothills on the San Mateo, Magdalena and Bear Mountain ranges.
Red-naped sapsucker	They are found in high elevation riparian woodland, ponderosa pine, mixed conifer, and spruce/fir. This species prefers aspen and cottonwoods for nesting and are often found in oaks in winter.
Montezuma quail	Primarily occurs in open pine grasslands, but also utilizes habitats from piñon-juniper to spruce-fir.
Grace's warbler	This species is fairly common in ponderosa pine but may extend into mixed conifer if ponderosa pine is also present.
Elf owl	Found on the San Mateo and Magdalena Mountain ranges in low to mid-elevation riparian areas where it nests in cavities excavated by woodpeckers.
Vesper sparrow	This species is found in dry meadows with some shrub component from about 7,000 feet to at least 8,400 feet.
Williamson's sapsucker	This species is uncommon in ponderosa, mixed conifer, and spruce/fir.
Olive-sided flycatcher	This species breeds in habitat along forest edges and openings, including: burns, natural edges of bogs, marshes, open water; semi-open forest, and harvested forest with some structure retained.
Loggerhead Shrike	Generally prefers juniper savannah or grassland/shrub habitats below 7,000 feet in elevation.
Gray vireo	Prefers juniper savannah habitats especially on moderate rocky slopes generally below 6,800 feet in elevation.
Juniper titmouse	Prefers juniper dominated relatively dry and open piñon-juniper habitats at elevations of 6,000 to about 7,200 feet.
Bendire's thrasher	Prefers relatively open grassland, desert shrublands, juniper woodland with scattered shrubs or trees.

Priority Bird Species	Habitat
Crissal thrasher	Prefers shrubby thicketlike habitat associated with dry washes with scrub, live oak, and four-wing saltbush.
Olive warbler	Found on the San Mateo and Magdalena ranges in ponderosa pine and mixed conifer from 7,400 to 9,800 feet in elevation.
Virginia's warbler	Considered to prefer arid montane forests with Gambel oak understory from 6,000 to 9,000 feet in elevation.
Red-faced warbler	Habitat for this species is high elevation (7,500–9,200 feet) riparian, ponderosa pine, and mixed conifer especially those sites with a component of deciduous trees.
Painted redstart	Prefers cool moist sites in ponderosa pine-oak riparian forests.
Black-chinned sparrow	Habitat for this species is dense chaparral on mountain slopes, rugged canyons, and sagebrush.
Eastern meadowlark	Prefers grassland habitats with a diversity of cover heights and good litter cover.

Threatened, Endangered, Candidate, and Sensitive Wildlife and Plant Species

Several wildlife and/or plant species lists were reviewed to determine potential species which may occur in the analysis area. Refer to the 2007 Regional Forester's Sensitive Species list and the U.S. Fish and Wildlife Service threatened and endangered county list for a complete list of species considered (U.S. Fish and Wildlife Service, 2012).

Table 38 shows federally listed TES wildlife and plant species having potential to occur within the analysis area. Other species were considered but were not included because the habitat type for the species does not occur in the analysis area. Refer to the biological assessment (BA) and the biological evaluation (BE) in the project record for a complete list of species considered but not evaluated.

Threatened, endangered, candidate, or sensitive wildlife and plant species which may occur or have potential habitat in the analysis area include:

- Northern goshawk (4 known territories occur within the analysis area);
- Mexican spotted owl (33 known territories);
- Eight other species of birds;
- Seven small mammals;
- Two amphibians;
- Four invertebrates; and
- Six plants including the endangered Zuni fleabane.

There is a small portion of designated Mexican spotted owl critical habitat within the analysis area (the majority of critical habitat is within the Apache Kid and Withington Wilderness areas, outside the scope of this analysis). Table 38 shows all the TES species having potential to occur on the Magdalena Ranger District's travel management planning area.

Table 38. Threatened, endangered, candidate, and sensitive species considered

Common Name	Special Status	Status in Project Area
Mexican spotted owl	Federally Threatened/ Critical Habitat	This species occurs in dense, multistory mixed conifer stands with large tree structure. Spotted owls prefer shaded, cool, moist canyon sites and mountain slopes with rock outcrops, cliffs, talus, and standing dead and down woody material. There are 33 protected activity centers within the district. There are 169,081 acres of critical habitat on the district and 180 acres within the analysis area. Mexican spotted owl habitat is managed at three levels—protected activity centers, recovery habitat, and other forest and woodland types—to achieve a diversity of habitat conditions across the landscape. Protected activity centers are known territories which are a minimum of 600 acres each. Recovery habitat includes all mixed conifer, pine-oak forests, and riparian areas meeting Mexican spotted owl recovery plan definitions. Other forest and woodland types include ponderosa pine, spruce-fir, woodland, and aspen forests outside PACs and recovery habitat. The analysis area is in the Upper Gila Mountains Ecological Management Unit (EMU). The primary threat in this EMU is stand-replacing wildfire. Lesser threats are indiscriminant firewood harvests (especially the removal of large oaks, snags, and down logs), and improper grazing by livestock.
Zuni fleabane	Federally Threatened	The Zuni fleabane occurs on nearly barren detrital clay hillsides with soils derived from shale of the Chinle or Baca formations (often seleniferous) in the Datil Mountain area.
Northern aplomado falcon	Federally Endangered	The falcon occurs in arid desert grasslands with some potential habitat occurring in the southeastern portion of the analysis area. No individuals have been documented on the district.
Chiricuhua leopard frog	Federally Threatened	This species occurs in wetland and stream habitats. An existing population occurs on private property and State lands near the forest boundary southwest of the San Mateo Mountains.
Northern leopard frog	USFS Southwestern Region Sensitive	This species is usually found in springs, slow moving streams, marshes, ponds, lakes, and other aquatic habitats.
Alamosa springsnail	Federally Endangered	This species occurs in the Alamosa Warm Springs on private and State land near the southwestern boundary of the San Mateo Mountains.
Bleached skimmer dragonfly	USFS Southwestern Region Sensitive	Prefers pond and spring habitats with ephemeral vegetation being a vital component.
Western yellow-billed cuckoo	Federal Candidate	Yellow billed cuckoos in New Mexico prefer desert riparian woodlands comprised of willow, Fremont cottonwood, and dense mesquite. This species has not been recorded on the district.
Northern goshawk	USFS Southwestern Region Sensitive	Nests are typically in mature to old-growth ponderosa pine and pine/oak forests composed primarily of large trees, with 60 to 70 percent canopy closure in large tree groups, near the bottom of moderate hill slopes, with sparse ground cover. There are four known post fledgling family areas (PFAs) within the analysis area.
Bald eagle	USFS Southwestern Region Sensitive	The analysis area provides winter habitat only. There are no known roosts.

Common Name	Special Status	Status in Project Area
American peregrine falcon	USFS Southwestern Region Sensitive	Peregrine falcons inhabit open wetlands and canyons near cliffs. They prey chiefly on birds.
Zone-tailed hawk	USFS Southwestern Region Sensitive	There are no known locations of zone-tailed hawks on the allotment but the arid, semi-open pine-oak woodlands and small pockets of riparian habitat in rugged canyons that are described for New Mexico are present on the analysis area. Prey species include birds, small mammals, and lizards.
Burrowing owl	USFS Southwestern Region Sensitive	Prefers open plains, grasslands, deserts, and steep banks of dry washes.
Loggerhead shrike	USFS Southwestern Region Sensitive	Prefers open, shrubby grasslands with scattered shrubs or small trees.
Gray vireo	USFS Southwestern Region Sensitive	Inhabits dry, shrub dominated landscapes such as grasslands with scattered junipers and shrubby arroyos.
Spotted bat	USFS Southwestern Region Sensitive	The spotted bat ranges throughout the western states. It is found in various habitats from desert to montane coniferous stands, including open ponderosa pine, piñon-juniper woodland, canyon bottoms, open pasture, and hayfields. Locations of this species are unknown in the analysis area. Threats include riparian/other habitat loss and degradation.
Allen's Lappet browed bat	USFS Southwestern Region Sensitive	This species primarily inhabits coniferous forests in southwestern mountains. Locations of this species are unknown in the analysis area, but they commonly roost behind pieces of loose bark in large conifer snags and trees. Small moths are the primary food source of these bats. They are known to forage in a variety of forest and woodland types
Pale Townsend's big-eared bat	USFS Southwestern Region Sensitive	Locations of this species are unknown in the analysis area. This bat prefers mines/caves for roost sites but also roosts in other habitats. Small moths are the primary food of these bats. They forage along forested edges taking prey from leaves and in flight.
Southern red-backed vole	USFS Southwestern Region Sensitive	This vole occurs in the coolest mesic sites within spruce-fir forest. Nests are usually in a secondary cavity in a live or dying tree, hole in the ground, stumps, logs, or under rocks.
Gunnison's prairie dog	USFS Southwestern Region Sensitive	Gunnison's prairie dog is usually found in grassland/herbaceous and shrubland areas, high mountain valleys, as well as open or slightly brushy country, rarely with scattered junipers and pines.
Botta's pocket gopher	USFS Southwestern Region Sensitive	This pocket gopher has been found in sycamore, cottonwood, and rabbitbrush riparian habitats (Bison-M, 2009).
New Mexico banner-tailed kangaroo rat	USFS Southwestern Region Sensitive	Primarily found in grasslands with both sand and clay based soils. This species constructs burrows which have conspicuous dirt mounds at the openings. Each mound is occupied by an adult male or female, and an animal may have more than one mound in its home range.
Magdalena Mountain snail	USFS Southwestern Region Sensitive	This mountain snail seems to occur widely in the Magdalena Mountain range, above elevations of 7,000 ft. It has been taken at several localities. Along North Fork Canyon, a branch of Water Canyon, it was found at 7,320 ft. on a north-facing slope near the bottom of the canyon, living under loose, igneous stones in thick leaf litter from deciduous trees. It has been taken in coniferous forest as high as 9,850 ft. on North Baldy Peak.

Common Name	Special Status	Status in Project Area
Subalpine mountain snail	USFS Southwestern Region Sensitive	Occurs on the San Mateo range in rhyolitic (igneous) talus.
Zuni milkvetch	USFS Southwestern Region Sensitive	This species is limited to the Zuni and Datil Mountains of New Mexico.
Villous ground-cover milkvetch	USFS Southwestern Region Sensitive	This plant prefers sandy soils of volcanic origin on slopes, benches, and ledges in xeric pine forest.
San Mateo penstemon	USFS Southwestern Region Sensitive	Primary occurrence is within open ponderosa pine and spruce-fir forest and high mountain meadows at 9,000–10,000 feet in elevation.
Arizona leather-flower	USFS Southwestern Region Sensitive	Moist mountain meadows, prairies, and open woods and thickets in a wide range of elevations up to 10,000 ft.
Tall bitterweed	USFS Southwestern Region Sensitive	Found on dry sites with coarse soils in piñon-juniper woodland and lower montane coniferous forest; 6,900–8,200 ft. elevations in northwestern Lincoln, northeastern Socorro, and western Torrance Counties, southern Manzano Mountains, Gallinas Mountains, Los Pinos Mountains, and northern Chupadera Mesa.

Environmental Consequences

Baseline Conditions

Motorized use of roads and trails and cross-country motorized travel off of system roads and trails affects terrestrial and aquatic species through:

1. Loss of habitat due to conversion of native vegetation to a particular road/trail surface (paved, gravel, dirt);
2. Fragmentation of habitats due to road and trail system development and cross-country motorized travel off of system roads and trails;
3. Lack of habitat use by wildlife due to disturbance caused by use of the road or trail system and cross-country motorized use; and
4. Direct mortality due to vehicle collisions.

Routes are considered to have similar effects regardless of whether they are in the existing system or new route designations. Routes being added to the system as new route designations are existing two-track routes currently being used by the public. For the wildlife species/habitat analysis, motorized roads and trails are considered together as routes since the primary effects to wildlife are similar. Effects are related to route densities, motorized traffic along those routes, and possible cross-country motorized travel off of system roads and trails potentially contributing to wildlife disturbance/harassment and habitat fragmentation. Overall, in all alternatives there is a net reduction in both system routes and acres affected by motorized use compared to the baseline. Motorized cross-country travel will be reduced from the current situation, reducing impacts to all

habitat types and associated species when and where that use occurred. Some decommissioned and unauthorized motorized routes are proposed to be added to the system but there would be an overall reduction in motorized routes.

In a letter dated May 12, 2009, the New Mexico Department of Game and Fish (NMDGF) stated that the agency is in favor of closing many routes to motor vehicle traffic to lessen fragmentation and disturbances to wildlife caused by motorized use. The ID team that developed the proposed action and alternatives, worked closely with the NMDGF to determine sufficient and strategically located roads and trails to remain open to vehicle use. The team assured that reasonable access to hunting areas is provided to meet the NMDGF's need for successful harvest and wildlife conservation. Alternative analysis also provides descriptions of how the intent of Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, was met.

Motorized use of routes during hunting season can provide increased hunter opportunity especially for disabled and youth hunters and increased harvest of game species. However, motorized use can also reduce the quality of hunts for some users since noise associated with that use can displace wildlife. In another letter dated February 28, 2006, the NMDGF confirmed their position related to motorized big game retrieval (MBGR), stating that individual national forests should not provide special treatment to mobility impaired hunters so that the spirit and intent of the Travel Management Rule is maintained. The NMDGF suggested that MBGR be consistent across forests in the State to ensure compliance and enforcement capabilities. The Forest Service Southwestern Region also provided guidance for MBGR in their Travel Management Rule Guidelines (Revised June 30, 2008). For the purposes of this analysis, only elk and mule deer are being considered for MBGR on Game Management Unit 13 (Datil and Bear Mountains units) and Unit 17 (San Mateo and Magdalena Mountains units). Other species such as cougar and black bear are not being considered for MBGR since there are very few harvested on the district.

Management Indicator Species

The general wildlife effects described above apply to MIS habitat and populations. Table 39 describes the rationale for the estimated effects determination including effects to forestwide MIS population and habitat trend. The Forest Service is required to analyze impacts to specific habitat types and the primary species associated with these habitat types (see the project level MIS report for a more detailed discussion of motorized route and motorized dispersed use impacts to wildlife).

Variables analyzed for MIS include route density (miles per square mile), miles of motorized big game retrieval, miles of dispersed camping, and acres of direct habitat loss. Route density by habitat type is based on a GIS analysis of the miles of routes in seven separate habitat types.

The Forest Service is required to analyze how a project will affect the forest-wide population and habitat trends for each MIS habitat type and MIS species associated with these habitat types. In most cases, the amount of habitat affected is a very small percentage of the amount of habitat available forest-wide. Motorized use will not affect the quantity of habitat available for management indicator species in the forest but habitat quality may be affected by routes and cross-country motorized use. Table 39 describes the variables analyzed to determine the estimated effects to MIS including effects to forest-wide population and habitat trend. Ultimately there is very little difference between the alternatives in terms of the miles of motorized routes being designated.

The primary difference between the alternatives is where routes are not being proposed for designation (such as avoiding some threatened and endangered species habitat) and the proposed amount of dispersed camping corridors, motorized big game retrieval zones, and designation of an OHV area. In general, alternative 2 has the least amount of motorized cross-country use since MBGR and motorized dispersed camping zones would not be designated. Alternative 3 would have the most dispersed use and alternative 4 would have the fewest miles of designated routes.

Table 39. Summary of variables by alternative and habitat type

Grassland Habitat	Baseline	Alt. 1, Proposed Action	Alt. 2	Alt. 3	Alt. 4
Route density	2.62	1.63	2.08	1.70	1.39
Miles of motorized routes	435	271	346	283	231
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	870	542	692	566	462
MBGR miles	All available	0	0	137	0
Dispersed camping (miles)	All available	106	0	106	106
Mixed Conifer with Deciduous Inclusion					
Route density	0.85	0.33	0.63	0.33	0.32
Miles of motorized routes	91	35	67	35	34
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	182	70	134	70	68
MBGR miles	All available	0	0	3	0
Dispersed camping (miles)	All available	10	0	10	3
Piñon-Juniper					
Route density	1.02	0.45	0.61	0.48	0.40
Miles of motorized routes	662	292	395	310	262
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	1,324	584	790	1,376 (includes OHV area)	524
MBGR miles	All available	0	0	106	0
Dispersed camping (miles)	All available	137	0	137	125
Mountain Shrub					
Route density	0.48	0.15	0.26	0.22	0.15
Miles of motorized routes	13	4	7	6	4
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	26	8	14	12	8
MBGR miles	All available	0	0	2	0
Dispersed camping (miles)	All available	2	0	2	2

Grassland Habitat	Baseline	Alt. 1, Proposed Action	Alt. 2	Alt. 3	Alt. 4
Ponderosa Pine/Pine-Oak					
Route density	1.85	0.58	1.12	0.59	0.52
Miles of motorized routes	314	98	190	101	89
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	628	196	380	202	178
MBGR miles	All available	0	0	47	0
Dispersed camping (miles)	All available	60	0	60	49
Riparian					
Route density	6.6	3.41	4.81	3.51	3.16
Miles of motorized routes	246	126	178	130	117
Acres of direct habitat loss (assuming habitat along undesignated routes will recover)	492	252	356	260	234
MBGR miles	All available	0	0	48	0
Dispersed camping (miles)	All available	58	0	58	43
Spruce-Fir					
Route density	0.86	NA	NA	NA	NA
Miles of motorized routes	2	0	0	0	0
MBGR miles	All available	0	0	0	0
Dispersed camping (miles)	All available	0	0	0	0
Acres of habitat Loss	0	0	0	0	0

Table 40. Summary of effects to MIS

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Elk - Mountain Grassland					
Miles of route/acres of habitat loss.	435 miles/870 acres	271 miles/542 acres	346 miles/692 acres	283 miles/566 acres	231 miles/ 462 acres
Route densities in mountain grassland habitat with comparison to baseline.	2.62 miles of route per square mile. This route density is high compared to most other habitat types.	Route density would be 1.63 miles/sq. mile, a reduction of 38% from the baseline.	Route density would be 2.08 miles/sq. mile, a reduction of 21% from the baseline.	Route densities would be 1.70 miles/sq. mile, a reduction of 35% from the baseline.	Route densities would be 1.39 miles/sq. mile, a reduction of 47% from the baseline.
Acres of habitat loss compared to the amount of forestwide habitat available (shown as a percentage).	Acres of habitat loss represents only 0.45% of the amount of habitat available forestwide, so habitat quantity at the forest scale is unaffected.	Habitat loss represents only 0.28% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.36% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.29% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.24% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.
Proposed decommissioned, unauthorized, and closed routes to be added to the system in grassland habitat.	Many of the closed, decommissioned, or unauthorized routes are being used resulting in habitat loss, fragmentation, and displacement of elk.	Thre would be 7.9 miles of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	Thre would be 10.8 miles of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There would be 7.5 miles of decommissioned, unauthorized, and closed routes in this habitat under this alternative.

Effects Summary – Elk in Grassland Habitat

Baseline: Under the baseline, motorized route density is higher in the grassland habitat type than Forest Plan standards by 0.72 mile of motorized route per square mile. Cross-country motorized travel is currently available throughout this habitat type on a year-long basis resulting in habitat fragmentation, loss of habitat, and displacement due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in mountain grassland habitat, causing some displacement of elk during hunting seasons. Current levels of MBGR may allow increased hunter opportunity (since some hunters will avoid hunting areas without MBGR), but may also result in lower hunter success due to displacement of wildlife due to noise. Motorized dispersed camping is available districtwide in mountain grassland habitat causing displacement of elk when camps are in use. Population trend for elk remains upward because factors other than motorized use are more likely to be responsible for the upward elk population trend on a forestwide basis, (Refer to the forestwide MIS report). Habitat trend remains stable. Even though motorized route densities are high, it is a small percentage of the total available forestwide, representing 0.45 percent of the grasslands on the forest. Motorized use is not considered to be the limiting factor for grassland habitat trend affecting habitat quality more than quantity.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Alternatives 1–4 • **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout grassland habitat type reducing displacement of elk and habitat loss and fragmentation. Grassland areas are generally easily accessible to motorized off-route travel, and habitat quality would benefit locally under all alternatives. • **Motorized Big Game Retrieval:** Under alternatives 1, 2, and 4, MBGR would not be designated, benefiting elk and grassland habitat. Under alternative 3, MBGR would be available along 137 miles of routes adjacent to grasslands, creating a potential for some displacement of elk during the deer and elk hunting seasons. MBGR may allow increased hunter opportunity for elk but may also result in lower hunter success. • **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide, benefiting wildlife and habitats. Motorized dispersed camping would be available along 100 miles (alternative 4) to 106 miles (alternatives 1 and 3) of grassland habitat, creating a potential for displacement of elk when camps are in use. Only alternative 2 would not provide for designated camping resulting in benefits to elk and grassland habitat compared to the other alternatives. • **Grassland Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be allowed benefiting grassland habitat. Alternative 3 would have the most motorized dispersed use which would reduce habitat availability locally. Alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2. • **Elk Population Trend** would remain upward because factors other than motorized use are more likely to be responsible for the upward elk population trend on a forestwide basis. Compared to the baseline, local populations of elk may increase since route densities and motorized cross-country use would be reduced under all alternatives.					
Elk, Hairy Woodpecker, Black Bear, and Red-naped Sapsucker in Mixed Conifer Habitat					
Miles of route/acres of habitat loss in mixed conifer	91miles/182 acres	35 miles/70 acres	67 miles/134 acres	35 miles/70 acres	34 miles/68acres
Motorized route densities in mixed conifer habitat with comparison to baseline	Route densities remain at 0.85 mile per square mile in this habitat type.	Route densities are 0.33 mile per square mile which is reduced 62% in this habitat type compared to the baseline.	Route densities would be 0.63 mile per square mile, reduced 27% from the baseline.	Motorized route densities would be 0.33 mile per square mile, reduced 62% from the baseline.	Motorized route densities are 0.32 in this habitat type which is reduced 63% compared to baseline.
Acres of mixed conifer habitat loss compared to the amount of forestwide habitat available (shown as a percentage).	Direct habitat loss represents 0.08% compared to the forestwide total so habitat quantity at the forest scale is unaffected.	Habitat loss represents only 0.03% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.06% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.03% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.03% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Proposed decommissioned, unauthorized, and closed routes to be added to the system in mixed conifer habitat.	Many of the closed, decommissioned, or unauthorized routes are currently being used resulting in habitat loss, fragmentation, and displacement of elk, black bear, red-naped sapsucker, and hairy woodpecker.	There would be 0.6 mile of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There would be 0.6 mile of decommissioned, unauthorized, and closed routes in this habitat under this alternative	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative in this habitat type.

Effects Summary – Elk, Hairy Woodpecker, Black Bear, and Red-naped Sapsucker in Mixed Conifer Habitat

Baseline: Motorized travel is currently available throughout mixed conifer habitat on a yearlong basis resulting in habitat fragmentation, loss of habitat, and displacement to elk, black bear, red-naped sapsucker, and hairy woodpecker due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in mixed conifer habitat causing some displacement of elk and black bear during the hunting seasons. Current levels of MBGR may allow increased hunter opportunity for elk (since some hunters will avoid hunting areas without MBGR), but may also result in lower hunter success. Black bear would not be available for MBGR which would not affect hunting success. MBGR would occur outside the breeding season for red-naped sapsucker and hairy woodpecker so effects would not cause nest abandonment resulting in unintentional take. These bird species are yearlong residents so some displacement due to MBGR would still occur. Motorized dispersed camping is available districtwide in mixed conifer habitat causing displacement of elk, black bear, red-naped sapsucker, and hairy woodpecker when camps are in use. Population trend of elk and hairy woodpecker remains upward because factors other than motorized use are more likely to be responsible for the upward population trends on a forestwide basis (refer to the forestwide MIS report). Population trends for red-naped sapsucker and black bear remains stable. For black bear, factors such as food availability are more likely to be responsible for population trend forestwide. Habitat trend for mixed conifer would be stable because the amount of motorized use in mixed conifer is relatively low when considered on a forestwide scale.

Alternatives 1–4

- **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout mixed conifer habitat, reducing displacement of elk, black bear, red-naped sapsucker, and hairy woodpecker. Habitat loss and habitat fragmentation would also be reduced for these species under all alternatives.
- **Motorized Big Game Retrieval**: Under alternatives 1, 2, and 4 MBGR would not be designated, benefiting elk, black bear, red-naped sapsucker, hairy woodpecker, and their mixed conifer habitat. Under alternative 3, MBGR would be available on only 3 miles of mixed conifer habitat creating a potential for minimal displacement of elk, back bear, red-naped sapsucker, and hairy woodpecker during the deer and elk hunting seasons. MBGR may allow increased hunter opportunity for elk, but may also result in lower hunter success. Black bear would not be available for MBGR which not affect hunting success.
- **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping would be available along 3 miles (alternative 4) to 10 miles (alternatives 1 and 3) of mixed conifer habitat, creating a potential for displacement of elk, black bear, red-naped sapsucker, and hairy woodpecker when camps are in use. Only alternative 2 would not provide for designated camping in this habitat type resulting in benefits to these species and mixed conifer habitat compared to the other alternatives. It is unlikely that snags used by the red-naped sapsucker and hairy woodpecker for nesting would be gathered by campers as firewood, since the species generally uses large diameter trees that are not usually gathered by campers.
- **Mixed Conifer Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be designated benefiting mixed conifer habitat. Alternative 3 would

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
have the most motorized dispersed use which would reduce habitat availability locally and alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2. • **Elk Population Trend** remains upward since factors other than motorized use are more likely to be responsible for elk population trend on a forestwide basis. Under all alternatives, local populations may improve with increased habitat availability. Alternative 4 has slightly fewer motorized routes and motorized dispersed use is less than alternatives 1 and 3. • **Black Bear Population Trend** remains stable since factors such as food availability are more likely to be responsible for population trend on a forestwide basis. • **Red-naped Sapsucker Population Trend** remains stable since factors other than motorized use are more likely to be responsible for population trend on a forestwide basis. • **Hairy Woodpecker Population Trend** remains upward since factors other than motorized use are more likely to be responsible for population trend on a forestwide basis.					
Mule Deer and Juniper Titmouse–Piñon-Juniper Habitat					
Miles of route/acres of habitat loss in piñon–juniper.	662 miles/1,324 acres	292 miles/584 acres The 4 miles of reroute in piñon-juniper habitat would result in an additional habitat loss of 8 acres under this alternative.	395 miles/790 acres	310 miles/620 acres plus a 756-acre OHV area = 1,376 acres. The 2.3 miles of reroute would result in an additional habitat loss of 4.6 acres under this alternative.	262 miles/524 acres
Motorized route densities in piñon-juniper habitat with comparison to baseline.	Route densities remain at 1.02 miles per square mile.	Motorized route densities would be 0.45 mile per square mile, reduced 56% from the baseline.	Motorized route densities would be 0.61 mile per square mile, reduced 40% from the baseline.	Motorized route densities would be 0.48 mile per square mile, reduced 53% from the baseline.	Motorized route densities would be 0.40 mile per square mile, reduced 61% from the baseline.
Acres of piñon-juniper habitat loss compared to the amount of Forest wide habitat available (shown as a percentage).	Direct habitat loss represents 0.16% compared to the forestwide total so habitat quantity at the forest scale is unaffected.	Habitat loss represents only 0.06% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.09% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.25% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.06% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Proposed decommissioned, unauthorized, and closed routes to be added to the system in piñon-juniper habitat	Many of the closed, decommissioned, or unauthorized routes are currently being used resulting in habitat loss, fragmentation, and displacement of mule deer and juniper titmouse.	There are 10.1 miles (affecting 20.2 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are 19 miles (affecting 38 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are 8.4 miles (affecting 16.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.

Effects Summary – Mule Deer and Juniper Titmouse in Piñon-Juniper Habitat

Baseline: Motorized travel is currently available throughout piñon-juniper habitat on a yearlong basis resulting in habitat fragmentation, loss of habitat, and displacement to mule deer and juniper titmouse due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in piñon-juniper habitat causing some displacement of mule deer and juniper titmouse during the hunting seasons. Current levels of MBGR may allow increased hunter opportunity for mule deer (since some hunters will avoid hunting areas without MBGR), but may also result in lower hunter success due to noise and displacement. MBGR would occur outside the breeding season for juniper titmouse so effects would not cause nest abandonment resulting in unintentional take. Motorized dispersed camping is available districtwide in piñon-juniper habitat causing displacement of mule deer and juniper titmouse when camps are in use. Population trend of mule deer and juniper titmouse remains downward because factors other than motorized use are more likely to be responsible for the downward population trends on a forestwide basis (refer to the forestwide MIS report). Habitat trend for piñon-juniper would be stable because the amount of motorized use in piñon-juniper is relatively low when considered on a forestwide scale.

Alternatives 1–4

- **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout piñon-juniper habitat, reducing displacement of mule deer and juniper titmouse. Habitat loss and habitat fragmentation would also be reduced for these species under all alternatives.
- **Motorized Big Game Retrieval:** Under alternatives 1, 2, and 4, MBGR would not be designated, benefiting mule deer and juniper titmouse in piñon-juniper habitat. Under alternative 3 MBGR would be available along 106 miles of routes in piñon-juniper habitat creating a potential for displacement of mule deer during the deer and elk hunting seasons. MBGR may allow increased hunter opportunity for mule deer but may also result in lower hunter success.
- **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping would be available along 125 miles (alternative 4) to 137 miles (alternatives 1 and 3) of piñon-juniper habitat, creating a potential for displacement of mule deer and juniper titmouse when camps are in use. Only alternative 2 would not provide for designated camping in this habitat type resulting in benefits to these species and piñon-juniper habitat compared to the other alternatives. It is unlikely that snags used by the juniper titmouse for nesting would be gathered by campers as firewood since the species uses large diameter trees that are not usually gathered by campers.
- **OHV Area Open to Motor Vehicle Use:** Only alternative 3 would designate an OHV area. OHV use would displace mule deer and juniper titmouse and severely alter piñon-juniper habitat on 756 acres causing habitat loss.
- **Piñon-Juniper Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be allowed benefiting piñon-juniper habitat. Alternative 3 would have the most motorized dispersed use which would reduce habitat availability locally. Alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
• **Mule Deer Population Trend** remains downward since factors other than motorized use are more likely to be responsible for mule deer population trend on a forestwide basis. Under alternative 3, local populations of mule deer may decrease with impacts associated with the OHV area. Alternative 4 has slightly fewer motorized routes, and motorized dispersed use is less than alternatives 1 and 3 which may increase habitat availability locally to increase populations in the analysis area in the long term. • **Juniper Titmouse Population Trend** remains downward since factors other than motorized use are more likely to be responsible for juniper titmouse population trend on a forestwide basis. Under alternative 3, local populations may decrease with impacts associated with the OHV area. Alternative 4 has slightly fewer motorized routes, and motorized dispersed use is less than alternatives 1 and 3 which may increase habitat availability locally to increase populations in the analysis area in the long term.					
Mule Deer - Mountain Shrub Habitat					
Miles of route/acres of habitat loss in mountain shrub habitat.	13 miles/26 acres	4 miles/8 acres	7 miles/14 acres	6 miles/12 acres	4 miles/8 acres
Motorized route densities in mountain shrub habitat with comparison to baseline.	Route densities remain at 0.48 mile per square mile.	Route densities would be 0.15 mile per square mile, reduced 69% from the baseline.	Route densities would be 0.26 mile per square mile, reduced 46% from the baseline.	Route densities would be 0.22 mile per square mile, reduced 55% from the baseline.	Route densities would be 0.15 mile per square mile, reduced 69% from the baseline.
Acres of mountain shrub habitat loss compared to the amount of forestwide habitat available (shown as a percentage).	Direct habitat loss represents 0.05% compared to the forestwide total so habitat quantity at the forest scale is unaffected.	Habitat loss represents only 0.01% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.02% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.02% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.01% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.
Proposed decommissioned, unauthorized, and closed routes to be added to the system in mountain shrub habitat.	Many of the closed, decommissioned, or unauthorized routes are currently being used resulting in habitat loss, fragmentation, and displacement of mule deer.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.
Effects Summary – Mule Deer - Mountain Shrub **Baseline:** Motorized travel is currently available throughout mountain shrub habitat on a yearlong basis resulting in habitat fragmentation, loss of habitat, and displacement to mule deer due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in mountain shrub habitat causing some displacement of mule deer during the hunting seasons. Current levels of MBGR may allow increased hunter opportunity for mule deer (since some hunters will avoid hunting areas without MBGR), but may also result in lower hunter success. Motorized dispersed camping is available districtwide in mountain shrub habitat causing displacement of mule deer when camps are in use. Population trend of mule deer remains downward because factors other than motorized use are more likely to be responsible for the downward population trends on a forestwide basis (refer to the forestwide MIS report). Habitat trend for mountain shrub would remain downward because the amount of motorized use in mountain shrub is					

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
relatively low when considered on a forestwide scale. **Alternatives 1–4** • **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout mountain shrub habitat, reducing displacement of mule deer. Habitat loss and habitat fragmentation would also be reduced for mule deer under all alternatives. • **Motorized Big Game Retrieval:** Under alternatives 1, 2, and 4, MBGR would not be designated, benefiting mule deer in mountain shrub habitat. Under Alternative 3 MBGR would be available along 2 miles of routes in mountain shrub habitat creating a minimal potential for displacement of mule deer during the deer and elk hunting seasons. MBGR may allow increased hunter opportunity for mule deer but may also result in lower hunter success. • **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping would be available along 2 miles (alternatives 1, 3, and 4) of mountain shrub habitat, creating a minimal potential for displacement of mule deer when camps are in use. Only alternative 2 would not provide for designated camping in this habitat type resulting in benefits to mule deer and mountain shrub habitat compared to the other alternatives. • **Mountain Shrub Habitat Trend** remains downward (does not change) under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be allowed benefiting mountain shrub habitat. Alternative 3 would have the most motorized dispersed use which would reduce habitat availability locally and alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2. • **Mule Deer Population Trend** remains downward since factors other than motorized use are more likely to be responsible for mule deer population trend on a forestwide basis. Under all alternatives, local populations may improve with increased habitat availability. Alternative 4 has slightly fewer motorized routes, and motorized dispersed use is less than alternatives 1 and 3 which may increase habitat availability locally to increase populations in the analysis area in the long term.					
Black Bear and Red-breasted Nuthatch– Spruce-Fir Habitat					
Miles of route/acres of habitat loss in spruce-fir habitat.	There are 0.86 mile of existing routes in spruce-fir habitat.	There are no routes being proposed in spruce-fir habitat.	There are no routes being proposed in spruce-fir habitat.	There are no routes being proposed in spruce-fir habitat.	There are no routes being proposed in spruce-fir habitat.
Motorized route densities in spruce-fir habitat with comparison to baseline.	NA	NA	NA	NA	NA
Acres of spruce-fir habitat loss compared to the amount of forestwide habitat available (shown as a percentage).	There is less than 2 acres of spruce-fir habitat lost as a result of existing motorized use.	There are no acres of spruce-fir habitat lost as a result of motorized use designations.	There are no acres of spruce-fir habitat lost as a result of motorized use designations.	There are no acres of spruce-fir habitat lost as a result of motorized use designations.	There are no acres of spruce-fir habitat lost as a result of motorized use designations.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Proposed decommissioned, unauthorized, and closed routes to be added to the system in spruce-fir habitat.	NA	NA	NA	NA	NA

Effects Summary – Black Bear and Red-breasted Nuthatch

Baseline: Motorized travel is currently available throughout spruce-fir habitat on a yearlong basis resulting in minimal habitat fragmentation, loss of habitat, and displacement to black bear due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in spruce-fir habitat causing some displacement of black bear and red-breasted nuthatch during the hunting seasons. Black bear are not available for MBGR which would not affect hunter success. Motorized dispersed camping is available districtwide in spruce-fir habitat causing displacement of black bear and red-breasted nuthatch when camps are in use. Population trend of black bear remains stable because factors such as food availability are more likely to be responsible for the stable population trends on a forestwide basis (refer to the forestwide MIS report). Habitat trend for spruce-fir would remain stable because the amount of motorized use in spruce-fir habitat in the analysis area is relatively low when considered on a forestwide scale.

Alternatives 1–4

- **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout spruce-fir habitat, reducing displacement of black bear and red-breasted nuthatch. Habitat loss and habitat fragmentation would also be reduced for black bear and red-breasted nuthatch under all alternatives.
- **Motorized Big Game Retrieval:** Under alternatives 1, 2, and 4, MBGR would not be designated, benefiting black bear in spruce-fir habitat. Under alternative 3, MBGR would be available, however, there is no contiguous habitat within the analysis area. There would be no effect to black bear in this habitat type during the deer and elk hunting season. Black bear are not being considered for MBGR.
- **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping designations do not occur in spruce-fir habitat.
- **Spruce-Fir Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. There is no contiguous habitat within the analysis area, therefore, there would be no effect to the spruce-fir habitat type.
- **Black Bear Population Trend** remains stable. Factors such as food availability are more likely to be responsible for population trend forestwide. In the long term, not allowing motorized cross-country travel may increase population trend locally by reducing habitat fragmentation and displacement.
- **Red-Breasted Nuthatch Population Trend:** Population trend remains stable since other factors are more likely to be responsible for population trend forestwide.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Merriam's Turkey and Pygmy Nuthatch - Ponderosa Pine					
Miles of route/acres of habitat loss in ponderosa pine habitat.	314 miles/628 acres	98 miles/196 acres	190 miles/380 acres	101miles/202 acres	89 miles/178 acres
Motorized route densities in ponderosa pine habitat with comparison to baseline.	Route densities remain at 1.85 miles per square mile. Existing route densities in this habitat type are considered high.	Route densities would be 0.58 mile per square mile, reduced 69% from the baseline.	Route densities would be 1.12 miles per square mile, reduced 39% from the baseline.	Route densities would be 0.59 mile per square mile, reduced 68% from the baseline.	Route densities would be 0.52 mile per square mile, reduced 72% from the baseline.
Acres of ponderosa pine habitat loss compared to the amount of forestwide habitat available (shown as a percentage).	Direct habitat loss represents 0.11% compared to the forestwide total so habitat quantity at the forest scale is unaffected.	Habitat loss represents only 0.04% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.06% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.04% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents only 0.03% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.
Proposed decommissioned, unauthorized, and closed routes to be added to the system in ponderosa pine habitat.	Many of the closed, decommissioned, or unauthorized routes are currently being used resulting in habitat loss, fragmentation, and displacement of Merriam's turkey and pygmy nuthatch.	There are 2.9 miles (affecting 5.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are 4.2 miles (affecting 8.4 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are 2.9 miles (affecting 5.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.

Effects Summary- Merriam's Turkey and Pygmy Nuthatch in Ponderosa Pine

Baseline: Motorized travel is currently available throughout ponderosa pine habitat on a yearlong basis resulting in habitat fragmentation, loss of habitat, and displacement to Merriam's turkey and pygmy nuthatch due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in ponderosa pine habitat causing some displacement of Merriam's turkey during the deer and elk hunting seasons. The pygmy nuthatch is generally present during the hunting season, although MBGR would occur outside the breeding season for pygmy nuthatch so effects would not cause nest abandonment resulting in unintentional take. Motorized dispersed camping is available districtwide in ponderosa pine habitat causing displacement of Merriam's turkey and pygmy nuthatch when camps are in use. Population trend of Merriam's turkey and pygmy nuthatch remains stable because factors other than motorized use are more likely to be responsible for the stable population trends on a forestwide basis (refer to the forestwide MIS report). Route densities in ponderosa pine habitat are considered high, but are slightly below the maximum allowed by the Forest Plan. Habitat trend for ponderosa pine would be stable because the amount of motorized use in ponderosa pine is relatively low when considered on a forestwide scale.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Alternatives 1–4 • **Cross-Country Motorized Travel**: Under all alternatives, cross-country motorized travel would no longer be available throughout ponderosa pine habitat, reducing displacement of Merriam's turkey and pygmy nuthatch. Habitat loss and fragmentation would also be reduced for these species under all alternatives. • **Motorized Big Game Retrieval:** Under alternatives 1, 2, and 4, MBGR would not be designated, benefiting mule deer in ponderosa pine habitat. Pygmy nuthatch are unaffected by MBGR. Under alternative 3, MBGR would be available along 47 miles of routes in ponderosa pine habitat creating a potential for displacement of Merriam's turkey and pygmy nuthatch during the deer and elk hunting seasons. • **Motorized Dispersed Camping**: Under all alternatives, motorized dispersed camping would no longer be available districtwide, benefiting wildlife and habitats. Motorized dispersed camping would be available along 49 miles (alternative 4) to 60 miles (alternatives 1 and 3) of ponderosa pine habitat, creating a potential for displacement of Merriam's turkey and pygmy nuthatch when camps are in use. Only alternative 2 would not provide for designated camping in this habitat type, resulting in benefits to these species and ponderosa pine habitat compared to the other alternatives. It is unlikely that snags used by the pygmy nuthatch for nesting would be gathered by campers as firewood, since the species uses large diameter trees that are not generally gathered by campers. • **Ponderosa Pine Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be allowed benefiting ponderosa pine habitat. Alternative 3 would have the most motorized dispersed use which would reduce habitat availability locally. Alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2. • **Merriam's Turkey Population Trend** remains stable since factors such as food availability are more likely to be responsible for the Merriam's turkey population trend on a forestwide basis than motorized use. • **Pygmy Nuthatch Population Trend** remains stable since other factors are more likely to be responsible for the pygmy nuthatch population trend on a forestwide basis than motorized use.					
House Wren – Riparian Habitat					
Miles of route/acres of habitat loss in riparian habitat.	246 miles/492 acres	126 miles/252 acres	178 miles/356 acres	130 miles/260 acres	117 miles/234 acres
Motorized route densities in riparian habitat with comparison to baseline.	Route densities remain at 6.65 miles of route per square mile.	Route densities would be 3.41 miles per square mile, reduced 49% from the baseline.	Route densities would be 4.81 miles per square mile, reduced 28% from the baseline.	Route densities would be 3.51 miles per square mile, reduced 47% from the baseline.	Route densities would be 3.16 miles per square mile, reduced 52% from the baseline.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Acres of riparian habitat loss compared to the amount of forestwide habitat available (shown as a percentage). *The amount of riparian habitat in this analysis is consistent with the watershed specialist report which is based on RMAP GIS analysis, not the forestwide MIS report.	Direct habitat loss represents 0.98% compared to the forestwide total so habitat quantity at the forest scale is unaffected.	Habitat loss represents 0.50% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents 0.71% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents 0.52% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.	Habitat loss represents 0.47% of the amount of habitat available forestwide, so habitat quantity at the forest level would be unaffected.
Proposed decommissioned, unauthorized, and closed routes to be added to the system in riparian habitat.	Many of the closed, decommissioned, or unauthorized routes are currently being used resulting in habitat loss, fragmentation, and displacement of Merriam's turkey and pygmy nuthatch.	There are 10.2 miles (20.4 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are no decommissioned, unauthorized, or closed routes being added to the system under this alternative.	There are 11.2 miles (22.4 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.	There are 8.9 miles (17.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative.

Effects Summary– House Wren in Riparian Habitat

Baseline: Motorized travel is currently available throughout riparian habitat on a yearlong basis resulting in habitat fragmentation, loss of habitat, and displacement of house wren due to disturbance. Motorized big game retrieval (MBGR) is available districtwide in riparian habitat causing some displacement of house wren during the deer and elk hunting seasons. The house wren is generally not present during the hunting season so this species would not be affected by MBGR. Motorized dispersed camping is available districtwide in riparian habitat causing displacement of house wren when camps are in use. Population trend of house wren remains stable because factors other than motorized use are more likely to be responsible for the stable population trends on a forestwide basis (refer to the forestwide MIS report). Route densities in riparian habitat are considered very high. Habitat condition will begin trending downward. Continued use of motorized routes and dispersed use in riparian habitat may cause loss of vegetation, alter channels, and cause erosion and downcutting of streambeds.

Alternatives 1–4

- **Cross-Country Motorized Travel:** Under all alternatives, cross-country motorized travel would no longer be available throughout riparian habitat, reducing displacement of the house wren. Habitat loss and fragmentation would also be reduced for this species.
- **Motorized Big Game Retrieval:** House wrens are unaffected by MBGR since it is absent during the hunting seasons. MBGR would be allowed along 48 miles of routes in riparian habitat during the deer and elk hunting seasons. Motorized use in riparian areas may cause loss of vegetation, alter channels, and cause erosion and downcutting of streambeds.

Habitat	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
• **Motorized Dispersed Camping:** Under all alternatives, motorized dispersed camping would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping would be available along 43 miles (alternative 4) to 58 miles (alternatives 1 and 3) of riparian habitat, creating a potential for displacement of house wrens when camps are in use. Only alternative 2 would not provide for designated camping in this habitat type resulting in benefits to these species and riparian habitat compared to the other alternatives. • **Riparian Habitat Trend** remains stable under all alternatives since the amount of motorized use is considered low on a forestwide scale. Alternative 2 would have the most motorized routes which would reduce habitat availability locally, but dispersed use would not be allowed benefiting riparian habitat. Alternative 3 would have the most motorized dispersed use which would reduce habitat availability locally, and alternative 4 would have the fewest proposed designated routes, but more motorized dispersed use than alternative 2. • **House Wren Population Trend** remains stable since populations are generally not affected by motorized use.					

Threatened, Endangered, Candidate, and Sensitive Wildlife and Plant Species

Table 41 describes the variables analyzed to determine the estimated effects to TES species. Ultimately there is very little difference between the alternatives in terms of the miles of motorized routes being designated. The primary difference between the alternatives is where routes are not being proposed for designation (such as avoiding some threatened and endangered species habitat) and the proposed amount of dispersed camping corridors or motorized big game retrieval zones and the designation of an OHV area.

Table 41. Threatened, endangered, candidate, and sensitive wildlife and plant species habitat variable by alternative

Species Name / Habitat Variable	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Mexican Spotted Owl (MSO)					
Existing permanent system road miles/acres in PACs.	31 miles/62 acres	14 miles/28 acres	27 miles/54 acres	15 miles/30 acres	14 miles/28 acres
Miles/acres of routes in other protected habitat (mixed conifer and pine/oak on steep slopes) now known as recovery habitat.	39 miles/78 acres	13 miles/26 acres	26 miles/52 acres	13 miles/26 acres	12 miles/24 acres

Species Name / Habitat Variable	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Routes/acres in restricted habitat (other mixed conifer, pine/oak, and riparian) now known as recovery habitat.	203 miles/406 acres	76 miles/152 acres	138 miles/276 acres	77 miles/154 acres	69 miles/138 acres
Routes/acres in critical habitat.	180 miles/360 acres	77 miles/154 acres	136 miles/272 acres	78 miles/156 acres	73 miles/146 acres
Miles of motorized big game retrieval (MBGR) in MSO habitat.	All MSO habitat is available for MBGR and other motorized cross-country travel.	0 miles	0 miles	29 miles	0 miles
Miles of motorized dispersed camping in MSO habitat	All MSO habitat is available for motorized dispersed camping and other motorized cross-country travel.	43 miles	0 miles	43 miles	34 miles
Decommissioned, unauthorized, and closed routes/acres in MSO habitat.	All habitat is available	2.5 miles/5 acres	0 miles	2.5 miles/5 acres	1.9 miles/3.8 acres
Determination of effect for Mexican spotted owl.	• All MSO habitat is available for motorized travel including cross-country motorized. • Most motorized use on the district is during hunting season which occurs outside of the MSO breeding season. • Hunting seasons for turkey, javelina and cougar occur during the MSO breeding season, but the number of	• Motorized routes are in MSO habitat; motorized routes in PACs are reduced 55% compared to the baseline. • Motorized routes in other MSO habitat (protected and restricted now collectively known as recovery habitat) are reduced by 64%. • There would be	• This alternative has the most motorized routes in MSO habitat but does not designate motorized dispersed use. • Motorized routes in PACs are reduced 13% from the baseline because unauthorized routes would not be designated for use. • Motorized routes in other protected and	• This alternative has the most motorized cross-country use designations in MSO habitat. • Routes in PACs are reduced by 51% compared to the baseline. • Motorized routes in other protected and restricted habitat (now collectively known as recovery habitat) are	• This alternative has the least amount of route designations in MSO habitat, but has the same amount of routes in MSO PACs as alternative 3 because these routes are primary Forest Service system roads. • Motorized routes in other protected and restricted habitat (now collectively known as

Species Name / Habitat Variable	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	hunters is low. • Motorized use may degrade/destroy MSO 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 adult owls have less time and energy invested in the nesting process. • Direct habitat loss from roads may reduce prey availability and use of system roads in PACs during the breeding season may cause some avoidance of area within the PAC. • This alternative may continue to affect species, but is not likely to adversely affect the species or its	dispersed camping designated in recovery habitat. • This alternative may affect the Mexican spotted owl, but it is not likely to adversely affect the species or its habitat. • If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.	restricted habitat (now known as recovery habitat) are reduced 32%. • Selection of this alternative may affect the species, but is not likely to adversely affect the species or its habitat. • If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.	reduced 63%. • This alternative has motorized big game retrieval (for deer and elk) in MSO habitat, but motorized use would occur outside of the MSO breeding season with discountable effects to MSO. • Use of motorized routes and cross-country motorized use may affect the species, but is not likely to adversely affect the species or its habitat. • If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.	recovery habitat) are reduced 67%. • Because motorized routes are in MSO habitat, this alternative may affect the species but is not likely to adversely affect the species or its habitat. • If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.

Species Name / Habitat Variable	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	habitat. • If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.				
Effects to MSO critical habitat (CH).	• Motorized routes are located in critical habitat and potentially there would be motorized dispersed camping and motorized big game retrieval in critical habitat since there are currently no restrictions against that use. • Existing routes in MSO habitat have generally been in place for years and have received variable levels of use depending on the location of the route and season. • Motorized use in critical habitat affects primary constituent elements (PCEs) by reducing the diversity of age classes in riparian forest types, reducing adequate levels of residual plant cover to maintain fruits	There are 58% fewer motorized routes in critical habitat under this alternative lessening affects to PCEs compared to the baseline.	There are 24% fewer motorized routes in critical habitat under this alternative lessening affects to PCEs compared to the baseline.	There are 57% fewer motorized routes in critical habitat under this alternative lessening affects to PCEs compared to the baseline.	There are 59% fewer motorized routes in critical habitat under this alternative lessening affects to PCEs compared to the baseline.

Species Name / Habitat Variable	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	and seeds and allow plant regeneration. • In canyon habitats motorized use could reduce the percent of ground litter and woody debris needed for prey species.				

Table 42. Threatened, endangered, candidate, and sensitive wildlife and plant species impacts by alternative

Zuni Fleabane – Impacts by Alternative
Baseline: There are 1.8 miles (3.5 acres) of motorized routes in Zuni fleabane habitat. There are 0.8 mile (1.6 acres) of motorized routes in potential Zuni fleabane habitat. Motorized big game retrieval (MBGR) and motorized dispersed camping are currently available districtwide which may impact individual plants. **Alternatives 1–4:** There would be no motorized routes or dispersed use designated in Zuni fleabane habitat. No MBGR is being proposed under alternatives 1, 2, and 4 and motorized big game retrieval (MBGR) proposed under alternative 3 does not occur in this species' current or potential habitat. MBGR and motorized dispersed camping would no longer be allowed districtwide benefiting habitat for this species. **Determination of Effect for Zuni Fleabane** **Baseline:** All occupied and potential Zuni fleabane habitat is available for off-route travel, including MBGR and motorized dispersed camping. There are existing motorized routes in Zuni fleabane habitat. Motorized use associated with the baseline condition may continue to impact individual plants. Off-highway vehicle use is one of the threats listed for the species. **Alternatives 1–4:** The removal of motorized cross-country use would benefit this species. There is no motorized dispersed camping proposed in Zuni fleabane habitat, and there are no route designations proposed in potential or occupied habitat. Implementation of these alternatives may affect, but is not likely to adversely affect the Zuni fleabane.
Northern Goshawk – Impacts by Alternative
Baseline: There are 4 miles (8 acres) of motorized routes in goshawk PFAs. Cross-country motorized travel will continue to be available throughout this species' habitat. All PFA and foraging habitat is available for motorized big game retrieval (MBGR) and other motorized cross-country use, but much of that potential use occurs outside the nesting season. There is a minor amount of displacement to goshawk prey from existing MBGR and motorized dispersed camping. All PFA and foraging habitat is available for motorized dispersed camping and other motorized cross-country use. Some of that use occurs during the breeding season which may lead to nest abandonment if the camp or use is too close to a nest. **Alternatives 1–4:** There are 4 miles (8 acres) of motorized routes in goshawk PFAs. Cross-country motorized travel will no longer be available throughout this species' habitat. MBGR would no longer be allowed districtwide benefiting wildlife and habitat. No MBGR is being proposed under Alternatives 1, 2 and 4. Under alternative 3, no MBGR is being proposed in PFAs. Most of the MBGR would occur outside the nesting season, although early deer hunts will coincide with the end of breeding season (through September 30). There would be small amounts of displacement to goshawk prey during the hunts along 47 miles (94 acres) of routes. MBGR would no longer be allowed districtwide benefiting wildlife and habitat. Motorized dispersed camping would be allowed along 60 miles (under alternatives 1 and 3) and 49 miles (alternative 4) of goshawk foraging habitat which may displace prey species or result in habitat loss if camps are used repeatedly. Motorized dispersed camping would no longer be allowed districtwide on a yearlong basis benefiting this species and habitats. **Determination of Effect for Northern Goshawk** **Baseline:** Motorized routes are in PFAs and may be used during the breeding season. All PFAs are available for motorized dispersed camping and MBGR. Currently, the baseline situation may impact the northern goshawk, but is not likely to result in a trend toward Federal listing or loss of viability. **Alternatives 1–4:** Motorized routes are in PFAs and may be used during the breeding season. Dispersed camping may impact PFAs and prey species habitat when camps are used repeatedly. This may impact the northern goshawk, but is not likely to result in a trend toward Federal listing or loss of viability.

Gray Vireo – Impacts by Alternative

Baseline: There are 662 miles (1,324 acres) of existing routes in piñon-juniper habitat. All habitat for this species is available for cross-country motorized use including motorized big game retrieval (MBGR) and motorized dispersed camping. Piñon-juniper habitat is available districtwide for MBGR.

Alternative 1: There are 292 miles (584 acres) of routes in piñon-juniper habitat. Motorized route densities would be reduced 56 percent compared to the baseline. The 4 miles of reroute in piñon-juniper habitat would result in a habitat loss of 8 acres. There are 10.1 miles (20.2 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. There is no MBGR proposed. MBGR would no longer be available districtwide benefiting wildlife and habitats. No OHV areas would be designated. Much of the piñon-juniper habitat is easily traversed off route. Prohibition of this activity and reductions in route densities by 56 percent over existing conditions would benefit this species and its potential nesting/foraging habitat.

Alternative 2: There are 395 miles (790 acres) of routes in piñon-juniper habitat. Motorized route densities would be reduced 40 percent compared to the baseline. There is no MBGR proposed or designated OHV areas under this alternative.

Alternative 3: There are 310 miles (620 acres) of routes proposed in piñon-juniper habitat. Motorized route densities would be reduced 53 percent compared to the baseline. There are 2.3 miles (4.6 acres) of reroute under this alternative resulting in 4.6 acres of habitat loss. There are 19 miles (38 acres) of decommissioned, unauthorized, and closed roads in this habitat. There are 106 miles of MBGR in piñon-juniper habitat. MBGR would no longer be available districtwide benefiting wildlife and habitats. OHV use would severely alter piñon-juniper habitat on 756 acres, but gray vireo are not known to occur in the proposed OHV area.

Alternative 4: There are 262 miles (524 acres) of routes proposed in piñon-juniper habitat. Motorized route densities would be reduced 60 percent compared to the baseline. There are 8.4 miles (16.8 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. There is no MBGR proposed nor would any OHV areas be designated. This alternative has the least amount of motorized routes in gray vireo habitat. Overall the effect would be an improvement of habitat for this species.

Determination of Effect for Gray Vireo

Baseline: All suitable habitat would be available for cross country and dispersed use, and motorized routes would continue to be used. The baseline situation may impact the gray vireo, but is not likely to result in a trend toward Federal listing or loss of viability.

Alternatives 1–4: Implementation of these alternatives may impact the gray vireo, but is not likely to result in a trend toward Federal listing or loss of viability.

Loggerhead Shrike – Impacts by Alternative

Baseline: Route density is 0.48 mile per square mile. Direct habitat loss remains at 26 acres. Cross-country motorized travel is currently available throughout this habitat type on a yearlong basis. MBGR and motorized dispersed camping is currently available districtwide.

Alternatives 1–4: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting wildlife and habitats. Route densities reduced 69 percent (alternatives 1 and 4); 46 percent (alternative 2), and 55 percent (alternative 3) compared to baseline. MBGR would not occur under alternatives 1, 2, and 4 and would no longer be available distric-wide, benefiting this species and its habitat. Disturbance and displacement could occur from MBGR under alternative 3. There are 2 miles of dispersed camping available in mountain shrub habitat which may result in minimal disturbance and displacement to the species.

Determination of Effect for Loggerhead Shrike

Baseline: All suitable loggerhead shrike habitat is available for off-route travel, MBGR, and motorized dispersed camping. The baseline condition may impact the loggerhead shrike, but is not likely to result in a trend toward Federal listing or loss of viability.

Alternatives 1–4: Motorized routes and motorized dispersed use would be reduced from the baseline. Implementation of these alternatives may impact the loggerhead shrike, but is not likely to result in a trend toward Federal listing or loss of viability.

Bald Eagle – Impacts by Alternative

Baseline: The analysis area provides winter habitat only. There are no known roosts. MBGR and motorized dispersed camping are currently available districtwide.

Alternatives 1–4: The analysis area provides winter habitat only. There are no known roosts. MBGR does not occur under alternatives 1, 2, and 4 and will no longer be available districtwide, benefiting this species and its habitat. Under alternative 3, MBGR may occur in habitat used by this species in the winter, but use is reduced from the baseline. This will benefit this species and its habitat. Motorized dispersed camping does not occur within any known winter roost areas.

Determination of Effect for Bald Eagle

Baseline: The existing situation could result in possible disturbance to winter roosts if motorized use occurs near a roost tree. All habitat for this species is available for cross-country motorized use, including MBGR and motorized dispersed camping. The baseline situation may impact individuals, but is not likely to result in a trend toward Federal listing or loss of species viability.

Alternatives 1–4: There are no nests or known winter roosts in the analysis area. Human activities would not occur within 0.25 mile of a bald eagle roost or nest site during any time of occupation by bald eagles. There would be no impact to the bald eagle. (The "National Bald Eagle Management Guidelines" would be followed if roosts or nests are discovered.) There would be no impact to the bald eagle or its habitat.

Northern Aplomado Falcon – Impacts by Alternative

Baseline: This species is not currently known to occupy the analysis area, but potential habitat exists. Motorized routes, cross-country, and dispersed use are available in all potential foraging habitat which may limit species use in some areas. Motorized big game retrieval (MBGR) is currently available districtwide which may limit species use in some areas. Motorized dispersed camping is available districtwide, causing potential displacement of this species from its foraging habitat when camps are in use.

Alternatives 1–4: Cross-country motorized travel will no longer be available throughout this species' potential habitat. Habitat for this species would improve from route density reductions and off-route travel prohibition. MBGR does not occur under alternatives 1, 2, and 4 and will no longer be available districtwide, benefiting this species and its habitat. Under alternative 3, MBGR may occur in habitat used by this species in the winter, but use is reduced from the baseline. This will benefit this species and its habitat. Motorized dispersed camping would result in displacement from foraging habitat when camps are in use (except alternative 2). Alternative 2 has the most routes of all action alternatives, but does not allow motorized cross-country use. This species would benefit from reduction in motorized cross-country use. Alternative 3 has the most dispersed use of all action alternatives, but the species would benefit from the overall reduction in route density and motorized cross-country use compared to the baseline. Alternative 4 has the least routes in potential habitat. This species would benefit from route density reductions.

Determination of Effect for Northern Aplomado Falcon

Baseline: Baseline conditions may affect the prey used by the Aplomado falcon.

Alternatives 1–4: Selection of these alternatives may affect prey used by the Aplomado falcon, but is not likely to adversely affect the species or its habitat. If this alternative is chosen, the Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.

American Peregrine Falcon – Impacts by Alternative

Baseline: Peregrine nesting in the Magdalena Ranger District occurs in steep, rugged canyon habitat. Road 235 in the Magdalena Mountains, 199, 6A, and 6 in the Datil Mountains are designated routes that occur in the species' sensitive zones. Motorized big game retrieval (MBGR) is currently available districtwide. MBGR generally occurs outside of the breeding season for this species so effects are discountable. Motorized dispersed camping is currently available districtwide and may cause displacement if use is occurring near breeding areas or in foraging habitat.

Alternatives 1–4: Road 235 in the Magdalena Mountains, 199, 6A, and 6 in the Datil Mountains are designated routes that occur in the species' sensitive zones. Under alternative 4, Road 6 in the Datil Mountains would be decommissioned, limiting access to a recreational area that has caused displacement of this species. MBGR does not occur under alternatives 1, 2, and 4 and would no longer be available districtwide, benefiting this species and its habitat. Motorized dispersed camping would result in displacement from foraging habitat when camps are in use (except alternative 2 where no dispersed use is proposed).

Determination of Effect for Peregrine Falcon

Baseline: Peregrine falcon prey may be slightly affected by dispersed use. Generally breeding territories are on high cliffs and are unaffected by motorized route use.

Alternatives 1–4: Peregrine falcon prey may be slightly affected by dispersed use. Generally breeding territories are on high cliffs and are unaffected by motorized route use. May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Zone-tailed Hawk – Impacts by Alternative

Baseline: Nest sites have not been documented so there are no known routes that affect this species. In general, routes in riparian habitat with ponderosa pine uplands may occur in this species nesting habitat. Motorized big game retrieval (MBGR) and motorized dispersed camping are currently available districtwide and may cause displacement if it is occurring near breeding areas or in foraging habitat. MBGR generally occurs outside of the breeding season for this species, so effects are discountable.

Alternatives 1–4: Cross-country motorized travel will no longer be available throughout this species' potential habitat. Habitat for this species would improve from route density reductions and off-route travel prohibition. Alternative 2 has the most routes available of all the alternatives, resulting in greater impacts to foraging habitat compared to the other alternatives. Under alternatives 1, 3, and 4, habitat for this species would improve from route density reductions. Alternative 3 has the most dispersed use available of all the alternatives, while alternative 4 has the least routes in potential habitat. Under alternative 3, MBGR would occur in this species habitat, but MBGR generally occurs outside of the breeding season so effects are discountable. For alternatives 1, 2, and 4, MBGR would not occur and would no longer be available districtwide, benefiting this species and its habitat. Dispersed camping would result in displacement from foraging habitat when camps are in use, except alternative 2 where dispersed camping would not be designated.

Determination of Effect for Zoned-tailed Hawk

Baseline: Zone-tailed hawk prey may be slightly affected by dispersed use. Breeding territories are generally near high cliffs and are unaffected by motorized route use.

Alternatives 1–4: Zone-tailed hawk prey may be slightly affected by dispersed use. Breeding territories are generally near high cliffs and are unaffected by motorized route use. May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

New Mexico Banner-tailed Kangaroo Rat, Gunnison's Prairie Dog, and Botta's Pocket Gopher in Mountain Grassland Habitat – Impacts by Alternative

Baseline: Route densities in grassland habitat remain at 2.62 miles of route per square mile. This route density is high compared to most of the other habitat types. Cross-country motorized travel is currently available throughout this habitat types on a yearlong basis. Cross-country MBGR is available districtwide in mountain grassland habitat causing some habitat loss. Motorized dispersed camping is available districtwide in mountain grassland habitat causing habitat loss in high use camps.

Alternative 1: Route density would be reduced 38 percent compared to the baseline. There are 7.9 miles (affecting 15.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative. Cross-country motorized travel will no longer be available for big game retrieval benefiting habitat. Route densities remain at 2.62 miles of route per square mile in grassland habitat. This route density is high compared to most of the other habitat types.

Alternative 2: Cross-country motorized travel will no longer be available throughout this habitat type on a yearlong basis. Route densities reduced 21 percent compared to the baseline. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting grassland habitats.

Alternative 3: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis. Route densities reduced 35 percent compared to the baseline. There are 10.8 miles (affecting 21.6 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. MBGR would be available on 137 miles of grassland creating a potential for some direct habitat loss. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting wildlife and habitats. Motorized dispersed camping would be available along 106 miles of grassland.

Alternative 4: Cross-country motorized travel will no longer be available throughout this habitat type on a yearlong basis. Route densities reduced 47 percent compared to the baseline. There are 7.5 miles of decommissioned, unauthorized, and closed roads in this habitat under this alternative. MBGR does not occur in this alternative and would no longer be available districtwide benefiting wildlife and habitats. Motorized dispersed camping would no

longer be available districtwide on a yearlong basis. Motorized dispersed camping would be available along 106 miles of grassland.

Determination of Effect for New Mexico Banner-tailed Kangaroo Rat

Baseline: All suitable habitat is available for off-route travel, MBGR, and motorized dispersed camping causing direct habitat loss.

Alternatives 1–4: May impact banner-tailed kangaroo rat, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Gunnison's Prairie Dog

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping. The baseline condition may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Alternatives 1–4: May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Botta's Pocket Gopher

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping. The baseline condition may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Alternatives 1–4: May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Spotted Bat, Allen's Lappet-browed Bat, and Pale Townsend's Big-eared Bat – Impacts by Alternative

Baseline: Motorized route, cross-country, and dispersed use are available in all potential foraging habitat, which may limit species use in some areas. MBGR and dispersed camping are currently available districtwide, which may limit species use in some areas. Wood gathering associated with camping may affect roosting habitat for Allen's Lappet-browed bat.

Alternative 1: Habitat for these species would improve from route density reductions and off-route travel prohibition. MBGR does not occur under this alternative and would no longer be available districtwide, benefiting these species and their habitat. Dispersed camping would result in displacement from foraging habitat when camps are in use. Wood gathering associated with camping may affect roosting habitat for Allen's Lappet-browed bat.

Alternative 2: Cross-country motorized travel would no longer be available throughout these species' potential habitat. This alternative has the most routes of all alternatives, but does not allow motorized cross-country use. These species would benefit from reduction in motorized cross-country use. MBGR does not occur under this alternative and would no longer be available districtwide, benefiting species and their habitat. Motorized dispersed camping does not occur under this alternative and would no longer be available districtwide on a yearlong basis, benefiting species and habitat. Wood gathering associated with camping may affect roosting habitat for Allen's Lappet-browed bat.

Alternative 3: Cross-country motorized travel would no longer be available throughout these species' potential habitat. This alternative has the most dispersed use of all action alternatives, but species would benefit from the overall reduction in route density and motorized cross-country use compared to the baseline. Motorized big game retrieval (MBGR) would not occur near cliff roosting areas benefiting species and habitat. Dispersed camping would result in displacement from foraging habitat when camps are in use. Wood gathering associated with camping may affect roosting habitat for this species.

Alternative 4: Cross-country motorized travel would no longer be available throughout these species' potential habitat. This alternative has the least routes in potential habitat. These species would benefit from route density reductions. MBGR does not occur under this alternative and would no longer be available districtwide, benefiting species and habitat. Dispersed camping would result in displacement from foraging habitat when camps are in use. Wood gathering associated with camping may affect roosting habitat for Allen's Lappet-browed bat.

Determination of Effect for Spotted Bat

Alternatives 1–4: May impact spotted bats, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Allen's Lappet-browed Bat

Alternatives 1–4: May impact spotted bats, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Pale Townsend's Big-eared Bat

Alternatives 1–4: May impact spotted bats, but is not likely to result in a trend toward Federal listing or loss of viability.

Southern Red-backed Vole – Impacts by Alternative

Baseline: Cross-country motorized travel is currently available throughout spruce-fir habitat on a yearlong basis. Motorized big game retrieval (MBGR) is available districtwide in spruce-fir habitat causing some direct habitat loss. Motorized dispersed camping is available districtwide in spruce-fir habitat resulting in direct habitat loss in high use camps.

Alternatives 1–4: Cross-country motorized travel would no longer be available throughout spruce-fir habitat on a yearlong basis benefiting wildlife and habitats. Under alternatives 1, 2, and 4, MBGR would not occur and would no longer be available districtwide benefiting wildlife and habitats. Under alternative 3, MBGR would be available in spruce-fir habitat creating a potential for some displacement. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting wildlife and habitats. Motorized dispersed camping would be minimally available in spruce-fir habitat, creating a potential for habitat loss in high use camps except in alternative 2 where dispersed camping would not be designated.

Determination of Effect for Southern Red-backed Vole

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping which may reduce habitat for the southern red-backed vole.

Alternatives 1–4: There is no contiguous habitat within the analysis area and dispersed use is minimal under all alternatives. Therefore, there would be no effect to species in this habitat.

Chiricuhua Leopard Frog – Impacts by Alternative

Baseline: An existing population occurs on private property and State lands near the forest boundary. Roads 511, 97, and 140 are the designated routes located in the dispersal zone of this species. Off-route travel is currently available districtwide increasing the likelihood of direct mortality. MBGR and dispersed camping are available in all riparian habitat within the dispersal zone of this species.

Alternative 1–4: Roads 511, 97, and 140 are the designated routes located within the watershed occupied by this species. Under alternatives 1, 2, and 4, MBGR would no longer be available districtwide benefiting dispersal habitats. Under alternative 3 MBGR occurs within the CLF 1 mile dispersal zone, causing potential direct impact from being driven over by vehicles. Motorized dispersed camping does not occur in the species' habitat. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting dispersal habitat of this species.

Determination of Effect for Chiricahua Leopard Frog

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping which may lead to direct mortality.

Alternatives 1–4: Motorized routes are in CLF habitat, but there is no motorized cross-country travel, benefiting this species. Route densities are reduced 28 to 52 percent from the baseline depending on the alternative. Because motorized routes are in the Chiricahua leopard frog habitat, these alternatives may affect this species but are not likely to adversely affect this species or its habitat. The Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination.

Northern Leopard Frog and Western Yellow-billed Cuckoo – Impacts by Alternative

Baseline: Route density is 6.6 miles of route per square mile in riparian habitat. Direct habitat loss remains at 492 acre, although not all of this is true riparian or wetland habitat and instead is mostly drainages where little riparian vegetation exists. Cross-country motorized travel is available throughout this habitat type on a yearlong basis. Motorized big game retrieval (MBGR) and motorized dispersed camping are available in all riparian habitat districtwide causing some potential for direct mortality and habitat loss of frogs, and displacement and habitat loss for the cuckoo.

Alternative 1: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting northern leopard frog and yellow-billed cuckoo habitats. Route densities would be reduced 49 percent compared to the baseline. MBGR and motorized dispersed camping would no longer be available districtwide benefiting riparian habitat. There are 10.2 miles (affecting 20.4 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. Motorized dispersed camping would be allowed along 58 miles of road in riparian habitat, creating a potential for some mortality and habitat loss when camps are in use.

Alternative 2: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting wildlife and habitats. Route densities would be reduced 28 percent compared to the baseline. MBGR or motorized dispersed camping does not occur in this alternative, benefiting riparian habitat.

Alternative 3: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting wildlife and habitats. Route densities would be reduced 47 percent from the baseline. Motorized big game retrieval (MBGR) would be allowed along 113 miles of road causing some direct habitat loss for both species and potential direct mortality of the frog species. MBGR would no longer be available districtwide benefiting habitats. There are 11.2 miles (affecting 22.4 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. Motorized dispersed camping would be allowed along 58 miles of road in riparian habitat with effects similar to alternative 1. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting wildlife and habitats.

Alternative 4: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting wildlife and habitats. Route densities would be reduced 52 percent. MBGR would no longer be available districtwide benefiting northern leopard frog and yellow-billed cuckoo habitats. There are 8.4 miles (affecting 16.8 acres) of decommissioned, unauthorized, and closed roads in this habitat under this alternative. Motorized dispersed camping would be allowed along 43 miles of riparian habitat, creating a potential for some mortality of frogs and habitat loss and displacement of both species when camps are in use. Motorized dispersed camping would no longer be available districtwide on a yearlong basis benefiting wildlife and habitats.

Determination of Effect for Northern Leopard Frog

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping.

Alternatives 1–4: May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Western Yellow-billed Cuckoo

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping.

Alternatives 1–4: May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Alamosa Springsnail – Impacts by Alternative

Baseline: The 511 road is the only designated route that is located upstream from this species' occupied habitat. Motorized big game retrieval (MBGR) and motorized dispersed camping is available along all the routes in the watershed occupied by this species. If dispersed camping is occurring upstream from the occupied habitat, there is a slight chance of sediment reaching the springs where the springsnail occurs.

Alternatives 1–4: The 511 road is the only designated route that is located upstream from this species. Sediment from roads is not listed as a threat to the species, and it is unlikely that sediment would reach the springs occupied by the Alamosa springsnail. Under alternatives 1, 2, and 4, MBGR would no longer be available districtwide benefiting Alamosa springsnail habitat. Under alternative 3, MBGR occurs within a watershed that contains Alamosa springsnail habitat. Motorized dispersed camping would not occur in the species habitat.

Determination of Effect for Alamosa Springsnail

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping.

Alternatives 1–4: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting this species. These alternatives may affect the species, but they are not likely to adversely affect the species or its habitat. The Forest Service would seek concurrence with the U.S. Fish and Wildlife Service on this determination. Alternative 3 would allow MBGR within the entire Alamosa springsnail watershed which would have a greater potential effect to the species.

Bleached Skimmer Dragonfly – Impacts by Alternative

Baseline: Route densities in or adjacent to this species habitat is not known. Cross-country motorized travel is available throughout wetland habitat type on a yearlong basis potentially affecting occupied habitat. MBGR and motorized dispersed camping is available districtwide which would reduce habitat quality for this species.

Alternatives 1–4: Cross-country motorized travel would no longer be available throughout this habitat type on a yearlong basis benefiting dragonfly habitats. Under alternatives 1, 2, and 4, MBGR would no longer be available districtwide benefiting habitat potentially used by this dragonfly. Under alternative 3, it is not known how much MBGR would be allowed near pond and spring habitat. Where that use occurs, dragonflies would be potentially affected. Motorized dispersed camping would be allowed near riparian habitat creating a potential for a reduction in habitat quality (except alternative 2), but motorized dispersed camping would be reduced from the baseline benefiting habitat.

Determination of Effect for Bleached Skimmer Dragonfly

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping. The baseline condition may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Alternatives 1–4: May impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Magdalena Mountainsnail and Subalpine Mountainsnail – Impacts by Alternative

Baseline: Motorized cross-country and dispersed use is available in all habitat which may reduce habitat availability and result in direct mortality in some areas where the species occurs. Motorized routes generally do not provide habitat for this species. Motorized big game retrieval (MBGR) and motorized dispersed camping are currently available districtwide which may reduce habitat availability and result in direct mortality to species in some areas where these species occur.

Alternatives 1–4: Habitat for these species would improve with off-route travel prohibition compared to the baseline. Alternative 3would have the most dispersed use available of all the alternatives resulting in direct mortality and habitat loss. Motorized dispersed camping would be allowed except for alternative 2, creating a potential for habitat loss and direct mortality when camps are in use.

Determination of Effect for Magdalena Mountainsnail

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping resulting in habitat loss and direct mortality.

Alternatives 1–4: Motorized dispersed use is available under this alternative. Implementation of this alternative may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Subalpine Mountainsnail

Baseline: All suitable habitat is available for off-route travel, MBGR, and dispersed camping. Motorized use is unlikely to affect the subalpine mountainsnail.

Alternatives 1–4: Motorized use is unlikely to affect the subalpine mountainsnail. There would be no impact to the species.

Zuni Milkvetch, Villous Groundcover Milkvetch, San Mateo Penstemon, Arizona Leatherflower, and Tall Bitterweed – Impacts by Alternative

Baseline: Direct impacts to sensitive plants are possible due to motorized route use and motorized off-route travel that is available in all potential habitats. Motorized use may result in loss of habitat and individual plants. MBGR and motorized dispersed camping are currently available districtwide which may impact individual plants.

Alternatives 1–4: Prohibiting off-route travel and reducing route densities compared to the baseline may have only slight benefits to sensitive plant species; however the potential exists for plants to be directly impacted by vehicle use. Under alternatives 1, 2, and 4, no MBGR is being proposed and MBGR would no longer be allowed districtwide, benefiting habitat for sensitive plant species. Under alternative 3, proposed MBGR may occur in sensitive plant species' current or potential habitat which may cause plants and their habitat to be lost due to that use. Motorized dispersed camping would no longer be available districtwide on a yearlong basis, benefiting plant species and their habitat. Along some routes, motorized dispersed camping would be designated (except under alternative 2), creating a potential for habitat loss and loss of individual plants.

Determination of Effect for Sensitive Plant Species

Baseline, All Species: All occupied and potential sensitive plant species habitat is available for off-route travel, including MBGR and motorized dispersed camping. There are existing motorized routes in sensitive plant species habitat. Motorized use associated with the baseline condition may continue to impact individual plants. Off-highway vehicle use is one of the threats listed for sensitive plant species.

Determination of Effect for Zuni Milkvetch

Alternatives 1–4: Prohibiting off-route travel and reducing route densities may have only a slight benefit to the species; however, the potential exists for this plant to be directly impacted by vehicle use. There is no motorized dispersed camping proposed in Zuni milkvetch habitat, and there are no route designations proposed in potential or occupied habitat. Implementation of these alternatives may affect, but is not likely to adversely affect the Zuni milkvetch.

Determination of Effect for Villous Groundcover Milkvetch

Alternatives 1–4: Motorized use may result in loss of habitat and individual plants. Implementation of these alternatives may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for San Mateo Penstemon

Alternatives 1–4: Motorized use may result in loss of habitat and individual plants. Implementation of these alternatives may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Arizona Leatherflower

Alternatives 1–4: Motorized use may result in loss of habitat and individual plants. Implementation of these alternatives may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

Determination of Effect for Tall Bitterweed

Alternatives 1–4: Motorized use may result in loss of habitat and individual plants. Implementation of these alternatives may impact individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

High Priority Migratory Birds

The effects described in general in the project specific migratory bird report (in the project record) apply to high priority migratory bird habitat and populations. Table 43 describes the rationale for the estimated effects determination. See the project level high priority migratory bird report in the project record for a complete description of each bird species considered and their respective habitat and population analysis. Under all alternatives, unintentional take of migratory birds due to nest abandonment may occur as a result of motorized use along designated routes or off-route during dispersed motorized use.

Table 43. Determination of effects for high priority migratory birds

Priority Bird Species	Determination of Effects
Mixed Conifer Species • Band-tailed pigeon • Dusky grouse • Flammulated owl • Broad-tailed hummingbird • Williamson's sapsucker • Red-naped sapsucker • Olive warbler	• Under the baseline condition, there are 91 miles (affecting 182 acres) of route in mixed conifer habitat, as well as off-route travel which may cause nest abandonment and direct mortality due to ground or shrub nests being driven over resulting in unintentional take. • Under alternatives 1 and 3, the potential for unintentional take of these priority species exists, but is reduced from the baseline condition because of route reduction and elimination of off-route travel. There are 0.6 mile (affecting 1.2 acres) of decommissioned, unauthorized and closed routes in this habitat under these alternatives. • Under alternative 2, the potential for unintentional take of these priority species is the highest of all of the action alternatives, but is still reduced

Priority Bird Species	Determination of Effects
• Red-faced warbler • Olive-sided flycatcher	from the baseline condition because of route reduction and the elimination of motorized cross-country travel. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the mixed conifer habitat type. Motorized dispersed use is less than alternatives 1 and 3. • The potential to affect individuals under all alternatives exists, but there would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.
Mountain Grassland Species • Scaled quail • Montezuma quail • Vesper sparrow • Loggerhead shrike • Gray vireo • Bendire's thrasher • Eastern meadowlark	• Under the baseline condition, there are 435 miles (affecting 870 acres) of route in mountain grassland habitat, as well as off-route travel which may cause nest abandonment and direct mortality if ground or shrub nests are driven over resulting in unintentional take. • Under alternative 1, the potential for unintentional take of these priority species is decreased due to reduction of routes in mountain grassland habitat and the elimination of off-route travel. There are 7.9 miles (affecting 15.8 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative. • Under alternative 2 the potential for unintentional take of these priority species is the highest of all of the alternatives, but is still reduced from the baseline condition because of route reduction and the elimination of motorized cross-country travel. • Under alternative 3, the potential for unintentional take of these priority species exists but is reduced from the baseline condition because of route reductions. There are 10.8 miles (affecting 21.6 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the mountain grassland habitat type. There are 7.5 miles (affecting 15 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative. • The potential to affect individuals under all alternatives exists, but there would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.
Mountain Shrub Species • Dusky grouse • Black-chinned hummingbird • Vesper sparrow • Loggerhead shrike • Gray vireo • Bendire's thrasher • Crissal thrasher • Black-chinned sparrow	• Under the baseline condition, there are 13 miles (affecting 26 acres) of route in mountain shrub habitat, as well as off-route travel which may cause nest abandonment and direct mortality if ground or shrub nests are driven over resulting in unintentional take. There are no decommissioned, unauthorized, and closed routes in this habitat type. • Under alternative 1, the potential for unintentional take of these priority species is decreased due to reduction of routes in mountain shrub habitat. • Under alternative 2, the potential for unintentional take of these priority species is the highest of all of the action alternatives, but is still reduced from the baseline condition because of the elimination of motorized cross-country travel. • Under alternative 3, the potential for unintentional take of these priority species is decreased due to reduction of routes in mountain shrub habitat. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the mountain shrub habitat type. • The potential to affect individuals under all alternatives exists, but there

Priority Bird Species	Determination of Effects
	would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.
Piñon-Juniper Woodland Species • Piñon jay • Black throated gray warbler • Band-tailed pigeon • Gray flycatcher • Black-chinned hummingbird • Montezuma quail • Juniper titmouse • Virginia's warbler	• Under the baseline condition, there are 662 miles (affecting 1,324 acres) of route in piñon-juniper habitat, as well as off-route travel which may cause nest abandonment if ground or shrub nests are driven over resulting in unintentional take. • Under alternative 1, the potential for unintentional take of these priority species is decreased due to reduction of routes in piñon-juniper habitat. There are 4 miles of reroute under this alternative, resulting in a habitat loss of 8 acres. There are 10.1 miles (affecting 20.2 acres) of decommissioned, unauthorized, and closed routes in this habitat under this alternative. • Under alternative 2, the potential for unintentional take of these priority species is the highest of all of the action alternatives, but is still reduced from the baseline condition because of route reduction and the elimination of motorized cross-country travel. • Under alternative 3, the potential for unintentional take of these priority species exists but is reduced from the baseline condition because of route reduction. The 2.3 miles of reroute would result in a habitat loss of 4.6 acres. There are 19 miles (affecting 38 acres) of decommissioned, unauthorized, and closed routes in this habitat. OHV use is allowed in this alternative, resulting in displacement of birds in this habitat type as well as severely altering piñon-juniper habitat on 756 acres causing habitat loss and displacement. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the piñon-juniper habitat type. There are 8.4 miles (affecting 16.8 acres) of decommissioned, unauthorized, and closed routes in this habitat. • The potential to affect individuals under all action alternatives exists, but there would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.
Ponderosa Pine Species • Gray flycatcher • Flammulated owl • Broad-tailed hummingbird • Williamson's sapsucker • Red-naped sapsucker • Grace's warbler • Olive warbler • Red-faced warbler • Painted redstart	• Under the baseline condition, there are 314 miles (affecting 628 acres) of route in ponderosa pine habitat, as well as off-route travel which may cause nest abandonment or direct mortality if ground or shrub nests are driven over and result in unintentional take. There are 4 miles (affecting 8 acres) of decommissioned, unauthorized, and closed routes in this habitat type. • Under alternative 1, the potential for unintentional take of these priority species is decreased due to reduction of routes in ponderosa pine habitat. There are 2.9 miles (affecting 5.8 acres) of decommissioned, unauthorized, and closed routes in this habitat. • Under alternative 2, the potential for unintentional take of these priority species is the highest of all of the alternatives, but is still reduced from the baseline condition because of route reduction and the elimination of motorized cross-country travel. • Under alternative 3, the potential for unintentional take of these priority species is decreased due to reduction of routes in ponderosa pine habitat. There are 4.2 miles (affecting 8.4 acres) of decommissioned, unauthorized, and closed routes in this habitat. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the ponderosa pine habitat type. There are 2.9 miles (affecting 5.8 acres) of decommissioned,

Priority Bird Species	Determination of Effects
	unauthorized, and closed routes in this habitat. • The potential to affect individuals under all action alternatives exists, but there would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.
Riparian Species • Williamson's sapsucker • Red-naped sapsucker • Elf owl • Red-faced warbler • Olive-sided flycatcher	• Under the baseline condition, there are 246 miles (affecting 492 acres) of route in riparian habitat, as well as off-route travel which may cause nest abandonment or direct mortality if ground or shrub nests are driven over resulting in unintentional take. • Under alternative 1, the potential for unintentional take of these priority species is decreased due to reduction of routes in riparian habitat. There are 3 miles of decommissioned, unauthorized and closed routes in this habitat. There are 10.2 miles (affecting 20.4 acres) of decommissioned, unauthorized, and closed routes in this habitat. • Under alternative 2, the potential for unintentional take of these priority species is the highest of all of the action alternatives, but is still reduced from the baseline condition because of route reduction and the elimination of motorized cross-country travel. • Under alternative 3, the potential for unintentional take of these priority species is decreased due to reduction of routes in riparian habitat. There are 11.2 miles of decommissioned, unauthorized, and closed routes in this habitat. • Alternative 4 has the least potential for unintentional take of these priority species due to the least amount of routes in the riparian habitat type. There are 8.9 miles (affecting 17.8 acres) of decommissioned, unauthorized, and closed routes in this habitat. • The potential to affect individuals under all action alternatives exists, but there would be no measurable negative effects on these migratory species. Unintentional take of individuals may occur, but these alternatives would not negatively affect population levels.

Cumulative Effects: MIS, TES and High Priority Migratory Birds

Cumulative impacts to management indicator species; threatened, endangered, candidate, or sensitive species; and high priority migratory birds are discussed broadly with a focus on impacts to wildlife species in general from noise disturbance, direct mortality and habitat degradation. Treatments and projects considered as past, present, and future actions include prescribed burns, WUI fuels reductions, cattle grazing, special use permits, forest health improvement projects (tree thinning), mining, mineral exploration, private land development, and recreational activities (such as hunting, wildlife viewing, hiking, biking, horseback riding, etc.).

The cumulative effects analysis includes projects that occurred during the last 10 years and those that are projected 10 years ahead. The boundary of the effects analysis includes the entire Magdalena Ranger District.

Alternative 1

Maintenance of existing WUI and vegetation treatments (and additional treatments) is expected to occur as tree regeneration takes place. Most thinning in treatment areas would take place adjacent

to road systems, so additional disturbance to wildlife (from noise and human activity) is not expected to occur because the use of the road system already disturbs wildlife. Maintenance and additional vegetation treatments and enforcement of off-route travel are within the control of the Agency. Past, present, and future cumulative impacts in areas where private land development is anticipated would substantially reduce security areas and travel corridors for wildlife. Areas on National Forest System (NFS) lands which border private land where development is occurring could become more important for wildlife migration and dispersal.

Vehicle use on designated roads could be expected to increase in the future, as well as other recreational activities such as mountain biking, wildlife viewing, horseback riding, and hiking. All these increased activities would cause disturbance for a longer period during daylight hours. With the elimination of motorized cross-country travel, many areas where cattle grazing, timber harvesting, and prescribed burning occur could regenerate with fewer problems, improving wildlife foraging, nesting, burrowing, and den habitat. Wildlife would have other areas to find security during times when disturbance factors are present, meaning their habitat is less fragmented and more secure. Prohibition of motorized cross-country travel would improve wildlife security over time, and cumulative impacts on the district—particularly with offsite development increasing—would put more pressure on NFS lands as refuges from human impacts.

Alternative 2

This alternative maintains the current designations for all NFS roads open to all vehicles for public use within the district, while eliminating all motorized cross-country travel. Prescribed burning, cattle grazing, tree thinning, and other actions on the district would continue to impact wildlife. Many of the impacts would be the same as the baseline, as the proposed changes include designating all existing system roads for all vehicles. More roads generally mean more habitat fragmentation. Eliminating motorized cross-country travel could balance out the number of areas where wildlife could find refuges from human disturbance. Noise disturbance along with other cumulative impacts would continue to impact wildlife under this alternative.

Alternative 3

This alternative designates fewer NFS roads for motor vehicle use within the district and includes fewer corridors for motorized dispersed camping and MBGR compared to the baseline. Prescribed burning, cattle grazing, tree thinning, and other actions on the district will continue to impact wildlife. More roads generally result in increased habitat fragmentation, resulting in less habitat available for species that require large areas of contiguous habitat. Eliminating motorized cross-country travel could balance out the number of areas where wildlife could find refuges from human disturbance. Noise disturbance along with other cumulative impacts would continue to impact wildlife under this alternative.

Alternative 4

This alternative is expected to have the least amount of cumulative impacts to wildlife. In addition to all of the forest projects and actions, the miles of roads designated for motorized vehicle use would be less than the other alternatives and baseline. With motorized cross-country travel reduced from the baseline, noise disturbance would be reduced and a greater number of acres would be available as wildlife refuges.

Watershed, Soils, and Air Resources

The following analysis is based on the hydrology and soils specialist report prepared by Livia Crowley, forest hydrologist. This report is on file in the project record.

Affected Environment

The Magdalena Ranger District is located in central New Mexico and is comprised of four geographic areas: the Magdalena Mountains, San Mateo Mountains, Datil Mountains, and Bear/Gallinas Mountains. Elevations in the project area ranges from just below 6,000 feet in the southern end of the Magdalena Mountain unit to 10,783 feet at the top of South Baldy Peak. The project area analyzed for this report, excluding wilderness and private inholdings, is approximately 697,716 acres.

Climate and topography can contribute to the effects that road locations have on water and soil conditions. Precipitation varies seasonally within the project area and is largely influenced by the southwest monsoons. The areas affected by these monsoons receive greater amounts of summer precipitation from moist air masses originating in the Gulf of Mexico and the Gulf of California. The majority of annual precipitation within the project area occurs between July and September. Temporal and spatial variability of precipitation is also a characteristic within the analysis area. Summer precipitation tends to have more spatial variability than winter frontal storms. Topography and storm type are two factors that control the spatial variability of precipitation. At the local scale, precipitation tends to increase with elevation due to the effects of orographic lifting. Higher elevations of the analysis area receive cool season moisture in the form of snow.

Watersheds

Watersheds are areas drained by streams to a single location. These drainage areas are defined by the highest elevations surrounding a selected location on a stream so that a drop of water falling inside the boundary will drain to the stream while a drop of rain falling outside of the boundary will drain to another watershed. The project area is located in portions of 80 individual 6th field Hydrologic Unit Code (HUC) watersheds, also known as 6th level watersheds. Watersheds can be impacted by numerous factors: including cross-country travel and existing roads (authorized or other). Motorized cross-country travel is allowed within the portions of watersheds that fall outside of the Apache Kid and Withington Wilderness areas and has an impact on the overall watershed conditions.

All of the 6th code watersheds across the forest have been classified based on the national Watershed Condition Framework (WCF). WCF allows an interdisciplinary team to assess the risks to the condition of each watershed and then rate the watershed based on these risks. Twenty-four different criteria, including terrestrial physical and biological indicators and aquatic physical and biological indicators, were used to rate watershed conditions. The resulting ratings indicate that a given watershed is “functioning properly” (good), “functioning at risk” (fair), or “impaired” (poor). Of the eighty 6th code watersheds on the Magdalena Ranger District rated using the WCF, 16 are rated as “fair” and 53 were rated as “good” using the definition provided by this process. Eleven watersheds were not rated since less than 10 percent of their area is located within National Forest System lands. The primary causes for those watersheds rated as functioning at risk are roads, proximity of roads and trails to water, soil condition, range condition, and fire regime condition class.

Watershed conditions can be impacted by roads; generally, these impacts are a result of road location and not road use. Research indicates that route density, defined as both roads and trails, can impact watershed conditions as well as water quality (Forman et al. 2003). A study in the Rio Puerco showed that route density has a strong influence on sediment loads (Phippen and Wohl 2003) on soils similar to those in the project area. The Watershed Condition Framework (Potyondy and Geier 2011) considers a road density greater than 2.4 miles per square mile to be indicative of a higher probability that the hydrologic regime is substantially altered. A moderate probability of hydrologic alteration exists when road and trail densities are between 1 and 2.4 miles per square mile.

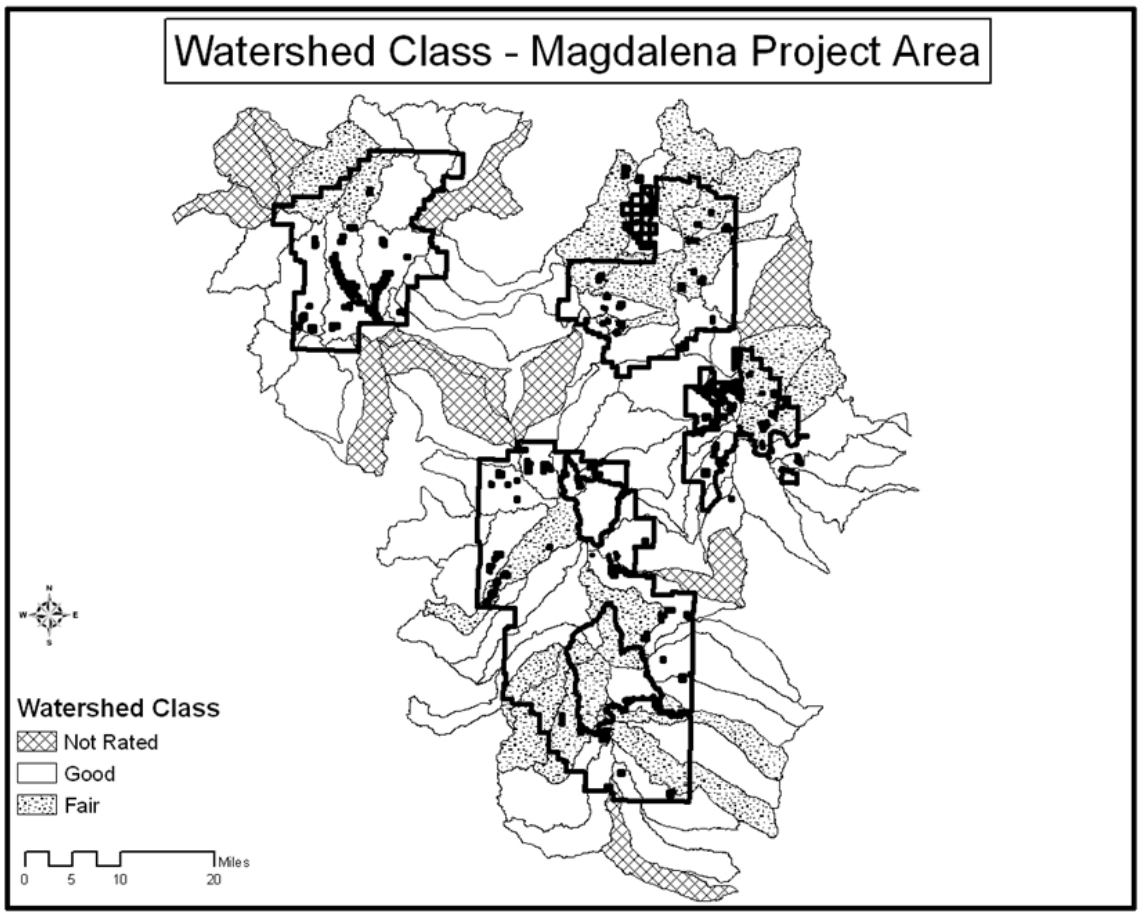

Figure 3. Magdalena project area watershed class

Table 44. 6th Code watersheds, road and trail density, percent of project in each watershed, watershed condition, and acres (shaded watersheds have road densities greater than 2.4 miles per square mile)

6th Code Watershed Name and HUC6 Number	Road Density mi/mi^2	Project Percent in HUC6	Watershed Condition	Acres
Alameda Spring–Milligan Gultch (130202110203)	0.7	26.6	good	15,425
Arroyo Montosa (130202090602)	2.3	98.8	good	15,455
Arroyo de La Matanza (130202031005)	1.8	7.6	good	28,527
Baca Canyon–Rio Salado (130202090703)	1.1	34.5	fair	34,155
Bear Spring Canyon-Rio Salado (130202090705)	0.9	19.7	good	17,283
Bear Springs Canyon (130202090704)	1.4	78.1	fair	22,263
Big Pigeon Canyon–Alamosa Creek (130202110602)	1.9	75.4	fair	32,633
Big Rosa Canyon (130202110204)	0.9	22.4	good	25,452
Big Rosa Canyon–Milligan Gultch (130202110205)	1.2	44.1	good	16,569
Blue Mesa Canyon–Alamocita Creek (130202090106)	0.7	7.5	good	26,239
Canon del Alamito–Rio Salado (130202090702)	0.5	29.6	fair	37,012
Carada de Ila–Alamosa Creek (130202110704)	1.4	23.3	good	29,916
Clemente Lake (130202080301)	1.1	0.5	not rated	36,554
Crawford Hollow–Rio Grande (130202110307)	1.5	21.7	good	25,967
Cuervo Canyon–Rio Grande (130202110503)	1.3	29.9	good	34,256
Dog Springs Canyon (130202090501)	0.9	2.8	not rated	30,401
Dry Lake Canyon (130202090603)	2.8	91.9	fair	30,313
Durfee Canyon (130202080103)	1.9	55.7	good	20,545
East Well (130202080104)	1.2	0.8	not rated	27,929
Elephant Butte Reservoir–Alamosa Creek (130202110705)	1.9	4.5	not rated	24,557
Gallinas Canyon (130202090601)	2.2	97.9	good	10,239
Garcia Falls–Alamosa Creek (130202110703)	0.9	15.3	good	38,979
Goat Spring (130202090607)	1.4	40.1	good	26,598
Grapevine Canyon–Alamosa Creek (130202110701)	1.0	38.5	fair	32,216
Headwaters Arroyo Gato (130202090604)	2.0	27.9	good	38,184
Headwaters East Red Canyon (130202110101)	1.0	66.2	fair	33,451
Headwaters La Jencia Creek (130202090606)	3.4	60.3	good	20,715
Headwaters Veteado Draw (130202060202)	1.7	1.5	not rated	17,122
Headwaters White House Canyon (130202080207)	2.5	84.2	good	36,968
Headwaters Z Slash Draw (130202080405)	1.6	57.1	good	36,062
High Lonesome Well (130202080205)	0.8	5.1	good	33,463
Indian Creek (130202110501)	0.6	19.9	good	13,612

6th Code Watershed Name and HUC6 Number	Road Density mi/mi^2	Project Percent in HUC6	Watershed Condition	Acres
Jaralosa Creek (130202090505)	1.2	22.0	fair	39,118
La Jara Canyon (130202090701)	1.5	41.7	good	25,317
Limestone Canyon–Alamosa Creek (130202110601)	1.6	51.9	good	35,447
Little Pigeon Canyon–Alamosa Creek (130202110603)	1.8	15.8	good	22,544
Little Well (130202080203)	0.9	13.4	good	24,946
Lumbre Canyon–Rio Grande (130202110306)	1.2	28.6	good	38,521
Main Canyon (130202080206)	2.0	95.2	good	27,700
Mill Canyon–Milligan Gultch (130202110202)	1.6	34.3	good	30,019
Mitchell Canyon (130202110802)	1.3	16.0	good	28,624
Montoya Well (130202080502)	0.9	2.4	not rated	27,934
New Well (130202080102)	3.6	20.4	good	10,806
Newton Draw (130202060201)	1.9	0.2	not rated	24,929
Nogal Arroyo (130202031002)	1.5	39.6	fair	33,821
Nogal Canyon–Rio Grande (130202110502)	1.9	30.2	fair	26,854
Outlet Arroyo Gato (130202090605)	2.9	39.1	good	12,813
Outlet East Red Canyon (130202110102)	2.0	69.8	good	28,900
Outlet La Jencia Creek (130202090608)	1.1	0.1	not rated	35,484
Outlet White House Canyon (130202080208)	1.9	0.2	not rated	13,926
Outlet Z Slash Draw (130202080406)	1.6	7.0	good	15,676
Ox Spring Canyon (130202090102)	1.8	97.0	fair	16,350
Ox Spring Canyon–Alamocita Creek (130202090104)	1.1	8.4	good	13,673
Pature Canyon–Alamocita Creek (130202090105)	0.8	30.1	good	23,548
Pino Draw (130202080402)	1.5	15.8	good	28,995
Point of Rocks Canyon (130202080303)	2.1	62.3	good	28,556
Puertecito Arroyo (130202110206)	0.5	0.4	good	10,159
Puertecito Arroyo–Milligan Gultch (130202110207)	1.6	41.4	good	35,372
Red Canyon (130202031101)	2.5	0.8	good	18,906
Rincon Draw (130202080204)	1.2	26.0	good	30,692
Rock Springs–Milligan Gultch (130202110201)	1.2	12.7	good	37,851
Romero Canyon (130202110801)	1.4	35.1	good	27,053
San Jose Arroyo–Rio Grande (130202110504)	1.2	50.7	fair	35,822
San Mateo Canyon–Alamosa Creek (130202110702)	1.3	43.8	fair	33,526
Sawmill Canyon (130202031205)	1.6	0.1	good	30,201
Shakespeare Canyon (130202031001)	1.3	32.3	fair	33,099

6th Code Watershed Name and HUC6 Number	Road Density mi/mi^2	Project Percent in HUC6	Watershed Condition	Acres
Sim Yaten Canyon–Alamosa Creek (130202110607)	1.3	43.6	good	24,336
Simon Canyon (130202110303)	1.0	14.0	good	23,202
Sugar Loaf Canyon (130202080501)	1.2	6.7	good	34,779
Taylor Well (130202080305)	1.2	8.6	good	31,237
Tenmile Hill–Milligan Gultch (130202110208)	0.6	0.0	not rated	22,918
Third Canyon–Alamocita Creek (130202090101)	1.4	26.6	fair	33,648
Tres Lagunas Draw (150200030104)	2.8	1.5	not rated	15,995
Walnut Creek (130202031103)	1.3	6.1	good	21,084
West Red Canyon (130202110605)	1.6	78.8	good	28,456
White Lake (130202080209)	1.5	8.9	good	30,500
White Well (130202080302)	1.1	9.1	good	28,252
Whitewater Canyon–Alamosa Creek (130202110604)	1.9	60.5	good	27,679
Wildhorse Canyon–Alamosa Creek (130202110609)	1.8	85.8	fair	13,180
Wolf Wells (130202080101)	1.8	11.6	good	21,065

Within these 6th code watersheds, the road densities as shown in table 44 range from .5 to 3.6 miles/square mile (mi/mi^2). While road densities may indicate hydrological alteration, the overall watershed condition considers many other factors:

- Seven watersheds have road densities greater than 2.4 mi/mi^2 which indicates a high probably that the hydrologic regime has been altered by the presence of roads and trails.
- Sixty-one watersheds have densities between 1 and 2.4 mi/mi^2 indicating a moderate probability of hydrologic alteration.
- Twelve watersheds have road densities less than 1 mi/mi^2; an indicator the hydrologic regime is substantially intact.

Streams

Streams are classified by their flow characteristics into perennial, intermittent, and ephemeral types:

- Perennial streams flow year-round because they get water from water storage in the ground. However, these streams may dry up during extreme droughts.
- Ephemeral streams only flow in direct response to precipitation or snow melt.
- Intermittent streams fall between ephemeral and perennial; these types of streams get water from the ground seasonally and usually dry up in the summer.

Intermittent and ephemeral streams provide many of the same ecosystem goods and services as perennial streams (EPA 2008). All streams are pathways for the movement of water, nutrients, and sediment throughout the watershed. Intermittent and ephemeral streams comprise a large

portion of the stream network within watersheds. These features have greater relative moisture than the surrounding area, often stored in the ground. In addition, when these features erode and downcut, gullies can form. This leads to soil loss and the surrounding water tables get deeper. Because of the value of these features, similar measures are used in this report to assess potential effects to these features. In recognition of the additional values of perennial streams, measures are separated by perennial and intermittent/ephemeral reaches.

Data used for analysis of water features such as streams is from the Cibola National Forest GIS dataset and the National Hydrography Data (NHD).

There are 3,313.5 miles of mapped intermittent and ephemeral stream channels and 1.7 miles of perennial streams within the analysis area. Cold Spring Canyon and Indian Creek in the San Mateo Mountains are the currently mapped perennial streams within this area. There are other small segments of perennial water, many of which are related to springs, which have not been mapped. These include North Fork of Water Canyon and Mill/Canyon, Copper Canyon. There are 76 mapped springs and 39 mapped seeps within the project area. Many springs are developed and provide water for livestock and wildlife.

The 300 foot proximity of streams was used to assess the potential for effects to increase or decrease from the proposed alternatives in relation to the baseline condition. There are currently 725.9 miles of ephemeral/intermittent streams within 300 feet of NFS roads. This is 22 percent of the ephemeral/ intermittent stream network. A small length (~.01 mi.) of the perennial stream in Nogal Canyon is within 300 feet of a National Forest System road (959). Because smaller perennial areas are not mapped in GIS and no consistent inventory exists, many smaller perennial portions are not represented in this data and do exist along roads. The riparian layer incorporates many of these areas.

There are 2,935.7 acres of riparian vegetation mapped within the project area, associated with 132.4 miles of intermittent/ephemeral streams and 1.3 miles of perennial channels. The different types of riparian areas are shown in table 45. A total of 1,608.4 acres of riparian areas are currently within 300 feet of a road. This is 55 percent of the mapped riparian acres in the project area. Note that since the riparian data is currently being ground verified, cottonwood and walnut systems may vary by species so there may be changes to acres within these types.

Table 45. Riparian types in the project area

Riparian Type	Acres
Fremont cottonwood – conifer	123.3
Fremont cottonwood – oak	47.7
Fremont cottonwood – shrub	53.9
Narrowleaf cottonwood – shrub	863.6
Rio Grande cottonwood – shrub	1,714.9
Upper montane conifer – willow	67.7
Arizona walnut	1.4
Unknown	6.6
Ponderosa pine – willow	56.6

Currently, unrestricted motorized cross-country travel across the project area is contributing to destabilization of stream channels, impacts to riparian areas, increased sediment, and reduced water quality. Roads—authorized and unauthorized—including motorized cross-country use have impacted many of these features causing disruption of flow patterns, bank destabilization, channel changes, and increased sedimentation of stream channels.

Water Quality

The Federal Clean Water Act (CWA) requires states to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 303 of the act requires states to adopt water quality standards necessary to protect designated uses whenever possible. No streams in the analysis area have been assessed by the State of New Mexico for water quality standards. Therefore, it is unknown whether or not water quality in the project area meets New Mexico water quality standards (2011). The water quality parameters of specific interest for this project are sediment and pathogens:

- Sediment is mobilized through surface disturbances and transported by water into stream channels.
- Pathogens such as bacteria are in fecal matter of animals including people. Because of this, areas where waste is deposited and accumulates become locations where pathogens could occur at elevated levels.

Sediment as a water quality concern has two parts: sediment, which causes cloudiness in water (turbidity) and sediment which deposits into stream channels as bottom deposits. Both types of sediment are related to the length of roads and trails adjacent to channels and the number of times these routes cross the stream (Gucinski et al. 2001).

Where roads are in close proximity to stream channels, effects to these streams have been noted. This is due to sediment and changes in morphology; especially where roads cross streams (Forman et al. 2003). Motorized vehicle crossings due to cross-country travel have similar effects. "Close proximity" was set at 300 feet for analysis purposes. This distance could be considered an average buffer width that is effective in mitigating effects to streams. Therefore, where roads are closer than 300 feet to a stream, some level of effects is likely to occur.

The literature shows that prescribing an effective buffer width is difficult due to variation in site characteristics and the values being protected (Clinton 2011). A range of buffer widths from 10m (~33 feet) (Clinton 2011) to over 1,000 m (~3,281 feet) (Forman and Alexander 1998) has been found to be effective in protecting stream and wetland values during management activities. Three hundred feet was chosen as the buffer to use for this project since several sources suggest that 100 m (303 feet) is generally effective in controlling sediment (Belt et al. 1982) and nutrients (Feller 2009). This distance provides an effective buffer for preventing effects to streams. Therefore, identifying those roads which are closer than 300 feet is a way to identify roads which are likely to have effects on streams.

Pathogens can be introduced into the soil and water at elevated levels in association with dispersed recreation (MacDonald et al. 1991). A pathogen is an infectious agent that causes disease to its host. These include bacteria, virus, and protozoan. There are over 100 bacteria, protozoan, and viruses present in human feces that are capable of causing illness (Cilimburg et al.

2000). Bacteria include coliforms and pathogenic bacteria such as Salmonella. Protozoans include Giardia and Cryptosporidium. Viruses can include the Adenovirus and Hepatitis A.

There is the potential for these pathogens to enter the soil and water where people gather and spend time without sanitary facilities; particularly if these areas are located near water. Studies have shown that dispersed recreation areas without sanitation contribute to elevated levels of selected pathogens in water and soil (Varness et al. 1978, Cilimburg et al. 2000). While these increases tend to be localized and short term, they do occur in the area of concentrated use and at the time of high use. There is no water quality data on pathogens or nutrients from within the analysis area, so it is not known what the current levels are.

Soil Conditions

The Forest Plan goal for soil resources is to: "Improve and maintain soil productivity and condition of watersheds and riparian areas." (Cibola Forest Plan, page 34) General soil characteristics on the Cibola National Forest are described within the terrestrial ecological units (TEU) survey (2009). TEUs are integrated combinations of landscape elements including climate, soils, potential natural vegetation, geology, and geomorphology. TEUs provide information about the ability to produce vegetation and respond to management activities and natural disturbances (U.S. Department of Agriculture 2005). The Magdalena travel management project area contains 97 individual TEUs.

Soil condition consists of three components: hydrologic, nutrient cycling, and stability (U.S. Department of Agriculture 1999). Soils in satisfactory condition are functioning properly and can maintain resource values. Impaired soils have a reduction in soil functions and/or an increased risk of degradation. Unsatisfactory soils have lost soil function and are unable to sustain resource values.

Soil hydrology refers to properties which effect how water percolates into or flows over the ground. Soil compaction is one hydrologic property of soil and is evidenced through changes in porosity, surface structure, bulk density, infiltration, or penetration resistance. Roads result in increased soil compaction due to vehicle weight compressing soil structure. Soil compaction occurs quickly on an undisturbed soil but reaches a plateau where soil compaction increases very little (Ampoorter et al. 2010). Road surfaces, unauthorized routes, and trails reach this plateau. Changes to soil compaction affect the other properties of soil, including the ability to support vegetation, the amount of water that soaks into the soil, and soil biological processes (McNabb, Startsev, and Nguyen 2001).

System roads, decommissioned roads, and inventoried unauthorized roads occupy 2,272 acres. These surfaces are extremely compacted. In addition, soil compaction is likely occurring on portions of the project area due to being open to motorized cross-country travel and unauthorized routes. It is unknown to what extent this occurs. These areas have unsatisfactory condition.

Nutrient cycling relates to soil organic matter and sustaining long-term soil productivity and plant growth. Woody material, soil crusts, litter, roots, and vegetation are all indicators of nutrient cycling. Roads affect nutrient cycling by removing topsoil, organic litter, and vegetation and changing soil properties (Gucinski et al. 2001). Clearly, roads remove all vegetation from the soil surface, thereby eliminating the soil's function in providing inputs to nutrients. Further,

compaction affects the ability of soils to revegetate. Roads which can revegetate and decompact can begin to recover this process.

Stability of soils refers to the erosion, transport, and deposition of soil particles by water, wind, or gravity (U.S. Department of Agriculture 1999). Roads cause unstable soils through surface disturbance leading to loss of vegetation and litter, increased erosion, and compaction. The type of soil and site characteristics determines how easily soil is mobilized and eroded away. The TEU data provides this information for soils through the erosion hazard rating. Erosion hazard is based on potential soil loss from complete removal of vegetation and litter (USDA 1986). A moderate rating indicates a loss of soil productivity would occur if the barren condition is not mitigated. A severe rating indicates a high probability of reduced site productivity before mitigations can be used.

- Currently, approximately 203.1 miles of roads are located on soils with a severe rating and 290.4 miles on soils with a moderate rating.
- Twenty-eight percent of the project area has soils with severe erosion potential. Thirty-eight percent of soils have a moderate rating.

Overall existing soil condition in the analysis area was determined using TEU data for the main component in each unit. As determined, these conditions are largely due to bare ground and unsustainable soil loss. Lack of ground cover can be the result of many activities, including erosion from roads and trails, motorized cross-country use, recreational use, and livestock. Where roads and trails are determined to be the cause, lands adjacent to roads can be observed to have reduced ground cover from concentrated flows of water which accumulate on compacted road and trail surfaces. Road runoff contributes to gully formation in several areas. Motorized off-road use has a similar effect.

Within the project area, satisfactory soil conditions occur on 46 percent of the analysis area. Impaired soils occur on 29 percent and unsatisfactory soils on 25 percent. Sixteen percent of the roads currently being used are located on unsatisfactory soils, 43 percent of roads are located on impaired soils, while 41 percent are located on satisfactory soils.

Air Quality

Under the Clean Air Act, the Forest Service is charged with protecting air quality and visibility in Class I wilderness areas (defined as wilderness areas in existence as of August 7, 1977, that are larger than 5,000 acres). The analysis area is within the Middle Rio Grande and Central Closed Basins air sheds. None of these air sheds include mandatory Class I wilderness areas. Additionally, existing information indicates that the analysis area, including the surrounding communities, meets the National Ambient Air Quality Standards (NAAQS). Because of this, effects to air quality are not carried through the analysis.

Methods and Assumptions

Geographic Information System (GIS) data, the TAP (USDA 2009), use of existing information, and field reviews were used to assist in the analysis of effects of the proposed alternatives. GIS was supplemented with best available science, literature reviews, and professional judgment.

Due to the large size and complexity of the project area, certain assumptions were made to simplify the analysis process. The assumptions are:

- Public education, compliance, and enforcement of regulations will generally limit public travel to designated routes. Compliance with the motor vehicle use map is likely to increase over time for all alternatives as visitors become more familiar with the new rules and designated routes.
- Routes refer to all motorized routes, including roads (system, unauthorized, and decommissioned) within the project area.
- The alternatives involve the designation of routes open to vehicle use by the public and not the physical removal or barricading of roads.
- All existing roads are currently driven on to some degree, regardless of status. This includes decommissioned and unauthorized roads.
- Routes not designated for public use are expected to receive less travel (administrative purposes only).
- Unauthorized routes may not be in an acceptable condition, as they were created without engineering design.
- Motorized trails and unsurfaced roads, when maintained properly, have similar effects to water and soil resources.
- Dispersed camping corridor locations were selected based on areas that have historically been used for this activity. Because of this, some effects to soil conditions have already occurred in these areas. However, it is possible that user density within these corridors will increase, particularly during holiday weekends and hunting season, because the same amount of users will be confined to a smaller area.
- For the purposes of standardizing calculations, affected road width is 16 feet. Motorized trail widths are assumed to be 10 feet, unless they have been converted from existing roads. In this case, assumed width impacted by soil compaction is 16 feet. This information was provided by the engineering staff (Graves 2011).

Environmental Consequences

Water Resources

The effects of concern for water resources are water quality and drainage channels. The analysis timeframe for effects to water resources related to proposed activities is 10 years. This is because in 10 years, it may be possible to observe or measure changes related to the selected alternative. The analysis area is the project area since it is this area that will contribute to water quality and channel changes from proposed activities.

Water Quality

Water quality has several components of interest. These are pathogens and sediment. Sediment is discussed under the soil stability as related to erosion. Additional information is provided in this section on sediment which makes it to the channel.

Alternatives — Water Quality — Pathogens

The only proposed activity which has the potential to change pathogen levels is motorized dispersed camping since this use would occur without waste disposal of any sort. Where motorized dispersed camping corridors are included in the designation of roads for motor vehicle use, waste would be a potential source of pathogens. Dispersed camping corridors do have some overlap with perennial water and drainage channels. These are the areas where the risk to water is greatest.

Measures to assess the potential effect for pathogens to increase as the result of the proposed alternatives are listed in table 46. Proximity to perennial water is the most important indicator when combined with use levels for determining the risk to water quality. Proximity to any stream channels is another indicator since channels can transport pathogens offsite. Pathogens can stay viable in soil and be transported to water, depending on the conditions and type of pathogen, for over a year (Santamaria and Toranzos 2003, Cilimburg et al. 2000). It is the increase in concentrated visitor use that elevates the risk of pathogens through the waste products introduced into a smaller area.

Table 46. Measures for increased risk to water quality from pathogens

		Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Acres of designated motorized dispersed camping within 300 feet of stream channels	Perennial Streams	130	0	0	0	0
	Intermittent and Ephemeral Streams	232,772	13,340	0	13,340	11,237
Number of springs within 300 feet of designated motorized dispersed camping	Persistent	76 41 named springs, 35 unnamed springs, see map	12 Road Spring, Aragon Spring, Turkey Springs, Pony Spring, Deer Springs, Questa Spring, Beartrap Spring, 7 unnamed springs	0	12 Road Spring, Aragon Spring, Turkey Springs, Pony Spring, Deer Springs, Questa Spring, Beartrap Spring, 7 unnamed springs	9 Road Spring, Aragon Spring, Turkey Springs, Pony Spring, Deer Springs, Questa Spring, 3 unnamed springs
	Seep	39	2	0	2	2
Acres open for motorized dispersed camping		697,716	25,466	0	25,466	21,944

Baseline

There are no designated motorized dispersed camping corridors within the project area. Motorized dispersed camping can occur anywhere within the project area as described in the recreation report. Popular areas for dispersed camping are also described in the recreation report. In the baseline condition, motorized dispersed camping is not concentrated to smaller designated

areas, so the risk of pathogens to occur in surface waters and soils is low, with possible exceptions at popular areas during high use.

Alternatives 1 and 3

By concentrating motorized dispersed camping into smaller areas by restricting motorized cross-country travel, these alternatives increase the potential for pathogens to occur in water and soil from the baseline condition. There are 25,466 total acres of motorized dispersed camping proposed in these alternatives. Within the 25,466 acres, 13,340 acres of corridor would occur within 300 feet of intermittent and ephemeral streams. No motorized dispersed camping areas are proposed along mapped perennial streams. In addition, 12 springs and 2 seeps are within 300 feet of the proposed motorized dispersed camping areas.

Alternative 2

This alternative does not propose to designate motorized dispersed camping areas; therefore this use would not be concentrated into smaller areas. Unlike the baseline, motorized cross-country travel would not be allowed under this alternative; parking would only occur within a car width adjacent to designated roads. This limitation would curtail the amount of use these areas receive. As a result, this use would remain widely dispersed, and there would be no increase in the potential of concentrating pathogens.

Alternative 4

By concentrating motorized dispersed camping into smaller areas, including along streams, this alternative increases the potential for pathogens to occur in water and soil relative to the baseline condition and alternatives 1 and 3. This alternative proposes 21,994 acres for motorized dispersed camping. This is 3,522 fewer acres for motorized dispersed camping than alternatives 1 and 3, which means the use would be more concentrated due to less area. Within the 21,994 acres proposed, 11,237 acres of corridor would occur within 300 feet of intermittent and ephemeral streams. There are no dispersed camping corridors proposed along perennial streams. Nine springs and two seeps are within 300 feet of the proposed motorized dispersed camping areas.

Alternatives – Sediment and Streams

None of the alternatives propose removing any roads or associated stream crossings. While the length of road and proximity to channels is not going to change, the amount of motorized travel on the roads will vary by alternative and designation. Designated roads and a motorized cross-country area are expected to have an increase in the amount of motorized use. The amount of travel on unpaved roads is related to the amount of erosion and sedimentation produced by these roads (MacDonald and Stednick 2003).

Indirect effects to streams related to proposed activities are those related to sediment and changes in stream morphology from motorized access to streams. When streams are crossed by motor vehicles on roads or through motorized cross-country use, changes in morphology occur. This includes the breakdown of streambanks, widening of the stream channel, and subsequent decrease in water depth. Motorized cross-country travel results in numerous stream crossings, some of which are used repeatedly. This would also be true of the designated corridors for dispersed camping and motorized big game retrieval.

There are three measures assessing for potential effects to water quality from sediment related to the designation of roads and off-road motorized use areas. The most important factors that influence the risk of adverse effects to water quality from unpaved roads and trails are related to the length of unpaved roads adjacent to channels and the number of times roads cross the stream (Gucinski et al. 2001). Sediment yield related to motorized cross-country use is assessed using the miles of channels in those areas open or designated for this use. The timeframe is 10 years since it is expected that within 10 years use patterns would have adjusted to the designations.

A 300-foot-wide buffer is used to assess the miles of designated roads adjacent to channels. This width, as discussed in the "Affected Environment," "Water Quality" section of this report is wide enough to effectively mitigate the effect of sediment carried by overland flow from most road surfaces. Sediment carried by channelized flow is not impeded by a buffer as it does not travel across the buffer. Mitigation of channelized flow includes prevention through proper design and maintenance.

Table 47. Summary of measures of water quality related to sediment

Activity		Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Miles of roads within 300 feet of ephemeral and intermittent stream channels		647.2	431.6	636.8	453.2	391.6
Miles of roads within 300 feet of perennial stream		.02	0	.02	0	0
Number of stream crossings on intermittent and ephemeral channels		1,481	1,035	1,495	1,090	957
Number of stream crossing on perennial streams		0	0	0	0	0
Miles of intermittent and ephemeral channels where motorized cross country use is allowed	general motorized cross-country use	3,313.5	0	0	0	0
	designated dispersed camping areas	0	223.5	0	223.5	186.1
	designated OHV area	0	0	0	1.8	0
	designated big game retrieval area	0	0	0	494.9	0
Miles of perennial channels where motorized cross-country use is allowed	general motorized cross-country use	1.7	0	0	0	0
	designated dispersed camping areas	0	0	0	0	0
	designated OHV area	0	0	0	0	0
	designated big game retrieval area	0	0	0	0	0

Baseline Conditions – Sediment and Streams

Due to unrestricted motorized cross-country travel, the baseline condition would continue to increase the potential for sediment to mobilize into streams across the entire project area. Within the analysis area there are no road crossings on the 1.7 miles of perennial streams within the project area. Currently, motorized cross-country use occurs across the analysis area with the potential to mobilize sediment on 1.7 miles of perennial stream and 3,313.5 miles of intermittent

and ephemeral channels with 1,481 crossings. These intermittent and ephemeral streams carry sediment into perennial streams where connected.

Alternative 1

This alternative creates the potential for sediment to increase on 4 percent of the project by proposing dispersed camping corridors, adding unauthorized roads to the system and designating them for motor vehicle use, constructing reroutes, and opening closed roads, which increase the potential for sediment yields to increase on 28,240 acres. Sediment yields are expected to improve on the remainder of the project area due to the restriction of motorized cross-country travel. In addition, designations result in 67 percent fewer crossings (2,897) on intermittent and ephemeral streams and no crossings on perennial streams. In addition, 612.6 fewer miles of road within 300 feet of intermittent and ephemeral channels and no designations within 300 feet of perennial streams, further decreases the potential for sediment yield from the baseline condition.

Alternative 2

This alternative does not propose any additional actions and would not result in an increased potential for sediment yields above the baseline condition. It does include a very small section (.02 mile) along a perennial stream which could increase sediment. Overall, it would reduce the potential for sediment yields by prohibiting motorized cross-country travel across the project area.

Alternative 3

This alternative has the potential to increase sediment yield on the most acres (29,653) and decrease sediment yield potential on the fewest acres (668,063) as compared to the baseline condition. These areas where the potential for sediment rates to increase are due to the inclusion of motorized big game retrieval corridors and designated motorized dispersed camping corridors.

Alternative 4

This alternative has the most potential to decrease sediment inputs to streams, especially when compared to the baseline. Motorized big game retrieval is not proposed in this alternative. In addition, by designating 662.1 fewer miles of road within 300 feet of ephemeral and intermittent channels and no designations within 300 feet of perennial streams, the potential for sedimentation decreases from the baseline condition.

Cumulative Effects – Water Resources

Appendix D lists the past, present, and reasonable foreseeable future activities in the project area. The cumulative effect of interest is the watershed condition. The scale is Sixth Level (12-digit) HUC watersheds. The timeframe is 10 years, since the chosen alternative would be implemented and changes to roads such as obliteration may have occurred within this timeframe by then. Watershed condition as determined using the Watershed Condition Framework (WCF), considered the number of open roads in each watershed. The alternatives would change the number of open roads on National Forest System lands by varying amounts within each watershed. However, these changes when implemented in the 16 watersheds rated as “fair” would not affect the rating, regardless of the alternative selected. In addition, as calculated, the other watersheds would continue to be rated as “good.”

Soil Condition

As described in the "Affected Environment" section, soil resources are assessed using three components: hydrologic, nutrient cycling, and stability. Soil compaction is assessed through the hydrologic function and nutrient cycling functions. Stability of soils is assessed through the erosion hazard rating. The analysis timeframe for effects to soil resources related to the proposed activities is 10 years. This is because in 10 years, it may be possible to observe changes in the chosen indicators related to the proposed actions. Ten years is enough time for soil compaction, loss of nutrients, and erosion to occur in new areas (Ampoorter et al. 2010). Ten years is enough time for changes to become apparent. Erosion can recover within 10 years through stabilization and revegetation.

However, recovery from soil compaction and nutrient cycling is different. While, revegetation can reestablish within 10 years and reduce erosion, effects to soil compaction and nutrient cycling take longer to recover (Kolka and Smidt 2004, Froehlich et al. 1985, Webb et al., 1986). The analysis area is the project area since it is in this area where soils are affected.

Soil Compaction and Nutrient Cycling

Nutrient losses and cycling are related to the vegetative and infiltration characteristics of a soil (USDA2005). Where soils are bare and compacted, as on a road or trail surface, the process of nutrient cycling is not effective since nutrients can't accumulate. When roads can revegetate and begin to recover from soil compaction, nutrients can start to accumulate and cycle through soils again. So these two effects are linked. Therefore, the analysis for soil compaction can be used as a proxy for nutrient cycling.

There are two measures used to assess effects on soil compaction and nutrient cycling. The first measure is the total acres where activities impact soil compaction. The second measure utilizes the wheeled off-road vehicle limitation, an interpretation from the TEU data (USDA 2005). A severe rating for this interpretation means that soil productivity is at a high risk for impacts and off-road vehicle use is likely to result in site degradation. Table 48 shows the result of these calculations.

Table 48. Acres of with potential for increased soil compaction and reduced nutrient cycling

		Acres/Percent of Analysis Area				
		Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Wheeled off-road vehicle limitation	**Severe**	380,599 54.6%	8,895 1.3%	0 0%	49,172 7.1%	7,390 1.1%
	Moderate	309,019 44.3%	16,445 2.4%	0 0%	55,202 7.9%	14,425 2.1%
	Slight	7,768 1.1%	133 <.1%	0 0%	173 <.1%	133 <.1%
Total acres with potential for increased soil compaction		697,716 100%	25,473 3.7%	0 0%	104,547 15.0%	21,948

Baseline

For the baseline condition, increased soil compaction and reduced nutrient cycling could continue to increase across the entire 697,716-acre project area due to motorized cross-country use. Over half (54.6%) of the analysis area has severe limitations for motorized off-road uses, meaning that site degradation is likely in these areas and may be already occurring.

Alternative 1

This alternative would result in 25,473 acres where soil compaction would have the potential to increase as the result of new road construction to avoid private land and motorized dispersed camping corridors. Of this, 8,895 acres are on soils rated with a severe limitation for wheeled off-road vehicles.

Alternative 2

This alternative does not propose any actions other than closing the project area to motorized cross-country use, so there are no additional acres of potential for increased soil compaction related to this alternative.

Alternative 3

This alternative has the potential to increase soil compaction on about 104,547 acres due the inclusion of motorized dispersed camping, motorized big game retrieval areas, and new construction to avoid private land. About 7.1 percent of the acres with an increased risk for increased soil compaction and loss of nutrient cycling are rated with a severe limitation for wheeled off-road vehicles.

Alternative 4

Like the other alternatives, this alternative has the potential to decrease soil compaction across the project area by prohibiting cross-country motorized use. Motorized dispersed camping and new construction to avoid private land has the potential to increase soil compaction on 21,948 acres. Of these acres, 7,390 are located on soils with a severe limitation for wheeled off-road vehicles.

Soil Stability – Erosion and Soil Loss

Exposed soil surfaces—such as roads—concentrate runoff which occurs on roads and trails, resulting in higher erosion rates and soil loss (Reid and Dunne 1984). Erosion and soil loss are components of soil stability. Soil stability is decreased when erosion and soil loss are increased. Designating routes for travel affects the amount of erosion and sediment by changing the amount of use. The amount of motorized use on a road is related to the erosion and sediment yield, with the greatest amount of erosion found on the most intensely used road (MacDonald and Stednick 2003, Zhi-Hua et al. 2009, Håkansson et al. 1988). Therefore, the amount of use on a forest road has the potential to affect the soil stability in terms of erosion which can lead to soil loss, sediment yields, and sedimentation into drainage channels.

Alternatives – Soil Stability (Erosion and Soil Loss)

The proposed activities that have the potential to change soil stability are listed in table 49 for each alternative. Some of these activities would result in more erosion and soil loss while other activities have the potential to reduce erosion and soil loss, thereby increasing soil stability.

Table 49. Proposed activities by alternative with potential to change soil stability (in acres)

Activity	Soil Stability Effect	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Restrict NFS roads to administrative use	Increase	0	378.2	0	367.1	477
Acres open to unrestricted motorized cross-country travel	Decrease	697,716	0	0	0	0
Designated area open to OHV use	Decrease	0	0	0	756	0
Closed roads changed to open roads and designated for all motorized vehicles	Decrease	0	14.7	0	16.9	10.6
Unauthorized roads added to the system and designated for all motorized vehicles	Decrease	0	17	0	29.2	17.3
Construct new road for reroutes	Decrease	0	4.5	0	6.4	3.7
Acres open to dispersed camping	Decrease	697,716	25,465.7	0	25,465.7	21,944.1
Designate motorized big game retrieval corridors	Decrease	0	0	0	86,683.7	0

The measure for soil stability is acres of increased or decreased soil stability related to the activities and miles of road designated on severe erosion hazard soils. Erosion hazard is an interpretation derived from the TEU data. Severe erosion hazard indicates that rates of soil loss have a high probability of lowering site productivity before mitigating measures can be applied. These measures can be found in table 50.

Table 50. Measures for the potential for reduced or improved soil stability

		Acres/Percent of Analysis Area				
		Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Acres with potential for reduced soil stability	**Severe**	193,550 27.7%	4,096 .5%	0 0%	25,212 3.6%	3,355 .5%
	Moderate	263,022 37.7%	6,102 .9%	0 0%	31,951 4.6%	4,964 .7%
	Slight	240,814 34.5%	15,309 2.2%	0 0%	47,427 6.8%	13,659 2.0%

	Acres/Percent of Analysis Area				
	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Acres with potential for improved soil stability	0 0%	647,716 93%	697,716 100%	584,727 84%	675,717 97%

Currently, because the project area is open to motorized cross-country travel, decreased soil stability could continue to occur across the entire 697,716 acres of the project area. Within these acres, 193,550 acres (27.7 percent) of the area are located on soils with a severe erosion hazard rating.

Alternative 1

Soil stability could improve across much of the project area largely by prohibiting motorized cross-country travel and designating roads. Restricting travel on 378.2 acres of road to administrative use improves soil stability along these roads. Additional proposals of adding new roads, designating dispersed camping areas, and new construction in alternative 1 could lead to decreased soil stability on 25,507 acres. Of these acres, 4,096 acres are rated with a severe erosion hazard and 6,102 acres with a moderate rating.

Alternative 2

Prohibition of motorized cross-country travel across the project area would lead to improved soil stability. Unlike the other alternatives, this alternative does not propose added activities which would further decrease soil stability beyond the baseline condition. While the measure for acres with the potential for improved stability shows the entire project area, improvement of soil stability would not occur on designated road surfaces.

Alternative 3

While the restriction of motorized cross-country travel improves conditions for soil stability across the project area, this benefit is reduced by the designation of corridors for motorized dispersed camping, motorized big game retrieval, new construction to avoid private lands, a designated OHV area, designating closed roads, and unauthorized roads. These activities have the potential to reduce soil stability on 104,590 acres. Of these acres, 25,212 acres are located on severe erosion hazard rated soils and 31,951 acres with a moderate erosion hazard.

Alternative 4

Like alternative 2, this alternative does not proposed motorized big game retrieval or a designated OHV area. Motorized cross-country travel would be prohibited across the project area leading to overall improved soil stability. Designation of corridors for motorized dispersed camping, new construction to avoid private lands, designating closed roads, and unauthorized roads could result in 21,978 acres where soil stability could be reduced. Of these acres, 3,355 are located on soils rated with a severe erosion hazard rating and 4,964 acres with a moderate rating.

Cumulative Effects – Soil

Appendix D of this environmental assessment lists the past, present, and reasonable foreseeable future activities in the project area. The spatial extend for potential cumulative effects to soil

condition is the entire Magdalena Ranger District. The timing is the recovery period of soil condition, at least 10 years since it is within this timeframe that change could become apparent. Soil conditions have been affected by multiple activities including the miles of unauthorized roads and ground disturbance from unrestricted motorized use. All of the alternatives propose to prohibit motorized cross-country travel across the project area. Effective implementation of any of the alternatives would lead to improved soil condition in many areas across the project area by allowing soils to begin restoration by stabilizing and revegetating.

Fire and Fuels

The following analysis is based on the fire and fuels specialist report prepared by Manual Martinez, district fire management officer. This report is on file in the project record.

Effects on fuel and fire conditions will be assessed for the area based upon the referenced regulatory framework and best available science. Effects of alternatives on wildfire suppression were determined by intuitive reasoning and cause and effect relationship experience, as wildfires are unplanned events in somewhat random locations and cannot be correlated to motorized travel. Effects on fuels management would also be generalized, as all future fuels treatment projects needing motorized access would be assessed by its own NEPA analysis.

Fire Behavior

Fire behavior is a function of fuels, weather, and topography. Of all the elements influencing fire behavior, only fuels can be manipulated. Throughout much of the American Southwest, the fine fuels such as grasses, forbs, and pine litter are important fuels that allow fire to spread. In most areas, human impacts have had significant effects on the availability of these fuels.

Fuels Management

Fuels management is a process of managing forest vegetation to successfully lessen the severity and risk of a potentially uncharacteristic wildfire. Fuels management treatments are often designed to restore and maintain forest heath by providing for a diverse ecological system. The objective of fuels management is to manage and maintain landscapes in a resilient condition so they have a good chance of surviving drought, fire, insects, and disease. This is done strategically through planning and implementing a range of hazardous fuels activities.

Historical Condition

Fire has played an important role in all ecosystems in the Southwest, but the frequency of this important disturbance mechanism has been highly variable. Historically, fires burned throughout the area relatively frequently. These fires were ignited by both humans and lightning. A major shift occurred around the turn of the 20th century, when land management activities such as fire suppression, timber harvesting, and grazing programs affected vegetation and fire regimes within the area.

Ranchers and farmers feared the loss of pasture and agricultural lands, and forest fires threatened homes and timber resources. This effect has been most pronounced in forest types that would have historically been maintained with frequent, low-intensity fire.

Fire Regime

Fire regime is a description of the role fire plays in an ecosystem in the absence of modern human mechanical intervention, including the influence of aboriginal burning (Agee, 1993). Five primary fire regime groups have been developed by Hardy et al. (2001) and Schmidt et al. (2002). These are coarse scaled and simplified categories that assist in understanding the ecological fundamentals of the biotic systems, at different elevations, that occur on the landscape and its previous relationship with fire as a process which acted upon them at different frequencies and severities for thousands of years. Elevations on the Magdalena Ranger District range from 5,000 to 11,000 feet.

- **Fire Regime I:** 0–35 year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant overstory vegetation replaced)
- **Fire Regime II:** 0–35 year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced)
- **Fire Regime III:** 35–100+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced)
- **Fire Regime IV:** 35–100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced)
- **Fire Regime V:** 200+ year frequency and high (stand replacement) severity

Condition Class

A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al.. (2001) and Schmidt et al.. (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and disease mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy et al.. 2001, Schmidt et al.. 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

Table 51. Fire Regime Condition Class

Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity, and pattern; and other associated disturbances.	• Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. • Composition and structure of vegetation and fuels are similar to the natural (historical) regime. • Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) are low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity, and pattern; and other associated disturbances.	• Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). • Composition and structure of vegetation and fuel are moderately altered. • Uncharacteristic conditions range from low to moderate. • Risk of loss of key ecosystem components are moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity, and pattern; and other associated disturbances	• Fire behavior, effect, and other associated disturbances are highly departed (more or less severe). • Composition and structure of vegetation and fuel are highly altered. • Uncharacteristic conditions range from moderate to high. • Risk of loss of key ecosystem components are high.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), "high graded" forest composition and structure (e.g. large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire. Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity, and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the fire regime condition class. A simplified description of the fire regime condition classes and associated potential risks follow.

Existing Condition

Elevations on the Magdalena Ranger District range from 5,000.to 11,000 feet. Due to the late-serial closed state of existing vegetation, increased fuel loadings, and absence of fire, the majority of the project area is at risk for loss of key ecosystem component. Departure from the natural regime has occurred across the project area, and current conditions indicate the project area has a high degree of departure from the natural regime.

Vegetation groups have been mapped for the Cibola National Forest and are assimilated with fire regimes. The dry mixed conifer forest group including ponderosa pine sites and lower elevation conifer is most closely represented by Fire Regime I. Fire Regime II is tied to the hot dry shrublands and woodlands including piñon-juniper. The mid-elevation mixed conifer group is best represented by Fire Regime III. The middle to high elevation spruce-fir vegetative group is represented by Fire Regime IV. Finally, the high elevation shrub group including Gambel oak is represented by Fire Regime V.

Much of this is due to overstocked tree densities in today's forest which are far greater than they were historically. Many areas in the project area are characterized as "dog hair" thickets of young pines with a heavy fuel load of pine needles and other litter on the forest floor. Now in mixed conifer forest, however, they naturally tend to burn hotter but not as often. Climate change could also be a contributing factor in today's large fire growth.

Table 52. Large fires within the last 7 years

Fire Name	Year	Cause	Total Acres
Davenport	2004	Lightning	194
Red	2005	Lightning	19
Turkey Park	2005	Lightning	20
Davenport	2005	Lightning	40
Main	2006	Lightning	50
Wasp	2007	Lightning	40
Burma	2008	Lightning	98
Wild Bull	2008	Lightning	122
Shipman	2008	Lightning	146
Fisher	2009	Lightning	407
Wood	2010	Lightning	22
Total			**1,158**

Table 53. Fire regimes and existing condition class within the Magdalena travel management area

Fire Regime Group	Historic Fire Return Interval	Condition Class	Approx. Percentage Within Project Area
I	0 – 35 years	2–3	34%
II	0 – 35 years	3	32%
III	35 – 100+ years	3	30%
IV	35 – 100+ years	3	4%
V	>200 years	3	0%

The fire program will not be affected by any changes to the transportation system. Road access will still be utilized to provide fire resources an efficient wildfire response. The road system could also be used for containment lines on both wildfire and prescribed fire situations. Each fuels project would still require its own NEPA analysis on the transportation system.

Risk

Fire hazard is most commonly associated with the difficulty of controlling wildfire events. Characteristics of fire behavior such as intensity, rate of spread, and resistance to control are generally utilized to determine and describe the hazard. As Brown et al. (2003) indicated, "Fire severity is considered an element of fire hazard." More importantly related to this report, is fire risk. Fire risk is the chance of a fire start from an ignition source and is based on the frequency of historical fire starts.

According to data for the past 7 years, human causes account for 10 percent of the fires within the project area and lightning accounts for the remaining 90 percent. Human-caused fires have the same risk of becoming a uncharacteristic fire as lightning-caused fire. National and regional fire management policy gives fire managers opportunities to respond appropriately to all wildfires, though the district does not have many human-caused incidents. Table 54 summarizes the number of human-caused fires to lightning fires on the district. The project area borders private property, State, BLM, and reservation lands. This can also contribute to increased risk of human-caused fires. The existing fuel conditions and high values at risk that border the forest dictate fire management to make the appropriate response in determining a suppression strategy (management discretion on how to manage fires) on all of the fires started on Forest Service lands.

Table 54. Total statistical fires on the district

Year	Lightning Caused	Human Caused	Total
2004	12	4	16
2005	10	2	12
2006	35	2	37
2007	23	2	24
2008	15	0	15
2009	11	0	11
2010	5	2	7
Total	111	12	123

Environmental Consequences

The Travel Management Rule (36 CFR 212.51(a)) states that, "Motor vehicle use on National Forest System roads, NFS trails, and in areas on NFS lands shall be designated by vehicle class, and if appropriate, by time of year, by the responsible official on administrative units or ranger districts of the National Forest System." Once these roads, trails, and areas have been designated and identified on a motor vehicle use map (MVUM), motor vehicle use off of the designated system will be prohibited (36 CFR 212.50 (a)).

The following vehicles and uses are exempted from these designations: (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; and (8) motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulation (36 CFR 212.51(a)).

It is important to note that fire is boundaryless by nature. There are many elements, some of them discussed within this report, that drive fire growth and spread potential. It is, therefore, understood that cumulative effects, onsite land management practices, and offsite land management practices are all co-related and overall risk is shared.

The Magdalena fire management program will not be greatly impacted by any of the travel management alternatives. Motorized access for engines as well as crews is essential for a timely response. Wilderness guidelines for suppression activities would not be altered.

Direct and Indirect Effects

Alternative 1

With the proposal of changing the status of 400.5 miles of open national forest roads to either closed (maintenance level 1) or restricted to administrative use only (maintenance level 2), this would lower the overall risk of fire. By limiting users to specified roads and designating a 600-foot-wide corridor, 300 feet on either side of 374.4 miles of designated roads for dispersed camping, the risk of human-caused fires may decrease. Construction of 4.5 miles of road on the district does not affect the condition of the landscape. The potential for large fire growth is not reduced, except in this small affected area.

Alternative 2

Alternative 2 would not change the existing condition. There would be no changes in the frequency of wildland fire and no additional effects on fuel reduction projects to those described under the existing condition. If unmanaged motorized recreation increases above current levels, there may be an increase in human-caused fires on current routes and new user-created routes.

Alternative 3

This alternative would allow for additional motorized access of 804.3 miles of road systems and 756 acres of motorized recreational opportunities when compared to alternatives 1 and 4. Under this alternative, the risk of human-caused fires may increase slightly. With the proposed OHV use of 756 acres in the southern part of the San Mateo Mountains in sections 2 and 3, T9S, R5W, this would increase patrol times for fire crews, as the proposed area is 2.5 hours from the district office. This may result in the case of a fire start, a fire increasing in size before any resources can get on scene.

By constructing 6.4 miles of newly constructed road reroutes (on the west side of the San Mateo Mountain range), this would provide fire crews access and timely response times to limit fire growth.

Alternative 4

This alternative would have the fewest miles (693.8) of open roads among all the alternatives. This would not affect fire personnel from responding to fire calls, as roads would be administratively authorized for emergency use. However, there could be fewer human-caused fire ignitions under this alternative due to less public access. Fuels projects would not be affected and

would continue as planned. This alternative would also provide the least amount of dispersed camping (321.2 miles). This would decrease patrol times for fire crews, but would still give initial attack forces easier access and quicker response to ignitions in dispersed camping corridors.

Effects Common to All Alternatives

With the population increase anticipated to continue, it can be expected that use across the district will increase at an equal rate. Consideration of increased risk could be managed under the Cibola fire management plan, which would restrict or close these areas under extreme fire conditions. Motorized access to areas for future forest vegetation management projects would require separate NEPA analysis for each individual project.

Cumulative Effects

Effects of motorized vehicle travel to wildfire suppression can't be quantified. Fires are random events in random locations. It would be logical to say that better quality roads and more access could help crews with response times for initial attack action. This should generally result in smaller fires where there is access by motorized travel. Potential alternatives with more roads, however, offer additional areas accessible to people in vehicles and a corresponding higher risk of human-caused fires.

There are no cumulative, irretrievable, or irreversible effects to fire suppression or fuels management from any alternative.

Summary

Action alternatives would not be expected to create unsafe or significantly higher fire danger. The primary effects of the action alternatives would be utilizing system routes to provide the best experience for the user while providing for safety.

The decision process has many variables, and consideration of all elements must be weighed. Demand for use of the project areas has changed through the centuries and the greatest unknown factor involves human activities and influences. Substantial evidence does not exist to determine the end risk of the alternative to be selected.

Consistency with Regulatory Framework

The principal policy document relevant to fire management on the forest is the "Cibola National Forest Land and Resource Management Plan" (LRMP), commonly referred to as the Forest Plan. The Forest Plan provides standards and guidelines for the management of fuels. The fire management plan formally documents the fire program based upon the LRMP. These standards and objectives are addressed by implementing the fire management options as allowed in the Forest Plan. The objectives and goals expressed in this document are in accordance with the framework of the Cibola fire management plan.

Range

The following analysis is based on the range specialist report prepared by Tina Cason, range management specialist. This report is on file in the project record.

Affected Environment

The grazing history on the Magdalena Ranger District dates back to before 1906 when the Forest Reserves came under the management of the newly formed Forest Service. Historic accounts indicate that sheep, cattle, and horses traditionally grazed this area. In 1885, ranchers in eastern Arizona and western New Mexico began driving their livestock to the Magdalena Railhead along the Magdalena Stock Driveway Trail. The driveway, as the trail came to be known, provided forage for trailing herds; however, it was often overused by adjoining ranches and lingering trail herds. Unregulated grazing took place until 1934 when the Taylor Grazing Act was signed by President Roosevelt. This act intended to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to stabilize the livestock industry dependent upon the public range" (USDI 1988). In the 1940s, ranchers shifted from sheep to cattle, which remains the primary livestock being grazed on the district.

The assessment of rangeland for this project was based on best available data sources such as invasive weed monitoring and field rangeland utilization assessments. Rangeland understory vegetation was assessed using local management knowledge and existing inventory data. Motorized recreational activities along with many other public activities have introduced invasive plant species onto forest lands. There is no method to determine exactly when or how a certain species gained access and establishment on forest lands. Undesired plants or invasive weeds pose a serious and increasing threat to New Mexico's environment and economy. These invasive species are tough competitors and can spread rapidly, disrupting native systems and having negative impacts on native plant species. While these impacts are species specific, invasive species have been documented to cause the following:

- Displacement of native plants and animals
- Increased fire danger
- Increased soil erosion
- Increased flood severity
- Increased soil salinity
- Decreased water quality

Two noxious weeds are known to be on the district: tamarisk and cheatgrass. Tamarisk is found in small ephemeral drainages and around springs on the north side of the district. There is also a small amount of cheatgrass on the south side. These plants out-compete native plants for water, nutrients, light, and space. They can severely affect wildlife habitat, soil stability, and forage production if they are not controlled. Invasive/exotic plants are spread through human activities such as unrestricted motorized travel, foot traffic, and livestock.

There are 38 active grazing allotments on the Magdalena Ranger District which authorizes both seasonal and yearlong term grazing permits. Following National Environmental Policy Act (NEPA) review, the term grazing permits are issued for 10 years. Approximately 90 percent of allotments on the Magdalena Ranger District have current NEPA decisions. Term grazing permit holders are aware of the Travel Management Rule and have participated in the NEPA process by providing their input concerning a designated road system. They have identified single purpose roads and needs for cross-country travel related to their authorized grazing activities. This coordination and consultation with the term grazing permit holders has been done in accordance with the Federal Land Policy and Management Act of 1976, Section 402 (d)(e).

Term grazing permits fit in under Item 8 of exempted uses (36 CFR 212.51(a)). Motorized travel off the designated road system by term grazing permit holders is based on need related to carrying out the required management practices in compliance with the terms and conditions of the permit. Permittees would continue to use existing roads and trails, along with some off-road travel, to manage livestock and maintain range improvements such as fences, corrals, and water developments as specified in their permits.

Environmental Consequences

Baseline Conditions

Livestock grazing occurs on 38 allotments on the Magdalena Ranger District. Permittees use existing system roads and trails as well as cross-country travel to manage livestock and livestock improvements. Management of range improvements currently occurs year round. Since motorized cross-country travel is unrestricted outside of wilderness, permittees are allowed to drive where necessary to maintain their allotment without this access being specified in the term grazing permit.

Alternative 1

If the proposed action is implemented, there would be no effect on the compliance of permittees with the terms and conditions of their grazing permit, because motor vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations is exempt from the travel management designations. Adding roads to the system and changing maintenance level 1 roads to maintenance level 2 roads, in the proposed action, would have no effect on grazing and grazing permittees, due to the small number of roads and road miles that would be brought into the road system. Implementation of the proposed action would limit motorized travel to a designated system of roads, resulting in the reduced risk or threat of invasive plant species establishing or increasing in population.

Alternative 2

The existing system alternative would result in no change to the current road system. Under this alternative, there would be no effect on grazing and grazing permittees because the roads that are currently being used would continue to be in use. The permittees would receive written authorization to use nondesignated roads and provide for limited off-road use though the grazing permits annual operating instructions (AOI) for the maintenance and construction of range improvements.

Alternative 3

Implementation of this alternative would result in designating more roads for motorized use than under alternatives 1 and 4, as well as opening 86,683.7 acres for motorized big game retrieval. Reopening 16.9 miles of closed roads, adding 29.2 miles of unauthorized roads to the system and designating them for motor vehicle use, and constructing 6.4 miles of new roads to avoid private land would not affect management of grazing activities on the district. Permittees would be authorized (under permit) to access and maintain range improvement facilities throughout the district.

This alternative would potentially have a higher risk to rangeland understory vegetation due to the 86,683.7 acres that would become open to motorized big game retrieval and the 25,465.7 acres for motorized dispersed camping corridors. Adding 6.4 miles of road reroutes to access inaccessible areas of the district would also increase the risk to rangeland understory vegetation due to opening undisturbed areas to a higher risk of exposure to invasive species which could be spread by a vehicle traveling from an area contaminated by invasive species.

Alternative 4

This alternative would designate fewer roads for motorized use on the district, lowering the number of miles designated for motorized dispersed camping corridors and prohibiting motorized cross country big game retrieval. This alternative would not affect management of grazing on the district, however, it will increase the miles of roads used through permit administration of AOIs. This alternative could have the lowest risk to rangeland understory vegetation from invasive plants and lowering the miles of motorized dispersed camping corridors on the district.

Cumulative Effects

Within the foreseeable future (10 years), term grazing permittees will continue to manage livestock and range improvements through the terms of their grazing permits on the Magdalena Ranger District. This is not likely to change as a result of any foreseeable future projects. There are no effects on range management associated with any of the alternatives; therefore, implementation of the Travel Management Rule would not contribute to cumulative effects upon range management. A reduction in the miles of roads available to motorized use under all alternatives would provide for a reduction to the spread of invasion plant species.

Climate Change

The USDA Forest Service Southwestern Regional Office planning program has summarized some ecological and socioeconomic effects of climate change (Periman 2008). The following is an excerpt of that information.

The state of knowledge needed to address climate change at the forest scale is still evolving. Most global climate models are not yet suitable to apply to land management at the forest scale. This limits regional analysis of potential effects especially for a specific project. At a more local scale, paleo-environmental studies of changing southwestern climate may provide limited historical ecological context for ecosystem variability and climate change. These can provide limited knowledge about past climate changes, patterns of precipitation, drought severity, and changes in vegetation patterns.

Climate modelers generally agree that the Southwestern United States is experiencing a drying trend that will continue into the later part of the 21st century. In the recent past, two droughts occurred: one in the 1930s (the Dustbowl) and one in the 1950s (the Southwestern Drought). Climate model scenarios suggest that the warming trend observed in the last 100 years may continue into the next century with the greatest warming occurring during the winter. Some climate models predict 2 to 3 degree temperature changes in the next 20 years. Such a temperature change could result in limited water supplies, alter fire regimes, and influence the distribution and abundance of animal and plant species.

Some potential ecological implications of climate change trends include:

- More extreme disturbance events such as wildfires, intense rain and wind events;
- Greater vulnerability to the spread of invasive plant species;
- Long-term shifts in vegetation patterns, such as cold tolerant vegetation moving upslope or disappearing in some areas; and
- Changes in wildlife population, diversity, viability, and migration patterns.

Some potential socioeconomic effects of climate change trends include:

- Water shortages and
- Impacts on amenities, and goods and service derived from forest products.

Environmental Consequences

The baseline conditions related to motorized use include the following: there are 697,716 acres that are currently open to motorized cross-country travel on the Magdalena Ranger District, which represents 88 percent of the Magdalena Ranger District (791,707 acres). As a result of unrestricted motorized cross-country travel, there has been a proliferation of unauthorized roads. Motorized dispersed camping is currently unrestricted in the areas open to motorized cross-country travel.

There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District open to general motorized use.

Climate change from this project would be difficult to measure, but the trend from this activity would likely not affect climate change, although it would reduce the amount of greenhouse gases produced on the district. Climate change could impact the project area in the form of lengthening the current drought trend. Damage to resources from motorized cross-country travel would be exacerbated by climate change, especially drought, if lower precipitation prevented or reduced reestablishment of vegetation. Repeated vehicle traffic along unauthorized routes would result in the loss of plant cover and the potential for soil erosion. Cross-country travel could increase areas of bare ground that are vulnerable to soil movement. Bare soil is also more vulnerable to the spread of invasive vegetation.

Effects Common to All Action Alternatives

All action alternatives would reduce the miles of roads available for motorized vehicles and likely reduce the introduction and spread of invasive/exotic plants. Climate change could lead to changes in vegetation composition and structure. The elimination of cross-country travel in all the alternatives would decrease the potential for motorized use to contribute to climate change related vegetation composition and structure changes when compared to the baseline conditions.

Alternative 1

Compared to the baseline, alternative 1 reduces the number of miles of system roads designated for motor vehicle use. This alternative prohibits all cross-country motorized travel; the designation includes the limited use of motor vehicles within 300 feet either side of 374.4 miles of certain specified roads for the purpose of motorized dispersed camping. The alternative would

reduce the limited climate effect of the baseline by designating fewer miles of road and establishing dispersed camping corridors where vegetation may be impacted. Although climate change could impact the project area in the form of lengthening the current drought trend, restricting cross-country travel would allow areas to revegetate.

Alternative 2

Compared to the baseline, alternative 2 increases the number of miles of system roads designated for motor vehicle use. This increase is due to the inclusion of road segments on private inholdings for which the Forest Service does not have a right-of-way. This alternative would restrict cross-country travel, allowing for areas that may have lost vegetation from motorized cross-country use to recover.

Alternative 3

Compared to the baseline, alternative 3 reduces the number of miles of system roads designated for motor vehicle use. This alternative prohibits all cross-country motorized travel, allows for 374.4 miles of motorized dispersed camping corridors, big game retrieval along 342.5 miles of road, and establishes a 756-acre area designated for motor vehicle use. The alternative would reduce the limited climate effect of the baseline by designating fewer miles of road and establishing dispersed camping corridors where vegetation may be impacted.

Although climate change could impact the project area in the form of lengthening the current drought trend, prohibiting cross-country travel and designating a motor vehicle use area would allow areas to re-vegetate. Big game retrieval would have a minimal effect on climate change.

Alternative 4

Compared to the baseline, Alternative 4 reduces the number of miles of system road designated of motor vehicle use. This alternative would prohibit all cross-country travel, allowing for areas that may have lost vegetation from cross-country use to recover.

Cumulative Effects

Motorized vehicle use will continue on the Magdalena Ranger District. This is not changed as a result of any foreseeable future projects. There are no effects on climate change associated with any of the alternatives; therefore, implementation of the Travel Management Rule would not contribute to cumulative effects upon climate change.

Inventoried Roadless Areas

Table 55 summarizes the acreages for each of the eight inventoried roadless areas (IRAs) located on the Magdalena Ranger District, which total 205,972 acres. Figure 4 shows a map of the inventoried roadless areas. Table 56 provides the number of system roads or road segments within each of the eight inventoried roadless areas. The eight IRAs are:

- Bear Gallinas Mountains
    - Goat Spring IRA
    - Scott Mesa IRA

- Datil Mountains
  - Datil IRA
  - Madre Mountains IRA
- Magdalena Mountains
  - Ryan Hill IRA
- San Mateo Mountains
  - Apache Kid Contiguous IRA
  - San Jose IRA
  - White Cap IRA

Table 55. Magdalena inventoried roadless areas

Inventoried Roadless Area	Acres
Goat Spring	5,757
Scott Mesa	39,534
Datil	13,974
Madre Mountain	19,855
Ryan Hill	34,286
Apache Kid Contiguous	67,570
San Jose	16,957
White Cap	8,039
Total	**205,972**

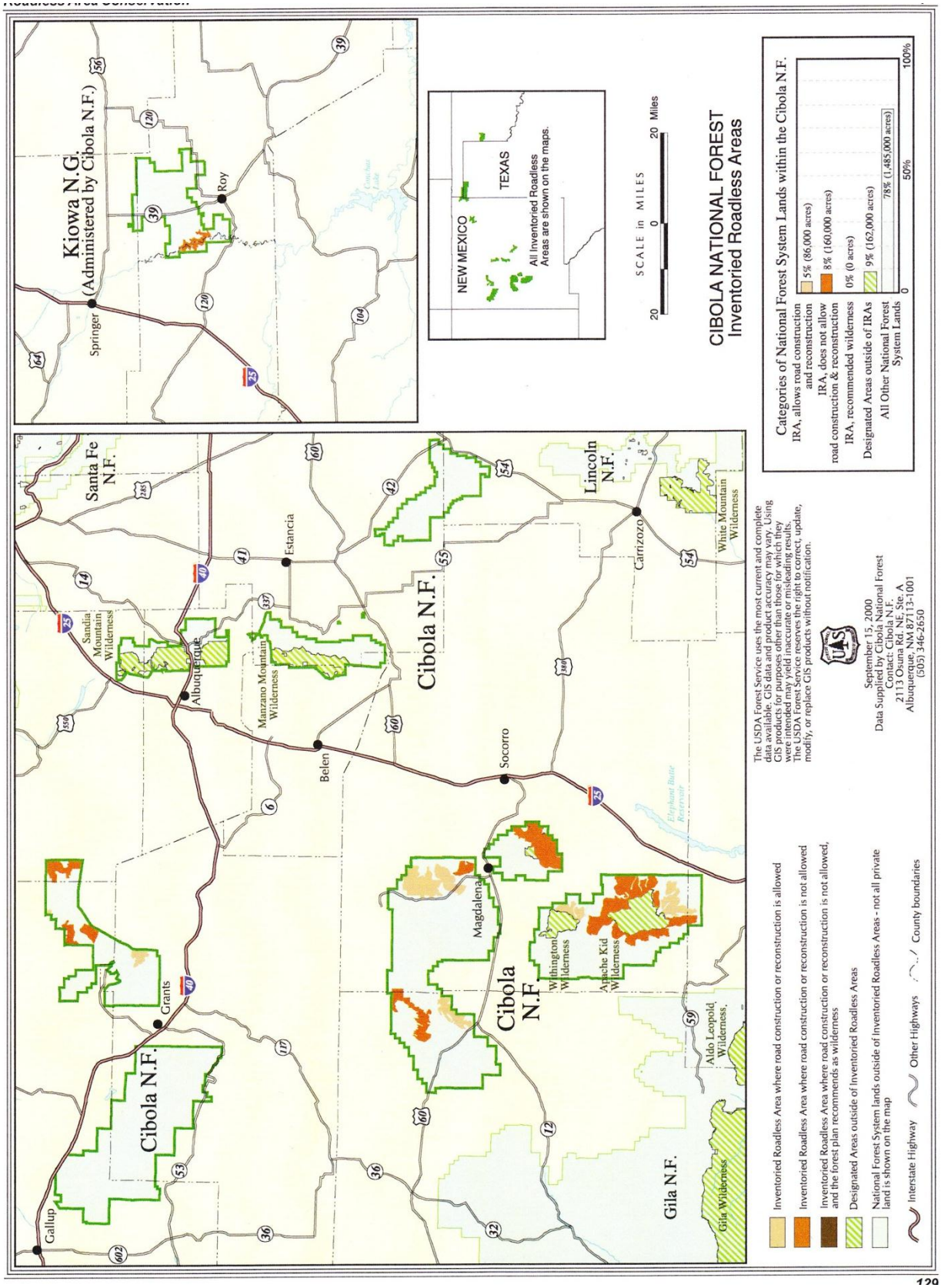

Figure 4. Inventoried roadless areas

Table 56. Number of system roads or segments located within each IRA

Goat Springs IRA				
FS Road Numbers				
354	354BB	354E1	506AA	506E
354AA	354C	354EE	506AC	506G
354B	354D	506A*D	506B	
Scott Mesa IRA				
FS Road Numbers				
123B	123GB	24CA*B	354WC	506L
123BB	123Q	24CB	467	CR12A*
123F	123QA	24CE	467D	CR12B*
123FAB	24A	354P	506	CR12C*
123FB	24BJ	354PA	506I	NM169*
123GA	24C	354WB	506K	
*These are county or state roads that vacated their rights-of-way, but the numbers never changed to a Forest Service road number. They are still within the IRA.				
Datil IRA				
FS Road Numbers				
14*A	505BJ	526	532	534B
Madre Mountain IRA				
FS Road Numbers				
100Z	409	419*A	434	511*D
1508	412	420	437	512*D
364	416	422AA	440	515A
365	417	424	459B	6
400AA	418A	433	461	
Ryan Hill IRA				
FS Road Numbers				
214	227AA	230	247	37
215	227B	231*B	247A	37–38
217	228	232X	248	38
218	229	234B	249	472B
227				

Apache Kid Contiguous IRA				
FS Road Numbers				
1010	331A	907	965	977
1011	332	912	965A	978
1012	332A	912A	966	980
1013	337	913	966A	981
1014	377X	917	967	982
1040	378A	918	967A	984
1041	478B	955A	967B	986A
1042	511	958	968	986B
1043	76	959A	969	986C
1108	86	959B	970	991
138A	871	96	971	993
140	873	962	971A	994
140B	874	962A	972	995
225	896A	963	974	996
225Z	905	964	975	997
330	906	964A	976	
San Jose IRA				
FS Road Numbers				
919	921	923	926	944A
920	921A	924	932	945A
920A	922	925	935A	953
920A1	922A	925A	942	955
White Cap IRA				
FS Road Numbers				
1045	1050	1055	56	873.1
1047	1054	1072	57A	
Number of road segments within inventoried roadless areas = 218				

Affected Environment

Under the Roadless Area Conservation Final Rule, management actions that do not require the construction of new roads will still be allowed, including activities such as timber harvesting for clearly defined, limited purposes, development of valid claims of locatable minerals, grazing of livestock, and off-highway vehicle use where specifically permitted (page 3,250 of Volume 66, No. 9 of the Federal Register (36 CFR Part 29)).

The Roadless Area Conservation Act, Final Rule, identifies nine characteristics that are used in defining an inventoried roadless area (36 CFR 294, 11; p 3272). Roadless area characteristics, resources, or features that are often present in and characterize inventoried roadless areas include:

1. High quality or undisturbed soil, water, and air;
2. Sources of public drinking water;
3. Diversity of plant and animal communities;
4. Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;
5. Primitive, semiprimitive nonmotorized and semiprimitive motorized classes of dispersed recreation;
6. Reference landscapes;
7. Natural appearing landscapes with high scenic quality;
8. Traditional cultural properties and sacred sites; and
9. Other locally identified unique characteristics.

The effects on the nine characteristics are not specifically analyzed in this section. They have been analyzed within the different resource areas identified in this chapter.

Action Common to All Alternatives

All open system road segments located within the boundaries of the eight inventoried roadless areas would be managed per the requirements and guidance provide in the Roadless Area Conservation Final Rule (Volume 66, No. 9 of the Federal Register (36 CFR Part 294)).

Environmental Consequences

Baseline

There are 697,716 acres currently open to motorized cross-country travel on the Magdalena Ranger District, which represents 88 percent of the Magdalena Ranger District (791,707 acres). Since cross-country travel has been permitted, there has been a proliferation of unauthorized roads. Motorized dispersed camping is unrestricted in the areas open to motorized cross-country travel. There are 1,171.4 miles of National Forest System roads on the Magdalena Ranger District open to general motorized use.

There are 218 road segments of open system roads located within the boundaries of the Magdalena Ranger District's eight inventoried roadless areas. There are no effects to the roadless characteristics under the baseline.

Alternative 1

Compared to the baseline, alternative 1 has fewer miles of system roads within the IRAs. Under this alternative, 146 road segments would be designated for motorized use within the IRAs. The reduction in the numbers of roads within the IRAs would have a beneficial effect. Under this alternative, the following roads would not be designated for motor vehicle use:

- Goats Springs IRA: FR 354D
- Scott Mesa IRA: FR 123BB, FR 123GA, FR 123GB, FR 24A, FR 506I,CR 12A, CR 12B, and CR 12C.
- Datil IRA: FR 497, FR 532, and FR 537A.
- Madre Mountain IRA: None.
- Ryan Hill IRA: FR 217, FR 247, and FR 38.
- Apache Kid Contiguous IRA: FR 1010, FR 1011, FR 1012, FR 1013, FR 1014, FR 1040, FR 1041, FR 1042, FR 1043, FR 1108, FR 138A, FR 140B, FR 225Z, FR 873, FR 874, FR 896A, FR 905, FR 906, FR 912, FR 912A, FR 955A, FR 958, FR 963, FR 964A, FR 965A, FR 966A, FR 968, FR 970, FR 971, FR 971A, FR 972, FR 975, FR 976, FR 977, FR 978, FR 980, FR 981, FR 982, FR 986A, FR 993, FR 994, FR 996, and FR 997.
- San Jose IRA: FR 919, FR 920A, FR 921, FR 921A, FR 923, FR 924, FR 925A, FR 926, FR 935A, FR 953, and FR 955.
- White Cap IRA: FR 1045, FR 1054, and FR 873.1.

Alternative 2

Under this alternative, there would be no change in the number of road segments and miles of roads that would be designated for motorized use within the IRAs. Motorized cross-country travel would be prohibited across the entire district.

Alternative 3

Compared to the baseline, alternative 3 has fewer miles of system roads within the IRAs. Under this alternative, 147 road segments would be designated for motorized use within the IRAs. The reduction in the numbers of roads within the IRAs would have a beneficial effect. Under this alternative, the following roads would not be designated for motor vehicle use:

- Goat Springs IRA: FR 354D.
- Scott Mesa IRA: FR 123BB, FR 123GA, FR 123GB, FR 24A, FR 506I, CR 12A, CR 12B, and CR 12C.
- Datil IRA: FR 497, FR 532, and FR 537A.
- Madre Mountain IRA: None.
- Ryan Hill IRA: FR 217, FR 247, and FR 38A
- Apache Kid Contiguous IRA: FR 1010, FR 1011, FR 1012, FR 1013, FR 1014, FR 1040, FR 1041, FR 1042, FR 1043, FR 1108, FR 138A, FR 140B, FR 225Z, FR 873, FR 874, FR 896A, FR905, FR906, FR912, FR912A, FR955A, FR958, FR963, FR964A, FR965A, FR 966A, FR968, FR970, FR971, FR971A, FR972, FR975, FR976, FR977, FR978, FR 980, FR 981, FR 982, FR 986A, FR 993, FR 994, FR 996, and FR 997.
- San Jose IRA: FR 919, FR 920A, FR 921, FR 921A, FR 923, FR 924, FR 925A, FR 926, FR 935A, FR 953, and FR 955.
- White Cap IRA: FR 1045, FR 1054, and FR 873.1.

Alternative 4

Compared to the baseline, alternative 4 has fewer miles of system roads within the IRAs. Under this alternative, 135 road segments would be designated for motorized use within the IRAs. The reduction in the numbers of roads within the IRAs would have a beneficial effect. Under this alternative the following roads would not be designated for motor vehicle use:

- Goat Springs IRA: FR 354D.
- Scott Mesa IRA: FR 123B, FR 123BB, FR 123F, FR 123GB, FR 24A, FR 506I, FR 506K, CR 12A, CR 12B, and CR 12C.
- Datil IRA: FR 497, FR 532, and FR 537A.
- Madre Mountain IRA: None.
- Ryan Hill IRA: FR 214, FR 217, FR 227, FR 247, and FR 38.
- Apache Kid Contiguous IRA: FR 1010, FR 1011, FR 1012, FR 1013, FR 1014, FR 1040, FR 1041, FR 1042, FR 1043, FR 1108, FR 138A, FR 140B, FR 225Z, FR 377X, FR 873, FR 874, FR 896A, FR 905, FR 906, FR 912, FR 912A, FR 955A, FR 958, FR 963, FR 964A, FR 965A, FR 966A, FR 967, FR 967A, FR 967B FR 968, FR 970, FR 971, FR 971A, FR 972, FR 975, FR 976, FR 977, FR 978, FR 980, FR 981, FR 982, FR 986A, FR 993, FR 994, FR 996, and FR 997.
- San Jose IRA: FR 919, FR 920, FR 920A, FR 921, FR 921A, FR 923, FR 924, FR 925A, FR 926, FR 935A, FR 953, and FR 955.
- White Cap IRA: FR 1045, FR 1054, FR 56, and FR 872.1.

Cumulative Effects

Motorized vehicle use will continue on the Magdalena Ranger District. This is not likely to change as a result of any foreseeable future projects. There are no effects on inventoried roadless areas associated with any of the alternatives; therefore, implementation of the Travel Management Rule would not contribute to cumulative effects upon inventoried roadless areas. The reduction in the numbers of roads within the IRAs would have a beneficial effect.

Forest Plan Amendment Analysis

Implementation of the Travel Management Rule (36 CFR Parts 212, 251, 261, and 295) is not a discretionary decision—it is mandated by the Travel Management Rule itself. Since 1985, the "Cibola National Forest Land and Resource Management Plan" allowed motorized cross-country travel and did not incorporate a motor vehicle use map (MVUM) as the enforcement tool for motorized travel designation. The Forest Plan must be amended to implement the Travel Management Rule. Because this management proposal would be within the current Forest Plan direction, there would be insignificant changes in the outputs of goods and services from the Cibola National Forest during the remainder of the life of the current Forest Plan. This travel management direction would remain in effect until the forest plan revision process examines motorized travel management in the context of the potential changes to forestwide goals, objectives, and management direction.

Chapter 4. Consultation and Coordination

The Forest Service consulted and/or coordinated with the following individuals, Federal, State and local agencies, tribes, and non-Forest Service persons during development of this environmental assessment.

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Consultation and Coordination

Public involvement and collaboration processes are described Chapter 1 of this document. Lists of comments received during the public involvement process, including scoping, are available in the project record.

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

Bureau of Land Management – Socorro Office
New Mexico State Historic Preservation Office
New Mexico Department of Game and Fish
Catron County Commission
Sierra County Commission
Socorro County Commission
Acoma Pueblo
Zuni Pueblo
Ysleta del Sur Pueblo
Mescalero Apache Tribe
Ft. Sill Chiricahua-Warm Springs Apache Tribe
Navajo Nation
Alamo Chapter of the Navajo Nation

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http://www.blm.gov/nm/st/en/prog/recreation/socorro/quebradas_backcountry_byway.html;

http://www.blm.gov/nm/st/en/prog/recreation/socorro/gordys_hill.html;

http://www.blm.gov/nm/st/en/prog/recreation/roswell/haystack_mountain.html;

http://www.blm.gov/nm/st/en/prog/recreation/roswell/mescalero_sands.html

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Glossary

A

Air Quality: The composition of air with respect to quantities of pollution therein. Used most frequently in connection with the standards of maximum acceptable pollution concentrations. Air quality classes (I, II, or III) are designations for the level of protection given to geographic areas of the country. This classification denotes the increment above which deterioration of air quality would be regarded as significant and consequently not allowed.

- **Class I** allows the least deterioration. National parks, monuments, and wilderness areas larger than 5,000 acres in size are designated as Class I areas.
- **Class II** is much less restrictive than Class I.
- **Class III** is the least restrictive.

Allotment: A designated area available for livestock grazing upon which a specified number, kind of livestock, and season of use may be grazed under a term grazing permit. The basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

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

Aquatic ecosystem: The stream channel or lakebed, water, or biotic communities, and the habitat features that occur there.

Aquifer: A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Area: A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district.

B

Best management practice (BMP): The method, measure, or practice selected by an agency to meet its nonpoint-source pollution control needs. BMPs include, but are not limited to, structural controls, operations, and maintenance procedures. BMPs can be applied before, during, or after pollution producing activities to reduce or eliminate the introduction of pollutants into the water.

Big game: Those species of large mammals normally managed as a sport hunting resource.

C

Caliche: A sedimentary rock, a hardened deposit of calcium carbonate. This calcium carbonate cements together other materials, including gravel, sand, clay, and silt. It is found in aridisol and mollisol soil orders. Caliche occurs worldwide, generally in arid or semiarid regions.

Channel: A passage, either naturally or artificially created, that periodically or continuously contains moving water, or that forms a connecting link between two bodies of water. River, creek,

stream, run, branch, and tributary are some of the terms used to describe natural channels. Natural channels may be single or braided. Canal and floodway are some of the terms used to describe artificial channels.

Climate change: Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically 30 years or longer). Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines "climate change" as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." The UNFCCC, thus, makes a distinction between "climate change" attributable to human activities altering the atmospheric composition, and "climate variability" attributable to natural causes. See also "Climate variability."

Condition survey: A tool used to document the condition of a given road. The roads are measured against maintenance objectives and standards for health and safety.

Constructed feature: Anything constructed by the Forest Service or by a permittee for use in administering the national forest or grasslands. When used in the context of scenery, the term refers to anything that is built on the landscape.

Corridor – A set distance from a route where motorized vehicles are authorized to be used 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)).

D

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 (MVUM).

Developed recreation: Recreation that occurs at manmade developments such as campgrounds, picnic grounds, or trailheads. Facilities might include roads, parking lots, picnic tables, toilets, and buildings. Campgrounds and picnic areas are examples of developed recreation sites.

Developed recreation site: A distinctly defined area where facilities are provided for concentrated public use, e.g. campgrounds or picnic areas.

Dispersed camping: Camping outside of a developed camping facility.

Dispersed recreation: That type of outdoor recreation that tends to be spread out over the land and in conjunction with roads, trails, and undeveloped waterways. Activities are often day-use oriented and include hunting, fishing, hiking, off-road vehicle use, and motor biking.

E

Easement: The right-of-use over the property of another. The land having the right-of-use is known as the dominant estate and the land that is subject to the easement is known as the servient estate.

Ecosystem: The system formed by the interaction of a group of organisms and their environment.

Eligible scenic river: A river that meets the eligibility criteria for a scenic river but has not been evaluated for its suitability. Such rivers are managed to maintain the outstandingly remarkable values for which they were determined to be eligible until a suitability evaluation is completed.

Ephemeral streams: Streams that only flow in direct response to precipitation or snowmelt.

Erosion: The wearing away of the land's surface by running water, wind, ice, or other geological agents. It includes detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

F

Facility: Structures needed to support the management, protection, and use of the national forests, including roads, trails, buildings, utility systems, dams, and other construction features. There are three types of facilities: recreation, administrative, and permittee.

Forage: browse and herbage which is available and can provide food for animals or be harvested for feeding.

Forb: Any herbaceous broad-leaved plant species.

Foreground: Detailed landscape generally found from the observer to a half mile away.

Forest (wood) products: Any resource derived from trees except lumber. This includes seeds, nuts, firewood, biomass, and other related products.

Forest Service Handbook (FSH): The principal source of specialized guidance and instruction for carrying out the direction issued in the FSM. Specialists and technicians are the primary audience of handbook direction. Handbooks may also incorporate external directives with related USDA and Forest Service directive supplements.

Forest Service Manual (FSM): A general guide containing legal authorities, objectives, policies, responsibilities, instructions, and guidance needed on a continuing basis by Forest Service line officers and primary staff in more than one unit to plan and execute assigned programs and activities.

Fragmentation: Habitat fragmentation is a process that occurs wherever a large, contiguous habitat is transformed into smaller patches that are isolated from each other by a landscape matrix unlike the original. This matrix can differ from the original habitat in either composition or structure. The crucial point is that it functions as either a partial or total barrier to dispersal for species associated with the original habitat. A clear threat to population viability exists when the process of fragmentation occurs that isolates pairs and populations versus fragmentation within the home range of the individual pairs.

G

Geographical information system (GIS): Computerized method used for inventory and analysis, which can overlay large volumes of spatial data to identify how features interrelate.

Geomorphology: The classification, description, nature, origin, and development of present landforms and their relationships to underlying structures; and of the history of geologic changes as recorded by these surface features.

Grazing: Consumption of range or pasture herbaceous forage by animals.

Grazing permit: Any document authorizing livestock to use NFS or other lands under Forest Service control for the purpose of livestock production. CFR 222.1(a) (5)

Grazing permittee: An individual who has been granted written permission to graze livestock for a specific period on a range allotment; the recipient of a grazing permit.

Great Plains: The large grassland in the rain shadow of the Rocky Mountains, about 2,500 miles from north to south and 600 miles wide from east to west. In the United States it covers the eastern portions of Montana, Wyoming, Colorado, and New Mexico; the western portions of North Dakota; South Dakota, Nebraska, Kansas, and Oklahoma; and the panhandle of Texas. It extends north into the Canadian provinces of Alberta, Saskatchewan, and Manitoba.

Guidelines: Specifications that (1) contribute to maintaining or achieving desired conditions and objectives and (2) would be adopted by a project or activity unless there is a compelling and defensible reason to vary from the guidelines. Such variances are only allowed without plan amendment if the alternative approach provided by the variance meets the intent of the plan guideline. If such a variance is considered appropriate, the responsible official records in the project-level document the reasons for that variance and no plan amendment is required. A project or activity should be consistent with guidelines.

H

Habitat: The natural conditions and environment in which a plant or animal lives, e.g. forest, desert, or wetlands.

Heritage resources: Buildings, sites, areas, architecture, memorials, and objects having scientific, prehistoric, historic, or social values.

High-clearance vehicle: A vehicle greater than 60 inches in width designed or modified for use “off road” with appropriate clearance, tires, suspension, and undercarriage protection.

Homestead: Land claimed by a settler, particularly under the Homestead Act of 1862.

Hydrologic unit code (HUC): The United States is divided and subdivided into successively smaller hydrologic units which are classified into four levels: regions, subregions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

- The **first level** of classification divides the nation into 21 major geographic areas or regions.
- The **second level** of classification divides the 21 regions into 222 subregions. A subregion includes the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area.
- The **third level** subdivides many of the subregions into accounting units. These 352 hydrologic accounting units nest within or are equivalent to the subregions.
- The **fourth level** of classification is the cataloging unit, the smallest element in the hierarchy of hydrologic units. A cataloging unit is a geographic area representing part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. These units subdivide the subregions and accounting units into smaller areas. There are 2,150 cataloging units (sometimes called watersheds) in the Nation.
- The **fifth level** HUC is watersheds between 40,000 and 250,000 acres in size.
- The **sixth level** HUC is watersheds between 10,000 and 40,000 acres in size.

Hydrology: The study of the behavior of water in the atmosphere, on the Earth's surface, and underground.

Important bird area (IBA): Sites that provide essential habitat for one or more species of birds. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected. The criteria for and selection of IBAs is administered by the Audubon Society.

Inclusion: A variance in vegetation within a vegetation type due to landform, moisture regime, soil type, erosion, or past disturbance.

Income: When "income" is used in this document, it is equivalent to the Bureau of Economic Analysis' definition of personal income which states, "Personal income is the income received by persons from participation in production, plus transfer receipts from government and business, plus government interest (which is treated like a transfer receipt). It is defined as the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance."

Indicator species: A species whose presence, absence, or relative well-being in a given environment is indicative of the health of its ecosystem as a whole.

Infiltration: Infiltration is the process of water entering the soil. The rate of infiltration is the maximum velocity at which water enters the soil surface.

Infrastructure: The facilities, utilities, and transportation system needed to meet public and administrative needs.

Intermittent stream: gets water from the ground seasonally and usually dries up in the summer.

Invasive species: A species, including its seed, spores, or other biological material, whose introduction does cause or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112).

Inventoried roadless area: On January 12, 2001, the Forest Service issued the Roadless Area Conservation Rule (RACR) (36 CFR 294, Subpart B) identifying inventoried roadless areas. The September 15, 2000, map for the Cibola National Forest displays the Canadian River IRA in New Mexico.

J

Job growth: The number of jobs gained by an area over a period of time. Jobs are counted in the same way the Bureau of Economic Analysis counts employment: "a count of jobs, full-time plus part-time, by place of work. Full-time and part-time jobs are given equal weight. Employees, sole proprietors, and general partners are included, but unpaid family workers and volunteers are not."

L

Leasing (oil and gas): A contract right granted by the United States allowing a lessee the right of holding a record title and operating right to the leased oil and/or gas in exchange for rent and royalty payments. Oil and gas leases will expire in 10 years if they are not put into production; otherwise, leases do not expire as long as they are "held by production."

M

Management indicator species: Plant or animal species or habitat components selected during the alternatives analyses stage of an environmental impact statement that are used to monitor the effects of planned management activities on populations of wildlife and fish, including those that are socially or economically important.

Middle ground: The zone between the foreground and background in a landscape. The area located from one-half mile to 4 miles from the observer.

Monitoring: Collecting information to track system conditions and their response to management.

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

Motor vehicle use map (MVUM): A map displaying designated roads, trails, and areas for motor vehicle use on an administrative unit or a ranger district of the NFS.

N

National Environmental Policy Act (NEPA): An act declaring a national policy to encourage productive and enjoyable harmony between man and his environment, to promote efforts which

will prevent or eliminate damage to the environment and the biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National forest land and resource management plan: A plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all resource management activities and establishes management standards and guidelines for the NFS lands of a given national forest or national grassland.

National Forest System (NFS) land: Federal lands that have been designated by Executive Order or statute as national forest, national grasslands, or purchase units, or other lands under the administration of the Forest Service.

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 by a legally documented right-of-way held by a state, county, or other public road authority.

National historic trail: National historic trails were authorized under the National Trails System Act of 1968 (Public Law 90-543), along with national scenic trails and national recreation trails. National scenic trails and national historic trails may only be designated by an act of Congress.

National Register of Historic Places: A list of heritage resources that have local, state, or national significance maintained by the Secretary of the Interior.

National Wild and Scenic River System: Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values; designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

Nesting platform: An artificial nest structure employed as a habitat improvement practice when quality nest sites are a limiting factor to raptor density.

Noxious weed: A legal term applied to plants regulated by Federal and state laws, such as plants designated as noxious weeds by the Secretary of Agriculture or by the responsible state official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insect or disease, and being not native or new or not common to the United States or parts thereof. (Forest Service Manual 2080.5, Federal Noxious Weed Act of 1974, PL 93-629, as amended.)

O

Off-highway vehicle: Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. (36 CFR 212.1)

Off-road motorized vehicle: Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain. This includes all mechanical means of transportation: passenger cars, 4-wheel drive pickups or sport utility vehicles, trail bikes,

snowmobiles, or other ground transportation vehicles that are capable of traveling over land where no roads exist.

Outstandingly remarkable values: Scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values which make a river eligible for designation as a wild or scenic river.

Overland flow: A condition in which precipitation rate is faster than infiltration rate, and excess water runs over the surface of the land.

P

Pasture: A grazing area enclosed and separated from other areas by fencing or other barriers.

Per capita income: This measure of income is calculated as the total personal income of the residents of an area divided by the population of the area. Per capita personal income is often used as an indicator of consumers' purchasing power and of the economic well-being of the residents of an area.

Perennial stream: Stream that flows all the time because it gets water from storage in the ground. However, these streams may dry up during extreme droughts.

Playa lakes: Bowl-shaped depressions that are dependent on rainfall and surface runoff for the water they impound. They are closed basins and usually do not overflow. They are mostly intermittent, with lake evaporation occurring at about 60 inches per year.

Prescribed burn: Fire burning under conditions specified in an approved plan to dispose of fuels, control unwanted vegetation, stimulate growth of desired vegetation, change successional stages, etc., to meet range, wildlife, recreation, wilderness, watershed, or timber management objectives. Prescribed burns occur under specified environmental conditions that allow the fire to safely be confined to a predetermined area and produce the fireline intensity and rate of spread required to meet management objectives.

R

Recreation Opportunity Spectrum (ROS): A framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences have been arranged along a continuum or spectrum divided into six classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

Right-of-way: A linear strip of land defined for a present or future location of transportation or utility right-of-way within its boundaries.

Riparian: An area of vegetation adjacent to an aquatic ecosystem distinguished by a high water table, certain soil characteristics, and some vegetation that requires free water or moist soil conditions.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1, FSM 7705).

Road Maintenance Level Definitions

- **Maintenance Level 1**. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are generally closed to vehicular traffic but may be available and suitable for use as motorized trails or for nonmotorized uses.
- **Maintenance Level 2**. Assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level.
- **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. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material.
- **Maintenance Level 4**. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.
- **Maintenance Level 5**. Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated.

Roaded natural ROS: Characterized by a predominantly natural appearing environment with moderate evidence of human activity. Resource modification and utilization practices are evident but harmonize with the natural environment. May have a mosaic of highly modified areas to pockets of unmodified lands. Developed sites provide for some user comfort as well as site protection, but harmonize with the natural environment.

Roost: A support such as tree limbs, thick tree bark, or brush piles which birds or bats use to rest upon or use for cover.

Route: A road or a trail. (FSM 7705, 2350.05)

S

Scenery: General appearance of a place, landscape, and/or its visible features (definition per SMS Handbook glossary, slightly revised and shortened for clarity).

Scenery management system (SMS): A process for the inventory and analysis of the aesthetic values of national forest lands providing for integration of these values with other biological, physical, and social/cultural resources in the planning process.

Scenic integrity (high, medium, and low): A measure of the degree to which a landscape is visually perceived to be "complete," and is determined by three factors: dominance, degree of deviation, and intactness of the desired landscape character established based on the existing condition. Scenic integrity disturbances most typically result from human activities, but can also result from natural events which exceed the landscape's historic range of variability in terms of magnitude, duration, or intensity. An exception to this is direct human alterations that have become accepted over time as positive landscape character attributes (e.g., historic cabins, farms, and ranches).

- **High integrity**: The valued scenery "appears natural or unaltered," yet visual disturbances are present; however, they remain unnoticed because they repeat the form, line, color, texture, pattern, and scale of the valued scenery. When used as a standard or guideline, this level should be achieved as soon after project completion as possible, or within 3 years maximum.
- **Moderate integrity**: The valued scenery "appears slightly altered." Noticeable disturbances are minor and visually subordinate to the valued scenery because they repeat its form, line, color, texture, pattern, and scale. When used as a standard or guideline, this level should be achieved as soon after project completion as possible, or within 3 years maximum.
- **Low integrity**: The valued scenery "appears moderately altered." Visual disturbances are codominant with the valued scenery and may create a focal point of moderate contrast. Disturbances may reflect, introduce, or "borrow" valued scenery attributes from outside the landscape being viewed (such as the size, shape, edge effect, and pattern of natural openings; vegetative type changes or socially valued architectural styles). Scenery attributes borrowed from outside the viewed landscape appear compatible with or complementary to those within. When used as a standard or guideline, this level should be achieved as soon after project completion as possible, or within 3 years maximum.

Scenic quality: Degree to which the appearance of a place, landscape, or feature can elicit psychological and physiological benefits to individuals and, therefore, to society in general (definition per SMS Handbook glossary, revised). Scenic quality is described and measured through the landscape character inventory information and the cumulative conditions of the two primary SMS indicators described in this glossary, "Scenic integrity" and "Scenic stability."

Scenic river: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive, and shorelines largely undeveloped, but accessible in places by roads.

Sediment: Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the Earth's surface either above or below sea level.

Sediment load: Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from site of origin by air, water, gravity, or ice.

Sedimentation: The deposition or settling of soil particles suspended in water.

Semiprimitive motorized ROS: Similar setting to the SPNM below, except this area provides a motorized back-country experience where trails and primitive roads are designed for high-

clearance, four-wheel-drive vehicles. There is a moderate probability of experiencing solitude. High degree of self-reliance and challenge in using motorized equipment. These areas are predominantly natural, lacking some human modification except when necessary for site protection.

Semiprimitive nonmotorized (SPNM) ROS: A nonmotorized back-country area with a predominantly natural appearing environment without evidence of resource modification and utilization practices. This type of area provides opportunities for self-reliance and challenge, with a low concentration of users and high degree of interaction with the natural environment. Recreation developments are rustic and rudimentary and primarily provided for the protection of the resources rather than convenience of the users.

Soil compaction: Soil compaction occurs when soil particles are pressed together, reducing the pore space between them. This increases the weight of solids per unit volume of soil (bulk density). Soil compaction occurs in response to pressure (weight per unit area) exerted by field machinery or animals. The risk for compaction is greatest when soils are wet.

Soil productivity: The capacity of a soil to support the growth of specified plants, plant communities, or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight per unit, area per year, percent plant cover, or other measures of biomass accumulation.

Special use: Those uses and occupancy occurring on more than a transient basis except those covered by mining laws or associated with harvesting timber or grazing livestock. These uses include roads, all types of utilities, ski areas, cemeteries, electronic sites, and recreation residences. Uses are ordinarily covered by either an annual or term permit. Annual permits are for relatively short-term use and are revocable by the Forest Service. They are renewable each year by payment of a fee. Term permits are used to cover uses of a longer time period (up to 30 years) and having a large economic investment. Examples of this permit include large electric transmission lines and large recreation resorts and ski areas.

Standard: An absolute requirement to be met in the design of projects and activities. A project or activity is consistent with a standard when its design is in accord with the explicit provisions of the standard; variance from a standard in any way is not allowed. In sum, a project or activity should meet the spirit, if not the letter, of a guideline, but must meet the letter of a standard.

Streambank: The sides of a channel that hold or carry water.

Structure: The presence, size, and physical arrangement of vegetation in a stand. Vertical structure refers to the variety of plant heights, from the canopy to the forest floor. Horizontal structure refers to the types, sizes, and distribution of trees and other plants across the land surface. Grassland lands with substantial structural diversity provide a variety of niches for different wildlife species.

Suitability: The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

Sustainability: Sustainability is a goal for economic development and natural resource management. Ecosystem sustainability is the capacity of an ecosystem for long-term maintenance of ecological processes and functions, biological diversity, and productivity. Social and economic sustainability generally refers to land management practices that provide goods and services from a resource without degradation of the site quality, and without a decline in the yield of goods and services over time.

T

Terrace: A leveled section of a hill cultivated area, designed as a method of soil conservation to slow or prevent rapid surface runoff.

Terrestrial ecosystem survey (TES) and **terrestrial ecological unit inventory (TEUI)**: A classification of ecological types and mapped terrestrial ecological units using a consistent standard throughout NFS lands. Ecological units are categorized to identify land and water areas at different levels of resolution based upon similar capabilities and potentials for response to management and natural disturbances. Capabilities and potentials derive from multiple elements, such as climate, geomorphology, geology, soils, water, and potential vegetation.

Topsoil: The upper, outermost layer of soil, usually the top 2 inches (5.1 cm) to 8 inches (20 cm). It has the highest concentration of organic matter and microorganisms and is where most of the Earth's biological soil activity occurs.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Travel Management Rule: Located in 36 CFR 212, Subpart B, Designation of Roads, Trails, and Areas for Motor Vehicle Use. The rule requires each national forest or ranger district to designate those roads, trails, and areas open to motor vehicles. Designation will include class of vehicle and, if appropriate, time of year for motor vehicle use. A given route, for example, could be designated for use by motorcycles, ATVs, or street legal vehicles. Once designation is complete, the rule will prohibit motor vehicle use off the designated system or inconsistent with the designations. Designations will be shown on a motor vehicle use map. Use inconsistent with the designations will be prohibited.

U

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. (36 CFR 212.1, FSM 2353.05, FSM 7705)

Utility corridors: The linear space needed to bury or suspend a produced water line, gas pipeline, oil pipeline, electric, or other line(s). It is often, but not always, located along a road.

W

Watershed condition: The state of a watershed based upon physical and biological characteristics affecting hydrologic and soil functions. It is determined through the synthesis of information

including vegetation types and condition, streambank conditions, range conditions and trend, soil conditions and erosion potential, and remotely sensed and field observations.

Wetland: Habitat that is transitional between terrestrial and aquatic where the water table is usually at or near the land surface, or the land is covered by shallow water. Wetlands have one or more of the following characteristics: (1) at least periodically the land supports predominantly hydrophytic plants; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at sometime during the growing season of each year (FSM 2600).

Woodland: A plant community in which trees are often small, characteristically with a greater proportion of their total height being crown more so than clear bole, and having trees spaced far enough apart that the canopies of adjacent trees usually do not touch and with the ground vegetation being mostly herbaceous, commonly grass (USDA Forest Service 2004).

Appendix A. Forest Plan Amendment

Cibola National Forest Plan Amendment

For the proposed action to comply with both the "Cibola National Forest Land and Resource Management Plan" (Forest Plan) and the requirements of the Travel Management Rule, a plan amendment is needed. The amendment would remove inconsistencies and ambiguities in road density guidance and remove language that does not comply with the Travel Management Rule requirement to close the forest to cross-country travel off of designated roads and trails. This amendment applies to all action alternatives.

Road Density Guidance

The ID team compared the proposed action to the guidelines in the Forest Plan to determine if the actions are consistent with the Forest Plan. The Forest Plan addresses road density in two places: forestwide guidance and in the management area guidance for transportation. The forestwide guidance (page 61-1 of the Forest Plan) provides for a maximum road density of 1.9 miles of road per square mile (average) of forest land. The proposed action is consistent with the forestwide guidance in the Forest Plan for road density (see table A1).

Table A1. Summary of district road densities

Existing Forest Plan Direction for Road Density (maximum miles per sq. mile)	Existing District Road System – Open Road Density (miles per sq. mile)	Minimum Road System – Road Density (miles per sq. mile)	Proposed Action – Designate Road Density (miles per sq. mile)
1.9	1.2	0.8	0.1

The management area guidance on road density varies by analysis area, which is a subdivision of management areas that are described but not mapped in the Forest Plan. The analysis area road density guidelines range from 0.14 to 1.90 miles of road per square mile (see table A2). Many of the analysis areas were defined according to the seral stage of the vegetation type or range condition. Analysis areas based on vegetation structure change over time and shift across the landscape; shifts are caused by management activities and natural disturbances. Because the exact location of the analysis area boundaries is unclear and the conditions used to define them have changed, it is no longer meaningful to define road densities by analysis area. Because analysis areas cannot be mapped consistently over time, there is no way to determine if the proposed action road system exceeds the Forest Plan guidance. There is a need to amend the road density guidance in the Forest Plan so that it is clear and consistent.

We propose to retain the current forest-wide road density direction (1.9 miles of road per square mile, maximum) while eliminating road density guidance for each management area and its associated analysis area. We will continue to allow for the temporary increase in road density (2 to 3 miles of road per square mile) in active vegetation management areas in all management areas. For example, this includes areas where administrative access is needed for projects such as those under the Healthy Forest Restoration Act (HFRA) to reduce fire risk by creating firebreaks. In the current Forest Plan, this direction only applies to some management areas.

Table A2. Existing plan direction for road densities by management area

Management Area	Analysis Area	Existing District System Open Road Density (miles per sq. mile)
Management Area 11	14	1.90
	15	1.20
Management Area 12	16	1.70
	17	1.20
Management Area 13	18	0.14
Management Area 15	23	1.90
	24	1.00

Cross-Country Travel and Road Obliteration and Maintenance

Since the Forest Plan allows cross-country travel across 168,989 acres on the district, there is a need to amend the Forest Plan to comply with the Travel Management Rule.

The Forest Plan also contains some obsolete timeframes for performing road construction, reconstruction, or obliteration. The plan was analyzed in 10-year periods (periods 1 through 5) for the first 50 years and in 50-year periods (periods 6 through 8) for the following 150 years. Implementation of period 1 was expected to begin in Fiscal Year 1986. Since the plan is now in its 3rd decade, some of these periods and associated tasks are moot. Other periods specify maintenance on more miles of roads than are being proposed for designations. Therefore, all language on periods associated with roads under the "Transportation" section is proposed to be amended.

To provide for consistency between the Forest Plan and Travel Management Rule, we propose deleting or changing the standards/guidelines listed below, which refer to OHV area closures and restrictions, obliteration and maintenance, signing of closed areas (no longer appropriate), or specific acreages of OHV closed areas (no longer necessary as all areas outside the designated system will be closed). This amendment would be specific to the Magdalena Ranger District.

Table A3. Forest Plan amendment

Management Area and/or Page Number	Current Forest Plan Direction	Change to Forest Plan Direction
Page 61-1	i. Water, (1) Quality, (a): Maximum road density of 1.9 miles of road per square mile.	Add the following text: Open system road densities will increase temporarily to 2 to 3 miles per square mile in active vegetation management areas.

Management Area and/or Page Number	Current Forest Plan Direction	Change to Forest Plan Direction
Management Area 11 Page 146	Road management will be applied to obliterate poorly located or poorly constructed roadways to improve watershed condition and reduce soil loss. Management will take the form of standard roadway prescriptions for obliteration. Obliterate roads at the following rates: 94.7 miles of local road in Period 1	Delete text
Management Area 11 Page 147	Manage the following average road densities: 1.9 miles of road per square mile (Analysis Area 14). 1.2 miles of road per square mile (Analysis Area 15). Road densities will increase temporarily to 2 to 3 miles per square mile in active timber harvest areas.	Delete test
Management Area 11 Page 148	Maintain Forest System roads at rates indicated below. Maintain roads to levels 3, 4, and 5. 460 miles per period in all periods (Analysis Areas 14, 15). 60 miles per period in all periods (Analysis Areas 14, 15). Perform road maintenance at indicated rates. Maintain road to level 2. 230 miles per period in all periods (Analysis Area 14, 15). 46 miles per period in all periods (Analysis 14, 15).	Delete text
Management Area 12 Pagse 155–156	Road management will be applied to obliterate poorly located or constructed roadways to improve watershed condition and reduce soil loss. Management will take the form of standard roadway prescriptions for obliteration. Road obliteration will occur at the following rates: 17.4 miles of local roads in Period 1.	Delete text
Management Area 12 Pages 156–157	Maintain roads to levels 3, 4, and 5 in developed recreation sites. Manage the average road densities indicated below: 1.7 miles of road per square mile (Analysis Area 16). 1.2 miles of road per square mile (Analysis Area 17). 2-3 miles of road per square mile (temporary) in active timber harvest areas.	Delete text
Management Area 12 Page 157	Maintain Forest System Roads to levels 3, 4, and 5 at the rated indicated below. • 130 miles per period in all periods (Analysis Area 16). • 170 miles per period in all periods (Analysis Area 17). Perform road maintenance at rates indicated below: • 60 miles per period in all periods (Analysis Area 16.) • 320 miles per period in all periods (Analysis Area 17).	Delete text
Management Area 13 Page 160	Road management will be applied to obliterate poorly located or constructed roadways to improve watershed condition and reduce soil loss. Management will take the form of standard roadway prescriptions for obliteration. Obliterate roads at the following rates: • 115.3 miles of local roads in Period 1 (Analysis Area 18).	Delete text

Management Area and/or Page Number	Current Forest Plan Direction	Change to Forest Plan Direction
Management Area 13 Page 161	Manage an average road density of 0.4 mile of road per square mile (Analysis Area 18).	Delete text
Management Area 13 Page 162	Maintain 35 miles of Forest System roads in each period. Maintain to levels 3, 4, and 5 (Analysis Area 18). Do road maintenance at the rate of 17 miles per period in all periods. Maintain roads to level 2 (Analysis Area 18).	Delete text
Management Area 16 Page 190	Road management will be applied to obliterate poorly located and constructed roadways to improve watershed condition and reduce soil loss. Management will take the form of standard roadway prescriptions for obliteration. Obliterate roads at the following rates: • 299 miles in local roads in Period 1.	Delete text
Management Area 16 Page 192	Maintain average road densities indicated below: • 0.3 mile of road per square mile (Analysis Area 25). • 1.0 mile of road per square mile (Analysis Area 26). • 1.4 mile of road per square mile (Analysis Area 27). • 1.0 mile of road per square mile (Analysis Area 28). • 1.0 mile of road per square mile (Analysis Area 29). • 1.3 mile of road per square mile (Analysis Area 30).	Delete text
Management Area 16 Page 192	Maintain Forest System Roads at rates indicated below. Maintain roads to levels 3, 4, and 5. • 460 miles per period in all periods (Analysis Area 25). • 150 miles per period in all periods (Analysis Area 26). • 290 miles per period in all periods (Analysis Area 27). • 200 miles per period in all periods (Analysis Area 28). • 720 miles per period in all periods (Analysis Area 29). • 1,120 miles per period in all periods (Analysis Area 30).	Delete text
Management Area 16 Page 192	Perform road maintenance at rates indicated below. Maintain roads to level 2. • 529 miles per period in all periods (Analysis Area 25) • 476 miles per period in all periods (Analysis Area 26) • 350 miles per period in all periods (Analysis Area 27) • 80 miles per period in all periods (Analysis Area 28) • 350 miles per period in all periods (Analysis Area 29) • 1,066 miles per period in all periods (Analysis Area 30)	Delete text

Appendix B. Past, Present and Foreseeable Future Project

This appendix lists past, present, and foreseeable future projects for use in the cumulative effects analysis.

Past Projects

Project	Location	Size	Type	Implementation
Antelope Well Turkey Rehabilitation Project	Sec. 22, T1N, R9W	2 acres	Build new fence within 10 feet of existing fence line, replace the existing drinker with new water catchment and drinker.	Project implemented.
Red Canyon Trick Tank Rehabilitation Project	Sec. 24, T1N, R10W	3 acres	Build new fence within 50 feet of existing fence line, replace old drinker and paint existing catchment.	Project implemented.
Strauss Road Easement, Road Maintenance, and Road Reroute	Sec. 5, T2S, R11W Sec. 21, 22, 27, 28, 32, and 33, T1S, R11W	4.2 acres	Issuance of a road easement for ingress/egress to a private inholding. Issuance of a road use permit to provide for road maintenance.	Project implemented.
Ryan Hill/Madera Grazing Allotment	Sec. 5–8, 17–19, and 30, T4S, R2W Sec. 13, 24–26, 34, and 35, T4S, R3W Sec. 3, T5S, R3W	5,271 acres	NEPA completed and a new allotment management plan developed to address grazing management practices.	Project implemented.
Timber Peak Prescribed Burn	Sec. 3–6, T5S, R3W Sec. 3–10, T4S, R3W	13,968 acres	Prescribed burn to improve conditions for wildlife and livestock, and reduce the risk and spread of catastrophic wildfire.	
Burton Road Easement	Sec. 22, 23, and 27, T3S, R4W	4 acres	Issuance of road easement for ingress/egress into private inholding. Provides for road maintenance.	Project implemented.
Limestone Canyon Wet Meadow Restoration	Sec. 28, T5S, R7W	28 acres	Build new fence around wet meadow, install low impact erosion structures, thin encroaching conifers.	Project implemented.
Morley Tank Meadow Restoration	Sec. 34, T4S., R7W Sec. 2 and 3, T5S, R7W	28 acres	Build fence around wet meadow, rebuild berm and spillway on existing earthen tank, thin ponderosa and juniper tree stands.	Project implemented.
Bear Grazing Allotment Trick Tanks	Sec. 13 and 23, T6S, R7W	2 acres	Installed two 1,500 gallon trick tanks and two drinkers.	Project implemented.

Project	Location	Size	Type	Implementation
Big Rosa Grazing Allotment Pipeline Installation and Repair	Sec. 28, 29, 32, and 33, T5S, R5W	24 acres	Project activities included the installation of 3 pipeline segments and the removal and replacement of the existing pipeline.	Project implemented.
Lizze Lynn Turkey Track Slash	Sec. 18, T4S, R7W	2 acres	Issuance of a permit for water conveyance across FS land	Project implemented.
Abbe Springs Grazing Allotment Maintenance	Sec. 18, 19, and 30, T1N, R4W Sec. 1–18, 20–28, T1N, R5W Sec. 19, T2N, R4W	12 acres	Maintenance of existing range improvements.	Project implemented.
Bear Mountain Allotment Extension of Water Pipeline	Sec. 4, and 9, T1S, R5W	1 mile	Existing water pipeline extended.	Project implemented.
Bear Mountain No. 14 Wildlife Project	Sec. 11, R1S, R4W	1 acre	Replace existing concrete pad and rebuild fence.	Project implemented.
Sawmill Canyon Wildlife Project	Sec. 8, T1S, R6W	2.5 acres	Added a second metal catchment to an existing drinker.	Project implemented.
Crosby Trick Tank	Sec. 15, T2S, R11W	3 acres	Replacement of an existing metal catchment and expand the existing enclosure fence.	Project implemented.
Sale of Baldwin Cabin	Sec. 33, T1S, R10W	40 acres	Sale of a FS administrative site.	Project implemented.
Hop Canyon Allotment Maintenance of Range Improvements	Sec. 31, T2S R3W Sec. 6–8, 17, 19, and 30, T3S, R3W Sec. 1–3, 10, 11, 13, 14, and 24, T3S, R4W	17 miles	Maintenance of existing range improvements.	Project implemented.
Kelly Grazing Allotment Maintenance of Range Improvements	Sec. 30, T3S, R3W Sec. 10, 11, 13–16, 21, 22, 24–28, and 33–38, T3S, R4W	18 miles	Maintenance of existing range improvements.	Project implemented.
Palome Grazing Allotment Maintenance of Range Improvements	Sec. 33 and 34, T2S, R4W Sec. 3, 4, 8–11, 15–17, 20, and 21, T3S, R4W	25 miles	Maintenance of existing range improvements.	Project implemented.
Sawmill Grazing Allotment Maintenance of Range Improvements	Sec. 28, 29, and 31–34, T4S, R3W Sec. 3–5, T5S, R3W	11 miles	Maintenance of existing range improvements.	Project implemented.

Project	Location	Size	Type	Implementation
Tip Top Grazing Allotment Maintenance of Range Improvements	Sec. 28, 29, and 31-34, T4S, R3W Sec. 3–5, T5S, R3W	16 miles	Maintenance of existing range improvements.	Project implemented.
Puertocito Wildlife Project	Sec. 2, T5S, R4W	2.5 acres	Replace an existing fiberglass water catchment and expand fence enclosure.	Project implemented.
Ducklow Road Easement	Sec. 13, 14, 21, 22, and 23, T4S, R4W	2.16 miles	Issuance of a road use permit for road maintenance.	Project implemented.
Horse Mountain Wildlife Project	Sec. 30, T6S, R5W	2.5 acres	Replace existing water catchment.	Project implemented.
Hughes Wildlife Project	Sec. 33, T5S, R7W	2.5 acres	Replace existing water catchment.	Project implemented.
Questa Wildlife Project	Sec. 36, T9S, R6W	2 acres	Install a concrete rain water catchment and two fiberglass storage tanks.	Project implemented.
Penasco Grazing Allotment Maintenance of Range Improvements	Multiple sections in T9S, R4W; T9S, R5W; T9S, R6W; T10., R4W; T10S, R5W	80 miles	Maintenance of existing range improvements.	Projects implemented.
Steel Hill Grazing Allotment Maintenance of Range Improvements	Sec. 29, 30, and 32, T8S, R4W	4.5 acres	Maintenance of existing range improvements.	Projects implemented.
East Monticello Grazing Allotment Maintenance of Range Improvements	Sec, 30, 31, T9S, R5W Sec. 23–26, 35, and 36, T9S, R6W Sec. 5–8, 17, and 18, T10S, R6W Sec 1–3 and 10–13, T10S, R6W	12 acres and 4.5 miles	Maintenance of existing range improvements.	Projects implemented.
Bear Trap Grazing Allotment Maintenance of Range Improvements	Multiple sections in T5S, R6W; T5S, R7W; T5S, R8W; T6S, R8W; T7S, R8W	97 miles	Maintenance of existing range improvements.	Projects implemented.
Whitecap Wildlife Project	Sec. 30, T5S, R5W	2.5 acres	Replace existing water catchment and fence.	Project implemented.
Council Rock Grazing Allotment-Maintenance of Range Improvements	Sec. 8, T1S, R6W	2.5 acres	Maintenance of an existing water well.	Project implemented.

Project	Location	Size	Type	Implementation
Bear Mountain No. 14 Quail Guzzler	Sec. 11, T1S, R4W	3 acres	Repair existing water catchment and enclosure fence.	Project Implemented.
Bear Mountain No. 10 Guzzler	Sec. 36, T1S, R4W	2.5 acres	Maintain existing water development.	Project implemented.
Uranium City Resources	Sec. 20, 21, and 28-30, T2N, R10W	400 acres	Plan of operations to perform exploratory drilling.	Project implemented.
Gooseberry Canyon Spring	Sec. 21, T1N, R10W	2.5 acres	Maintain existing spring improvement.	Project implemented.
Datil Grazing Allotment Maintenance and New Construction of Range Improvements	Sec. 30 and 31, T1S, R9W Sec. 25, 26, 35, and 36, T1S, R10W Sec.6, T2S, R9W Sec. 1 and 2, T2S, R9W	28.6 acres	Maintain existing range improvements and construct two storage tanks, one water well, one drinker and 3 miles of water pipeline.	Project Implemented.
Hydro Resources Corp. Road Easement	Sec. 12, T3S, R4W Sec. 7, T3S, R3W	1.5 acres	Issue a permit for road use and maintenance.	Project implemented.
Arrowhead Spring Enclosure	Sec. 23, T4S, R4W	3 acres	Expand existing fence.	Project Implemented.
Water Canyon Mesa Trick Tank	Sec. 35, T3S, R3W	3 acres	Repair storage tank and install access ramp.	Project implemented.
505 Quail Water	Sec. 34, T2S, R3W	3 acres	Repair existing concrete catchment.	Project implemented.
Construct a new District Office	Sec. 22, T2S, R4W	2 acres	Construction of a new office building.	Project implemented.
Magdalena Ranger District Administrative Site Improvements	Sec. 33, T2S, R4W	2 acres	Demolish existing warehouse and construct a new warehouse.	Project implemented.
Chavez Wildlife Water	Sec. 19, T4S, R2W	3 acres	Rebuild existing fence.	Project implemented.
Gap Wildlife Water	Sec. 34, T4S, R4W	3 acres	Replace current catchment with a metal trick tank.	Project implemented.
Beartrap Campground Fence Reconstruction	Sec. 12, T5S, R7W	2.5 acres	Replace existing fence.	Project implemented.
Baney Tank Reconstruction	Sec. 2, T6S, R8W	3 acres	Reconstruct earthen tank.	Project implemented.
Bolander Wildlife Water	Sec. 24, T4S, R7W	2.5 acres	Maintain current water system.	Project implemented.
Dry Spring	Sec. 35, T5S, R6W	2.5 acres	Replace plumbing on existing wildlife drinker.	Project implemented.

Project	Location	Size	Type	Implementation
Eagle Spring Enclosure	Sec. 13, T5S, R7W	2.5 acres	Maintain existing water system.	Project implemented.
Jose Maria Quail Enclosure	Sec. 6, T10S, R5W	40 acres	Replace existing fence enclosure.	Project implemented.
Indian Spring Enclosure	Sec. 32, T6S, R6W	2.5 acres	Maintain current water development.	Project implemented.
Limestone Turkey Water	Sec. 22, T S, R7W	2.5 acres	Replace existing water development.	Project implemented.
Luna Park Rockheaders Enclosure	Sec. 25, T9S, R6W	2.5 acres	Maintain current water development.	Project implemented.
Monica Well Guzzler	Sec. 18, T4S, R6W	2.5 acres	Replace current guzzler.	Project implemented.
Pine Canyon Solar Well	Sec. 11, T8S, R7W	3 acres	Hook up storage tank for drinker.	Project implemented.
Pothole Spring Enclosure	Sec. 32, T6S, R6W	2.5 acres	Maintain current water development.	Project implemented.
Spring Hollow Rockheader	Sec. 4, T6S, R7W	2.5 acres	Maintain existing rockheaders.	Project implemented.
Switch Spring Enclosure	Sec. 36, T4S, R7W	2.5 acres	Maintain existing water development.	Project implemented.
Toolbox Spring	Sec. 4, T7S, R6W	3 acres	Maintain current water development.	Project implemented.
Withington Land Purchase	Sec. 22, T4S, R6W Sec. 26, T4S, R6W Sec. 5 and 6, T5S, R5W	426 acres	Negotiate land purchase.	Project implemented.
Socorro Electric Coop. Permit Reissuance	Districtwide	46 acres	Permit renewal.	Project implemented.
Penasco Allotment New Range Improvement	Sec. 5, T10S, R5W Sec. 11, T11S, R5W Sec. 8 and 36, T9S, R5W	10 acres	Construction of new range improvements.	Project implemented.
Pounds Waterline Permit Reissuance	Sec. 10 and 11, T3S, R3W	1 mile	Issue a special use permit for a water distribution line.	Project implemented.

Present and Foreseeable Future Projects

Project	Location	Size	Type	Implementation
Remuda Exploratory Drilling for Uranium	Sec. 36, T2N, R10W	4 acres	Plan of operation to drill four holes and extract cores for analysis	Project implemented.
Webster Exploratory Drilling for Uranium	Sec. 33, T2N, R10W	7 acres	Plan of operation to drill four holes and extract cores for analysis.	Project implemented
Homeland Security/ Border Patrol Installation of Facilities at Davenport Lookout	Sec. 29, T1N, R10W	100 sq. ft.	Installation of a self-supporting communication tower.	Project implemented
Buried Fiber Optic Line from Datil to Pie Town	Sec, 19, 32–34, T1S, R10W Sec. 2, 3, T1S, R11W Sec. 32–35, T1N, R11W	6 miles	WNMTC requested a special use permit to install a buried fiber optic line of FS lands.	Project implemented
Rosedale Forest Restoration, Part II	Sec. 2, 11, and 12, T6S, R6W	117 acres	Forest restoration project to maintain forest and watershed health, vigor, and productivity.	Project proposed for FY 2012. Has not been implemented
Apache Kid Heritage Site Stabilization	Sec. 35, T8S, R6W	1 acre	Determine options to preserve the Apache Kid gravesite marker.	Project has been funded at this time
Springtime Campground Fence Reconstruction	Sec. 36, T8S, R6W	1 acre	Construction of a pipe fence and the removal of a deteriorating wooden fence.	Project implemented
Beartrap Campground Fence Reconstruction	Sec. 12, T5S, R7W	150 meters	Construction of a pipe fence and the removal of a deteriorating wooden fence.	Project implemented
Bear Mountain No. 8 Wildlife Guzzler	Sec. 14, T1S, R4W	2.5 acres	Perform maintenance and repairs on an existing wildlife guzzler and fence.	Project implemented
Bear Mountain No. 14 Wildlife Guzzler	Sec. 11, T1S, R4W	2.5 acres	Perform maintenance and repairs on an existing wildlife guzzler and fence.	Project implemented
North East Red Prescribed Burn	Sec. 3, 5, 7, 8, 17–20, 29, and 30, T6S, R5W Sec. 9–14, 16, and 20–24, T6S, R6W	10,400 acres	Prescribed burn to improve conditions for wildlife and livestock.	Project in planning. Multiple year implementations.

Project	Location	Size	Type	Implementation
San Juan/Long Spring Prescribed Burn	Sec. 13, 14, 22–27, and 34–36, T7S, R5W Sec. 17–20, and 29–32, T7S, R4W Sec. 1–3, 10–15, 23, and 24, T8S, R5W Sec. 5–8, 17–20, 29, 30, and 32, T8S, R4W	20,830 acres	Prescribed burn to improve conditions for wildlife and livestock.	Project in planning. Multiple year implementations.
Mojave Academy Fuels Treatments	Sec. 25 and 36, T1N, R11W Sec. 19, T1N, R10W	1,250 acres	Reduce fuel loading by reducing tree stand density using mechanical and prescribed fire treatments in this wildland-urban interface.	Project in planning. Multiple year implementations.
Treatment for Invasive Plants	Districtwide	District-wide	Analysis of a variety of methods for treating invasive plants on the district.	Multiple year implementations.
Rosedale Ponderosa Pine Treatment	Sec. 2, 11, and 12, T6S, R6W	320 acres	Project to improve watershed condition.	Project in planning. Multiple year implementations.
Military Tactics Training Area	Sec. 27, 28, 29, and 32–36, T2N, R4W Sec.1–5, 8–12, 13–17, 20–24, and 25–29, T1N, R4W	20,898 acres	Analyze effects of a variety of training exercises as part of environmental analysis.	Project in progress.
Mineral Withdrawal of Zuni Fleabane Habitat	Sec. 4, 9, and 10, T1N, R11W Sec. 36, T2N, R11W Sec. 3, T1N, R10W	1,000 acres	Withdrawal from mineral entry at four Datil and Sawtooth Mountain locations. Withdrawal would prohibit mineral development.	Project in progress.
Centennial West Clean Line Project	Route has not been determined	900 miles: multiple jurisdictions	Construct a 600 kV transmission line to gather energy from renewable generation project.	Project in initial planning stages.
Durfee/Bolander Collaborative Landscape Restoration Project	Sec. 23-26, T4S, R8W Sec. 8–11 and 13–36, T4S, R7W Sec. 1–3, T5S, R7W	18,237 acres	Forest restoration project to maintain forest and watershed health, vigor, and productivity.	Project in planning. Multiple year implementations.
Davenport Forest Restoration (extension for 2006 proposed boundaries)	Sec. 24, T1N, R11W Sec. 19, 20, and 29, T1N, R10W	701 acres	Forest restoration project to maintain forest and watershed health, vigor, and productivity.	Project in planning. Multiple year implementations.

Project	Location	Size	Type	Implementation
Baney Fuels Treatment and Prescribed Burn	Numerous sections in T5S, R8W; T6S, R8W; T5S, R7W; T6S, R7W.	15,149 acres	Reduce fuel loading by reducing tree stand density using mechanical and prescribed fire treatments.	Project in planning. Multiple year implementations.
Bolander Fuels Treatments and Prescribed Burn	Sec. 9-11, 13–16, and 22–24, T4S, R7W Sec. 18, T4S, R6W	4,009 acres	Reduce fuel loading by reducing tree stand density using mechanical and prescribed fire treatments.	Project in planning. Multiple year implementations.
Monica Mechanical Thinning and Prescribed Burn	Sec. 17–21, and 29, T4S, R6W	1,804 acres	Reduce fuel loading by reducing tree stand density using mechanical and prescribed fire treatments.	Project in planning. Multiple year implementations.
Continental Divide National Scenic Trail	Multiple sections in T1N, R11W; T2N, R11W; T2N, R10W	10 miles	Develop a new segment of the trail.	Project in planning.
Corn Canyon Prescribed Burn	Sec. 31, T8S, R5W Sec. 36, T8S, R6W Sec. 1–6 and 7–12, T9S, R5W	4,760 acres	Broadcast prescribed burn to improve conditions for wildlife and livestock.	Project in planning. Multiple year implementations.
Chavez/Whitecap Prescribed Burn	Sec. 5–8, 18–22, and 30–34, T5 S, R5W Sec. 5, 24–26, and 36, T5S, R6W Sec. 5–8, T6S, R5W Sec. 1–3, 11, and 12, T6S, R6W	14,000 acres	Broadcast burn to improve conditions for wildlife and livestock.	Project in planning. Multiple year implementations.

Appendix C. Roads Designated for Administrative Use Only

Alternative 1, Proposed Action, Road Segments Restricted for Administrative Use

FS Road Numbers										
1000	1063	123GA	325	537A	699	743	791	862	903	959
1001	1063A	123GB	329	541	6X	744	792	864	905	960
1003A	1064	123OA	331XX	546A	7	745	794	865	906	961A
1004	1065A	123OB	333*BB	571	700	746	796	866	908	963
1006	1065X	123OC	339	60Z	701	747	797	867	908A	964A
1007	1069	123S	343	629	702	748	798	868	908B	965A
101	1071	128EB	350	62A	703A	749	798A	869	912	966A
1010	1080	131DA	354D	635	704	750	799	86B	912A	968
1011	1083	138A	354I	661B	705	752	799A	870	919	970
1012	1084	138B	354U	661BA	706A	756	800	873	920A	971
1013	1085	140A	354XA	663	707	757	801	873.1	921	971A
1014	1086	140B	358G	664	708	758	803	874	921A	972
1015	1087	14Z	363	665	709	758A	804	878	923	973
1019	1089	176	377X	666	710	760	805	879	924	975
1020	1090	180AA	38	667	711	761	806	882A	925A	976
1021	1093	1895	39	668	713A	762	808	883	926	977
1021A	1094	194*A	390	669	713B	763	809	884	930	978
1023	1096	204	392	670	714	763A	819	885A	932X	979
1025	1097	216	411A	671	715	763J	819A	888	934	980
1026A	1098A	217	441D	675A	716	764	820	889	934A	981
1026B	1098B	219B	448A	676	717	765	820A	890	935A	982
1026C	1098C	219D	45	677	718	766	821	890X	936	983
1028	1099	225X	451X	678A	719	767	823	891	936A	985
1028A	1099J	225Y	467C	68	719A	768	825B	891X	936B	986
1029	10AC	225Z	467X	680	720	769	530	892A	936M	986A
1031	10AX	235A	468	681	722	770	833	892B	938	986AA
1032	10ECA	247	47	683	723	773	834	892C	940	988
1033	10EF	24A	472	685	725	774	836	892ZA	941B	989
1035	10GZ	254D	478	685A	726	775	837	892ZB	943	993
1036	1101	256A	493A	685B	729	776	838	893A	944	994
1040	1102	260D	495A	685C	729A	777	839	893B	946	995
1041	1103A	266	496C	685D	729B	777X	84	893C	947	996
1042	1104	267	497	686	72B	778	840	893CA	94AA	997
1043	1105	269	502	687	733	779	844	893J	94BA	998
1044	1106	269A	504B	688	734	780	845	894	94C	**County Road Numbers**
1045	1107	271	505B	689	735	781	846	894A	94D	
1046	1108	273	505E	690	736	782	853	894B	94E	
1048	1109	28	506I	691	737	783	854	894J	94F	
1049	111A	282	510	692	738	784	855	895	953	CR12A
1053	113	286	529	693	738A	785	856	895A	954	CR12B
1054	119	292	52B	684	739	786	857	896A	955	CR12C
1056	119B	302	52C	695	73A	787	858	897	955A	
1057	123BB	312A	52D	696	740	788	859	897J	956	
1059	123FA	316A	532	697	741	789	860	900	957	
1062	123FF	319*B	533*D	698	742	790	861	902	958	

Alternative 3, Road Segments Designated for Administrative Use Only

FS Road Numbers									
1000	1064	123S	354D	664	708	758A	809	884	936A
1001	1065A	128EB	354I	665	709	760	819	885A	936M
1003A	1065X	131DA	354XA	666	710	761	819A	888	938
1006	1069	138A	358G	667	711	762	820	889	940
1007	1071	138B	363	668	713B	763	820A	890	941B
101	1080	140A	377X	669	714	763A	821	890X	943
1010	1083	140B	38	670	715	763J	823	891	944
1011	1084	14Z	39	671	716	764	825B	891X	946
1012	1085	176	390	675A	717	765	830	892B	947
1013	1086	180AA	392	676	718	766	833	892C	94AA
1014	1087	1895	411A	677	719	767	834	892ZA	94BA
1015	1089	194*A	441D	678A	719A	768	836	892ZB	94C
1019	1090	204	448A	68	720	769	837	893A	94D
1020	1093	216	451X	680	722	770	838	893B	94E
1021	1094	217	467C	681	723	773	839	893C	94F
1021A	1096	219B	467X	683	725	774	84	893CA	953
1023	1097	219D	468	685	726	775	840	893J	954
1025	1098A	225X	47	685A	729	776	844	894B	955
1026A	1098B	225Y	472	685B	729A	777	845	894J	955A
1026B	1098C	225Z	478	685C	729B	777X	846	895	956
1026C	1099	235A	493A	685D	72B	778	853	895A	957
1028	1099J	247	495A	686	733	779	854	896A	958
1028A	10AC	24A	496C	687	734	780	855	897	959
1029	10AX	254D	497	688	735	781	856	897J	960
1031	10EF	260D	502	689	736	782	857	900	961A
1032	10GZ	266	504B	690	737	783	858	902	963
1033	1101	267	505B	691	738	784	859	903	964A
1035	1102	269	505E	692	738A	785	860	905	965A
1036	1103A	269A	506I	693	739	786	861	906	966A
1040	1104	271	510	694	73A	787	862	908B	968
1041	1105	273	529	695	740	788	864	912	970
1042	1106	28	52B	696	741	789	865	912A	971
1043	1107	282	52C	697	742	790	866	919	971A
1044	1108	286	52D	698	743	791	867	920A	972
1045	1109	292	532	699	744	792	868	921	973
1046	111A	302	533*D	6X	745	794	869	921A	975
1048	113	312A	537A	7	746	796	86B	923	976
1049	119	316A	546A	700	747	799	870	924	977
1054	119B	325	60Z	701	748	799A	873	925A	978
1056	123BB	329	629	702	749	800	873.1	926	979
1057	123GA	331XX	62A	703A	750	803	874	930	980
1059	123GB	333*BB	635	704	752	804	878	932X	981
1062	123OA	339	661B	705	756	805	879	934A	982

FS Road Numbers									
1063	123OB	343	661BA	706A	757	806	882A	935A	983
1063A	123OC	350	663	707	758	808	883	936	985
986	968AA	989	993	996	997	998	**County Road Numbers**		
							CR12A	CR12B	CR12C

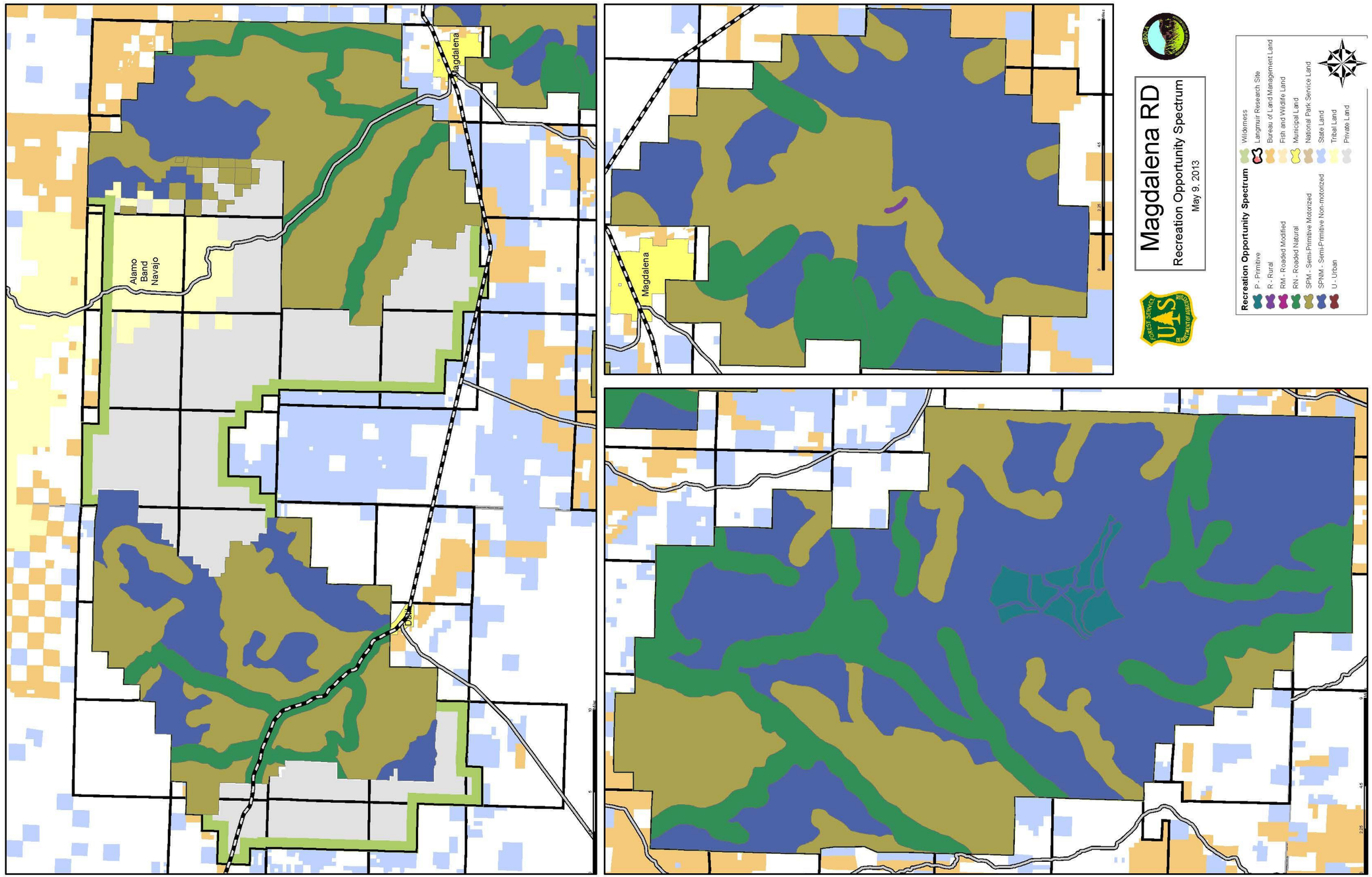
Alternative 4, Road Segments Designated for Administrative Use Only

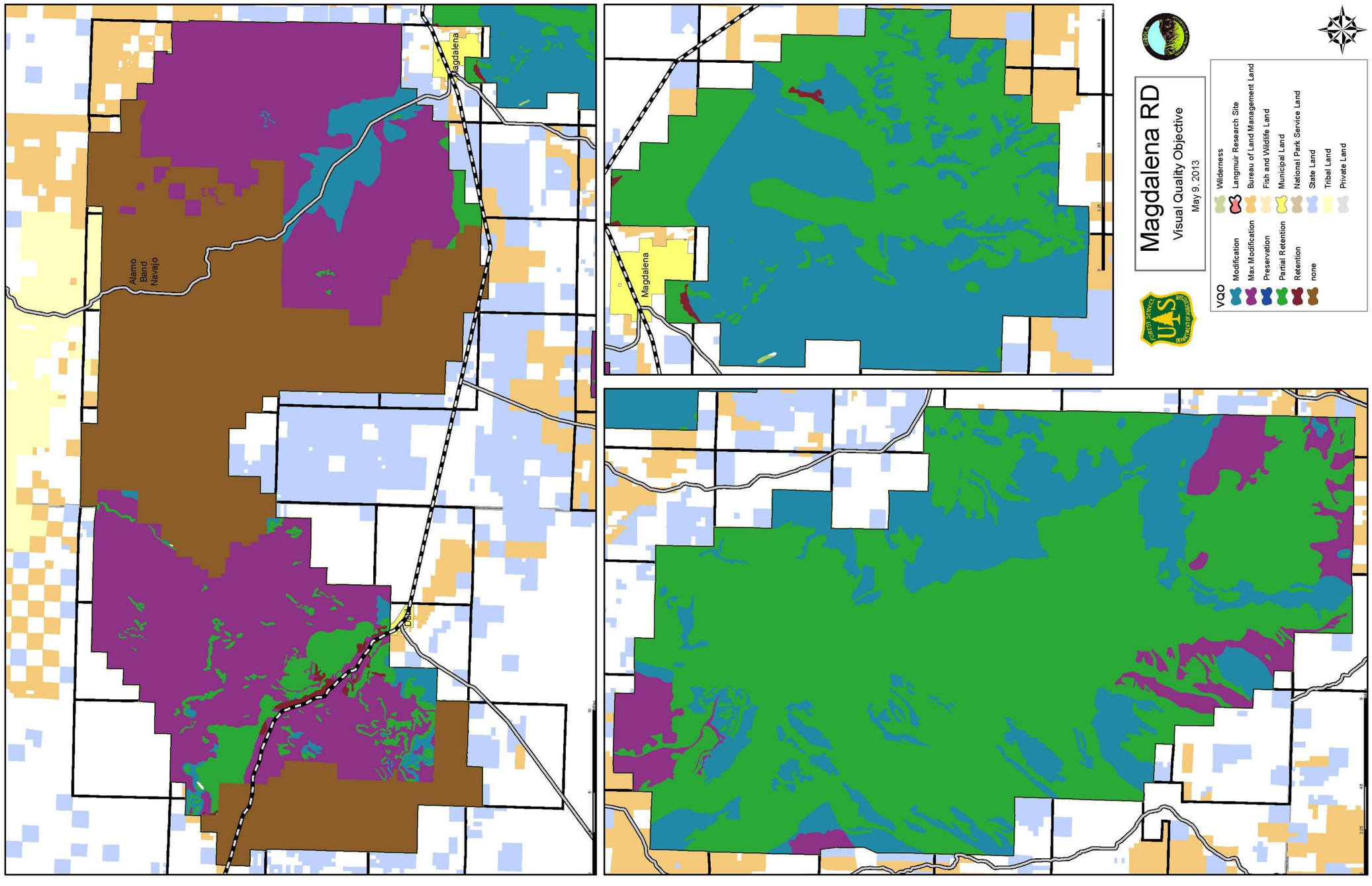
FS Road Numbers									
1000	1063	123FA	273	506I	688	734	780	845	893C
1001	1063A	123FF	28	506K	689	735	781	846	893CA
1003A	1064	123GA	282	510	690	736	782	853	893J
1004	1065A	123GB	286	529	691	737	783	854	894
1006	1065X	123OA	292	52B	692	738	784	855	894A
1007	1069	123OB	302	52C	693	738A	785	856	894B
101	1071	123OC	312A	52D	694	739	786	857	894J
1010	1080	123S	316A	532	695	73A	787	858	895
1011	1083	128EB	319*B	533*D	696	740	788	859	895A
1012	1084	131DA	325	537A	697	741	789	860	896
1013	1085	138A	329	541	698	742	790	861	896A
1014	1086	138B	331XX	546A	699	743	791	862	897
1015	1087	140	333*BB	56	6X	744	792	864	897J
1019	1089	140A	339	571	7	745	794	865	898
1020	1090	140B	343	59A	700	746	796	866	898A
1021	1093	14Z	350	60Z	701	747	797	867	899
1021A	1094	176	354D	629	702	748	798	868	899A
1023	1096	177	354I	62A	703A	749	789A	869	900
1025	1097	180AA	354U	635	704	750	799	86B	902
1026A	1098A	181	354XA	661B	705	752	799A	870	903
1026B	1098B	1895	358G	661BA	706A	756	800	873	904
1026C	1098C	194*A	363	663	707	757	801	873.1	905
1028	1099	204	377X	664	708	758	803	874	906
1028A	1099J	214	38	665	709	758A	804	878	908
1029	10AC	216	39	666	710	760	805	879	908A
1031	10AX	217	390	667	711	761	806	882A	908B
1032	10ECA	219B	392	668	713A	762	808	883	909
1033	10EF	219D	411A	669	713B	763	809	884	910
1035	10GZ	225X	441D	670	714	763A	819	885A	912
1036	1101	225Y	448A	671	715	763J	819A	888	912A
1040	1102	225Z	451X	675A	716	764	820	889	919
1041	1103A	227	467C	676	717	765	820A	890	920
1042	1104	235A	467X	677	718	766	821	890X	920A
1043	1105	247	468	678A	719	767	823	891	921
1044	1106	24A	47	68	719A	768	825B	891X	921A
1045	1107	254D	472	680	720	769	830	892	923
1046	1108	256	478	681	722	770	833	892A	924

FS Road Numbers									
1048	1109	256A	493A	683	723	773	834	892B	925A
1049	111A	260D	495A	685	725	774	836	892C	926
1053	113	265	496C	685A	726	775	837	892Z	930
1054	119	266	497	685B	729	776	838	892ZA	932X
1056	119B	267	502	685C	729A	777	839	892ZB	934
1057	123B	269	504B	685D	729B	777X	84	893	934A
1059	123BB	269A	505B	686	72B	778	840	893A	935A
1062	123F	271	505E	687	733	779	844	893B	936
936A	944	94E	957	965A	97	975	981	986AA	996
936B	946	94F	958	966A	970	976	982	988	997
936M	947	953	959	967	971	977	983	989	998
938	94AA	954	960	967A	971A	978	985	993	943
940	94BA	955	961A	967B	972	979	986	994	94D
941B	94C	955A	963	968	973	980	986A	995	956
964A									

County Road Numbers		
CR12A	CR12B	CR12C

Appendix D. Recreation Opportunity Spectrum and Visual Quality Objectives Maps


Magdalena
Alamo
Band
Navajo
Magdalena
Magdalena RD
Recreation Opportunity Spectrum
May 9, 2013
Recreation Opportunity Spectrum
P - Primitive
R - Rural
RM - Roaded Modified
RN - Roaded Natural
SPM - Semi-Primitive Motorized
SPNM - Semi-Primitive Non-motorized
U - Urban
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land

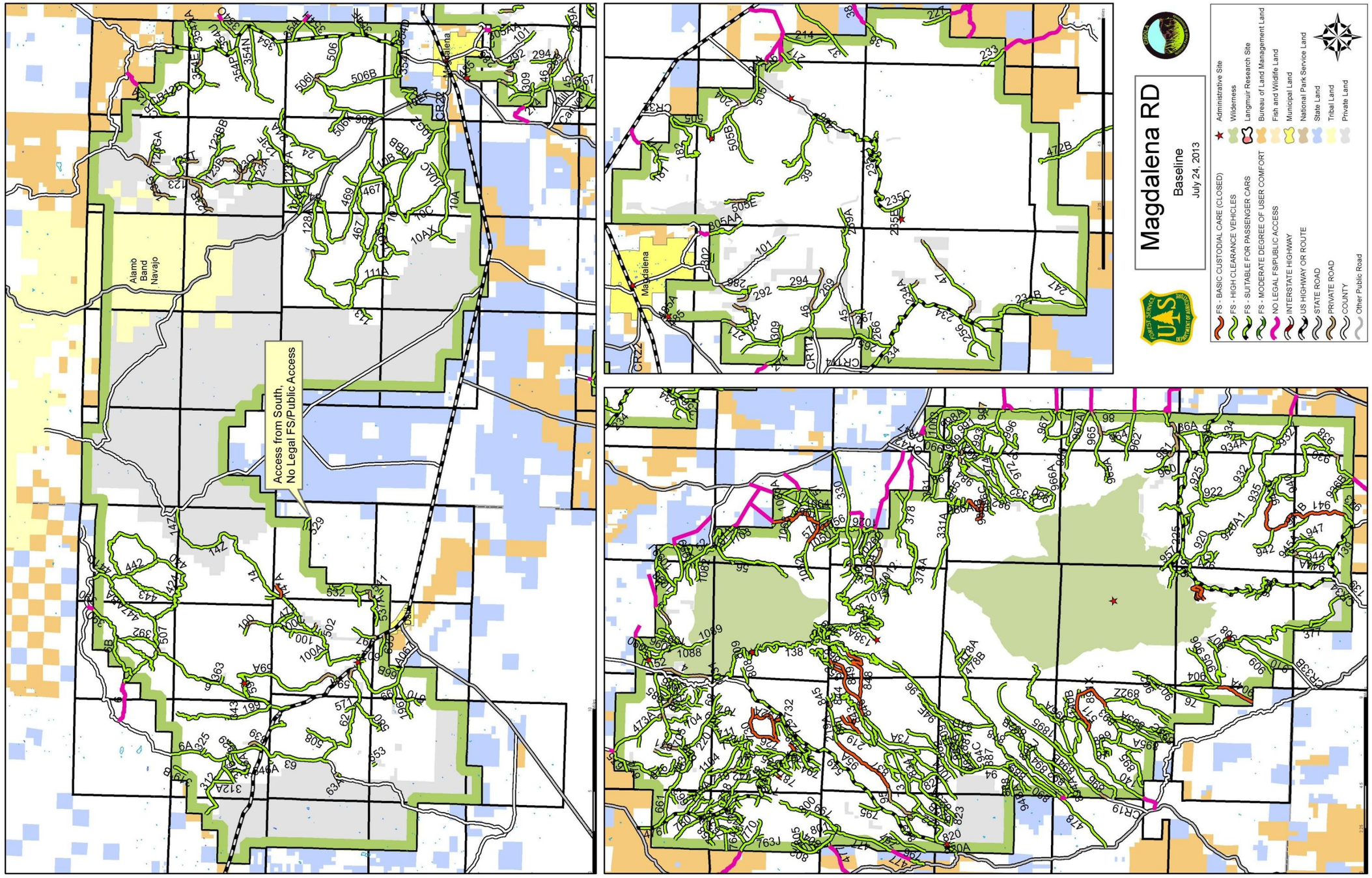

Magdalena
Alamo
Band
Navajo
Magdalena
Magdalena RD
Visual Quality Objective
May 9, 2013
VQO
Modification
Max Modification
Preservation
Partial Retention
Retention
none
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land

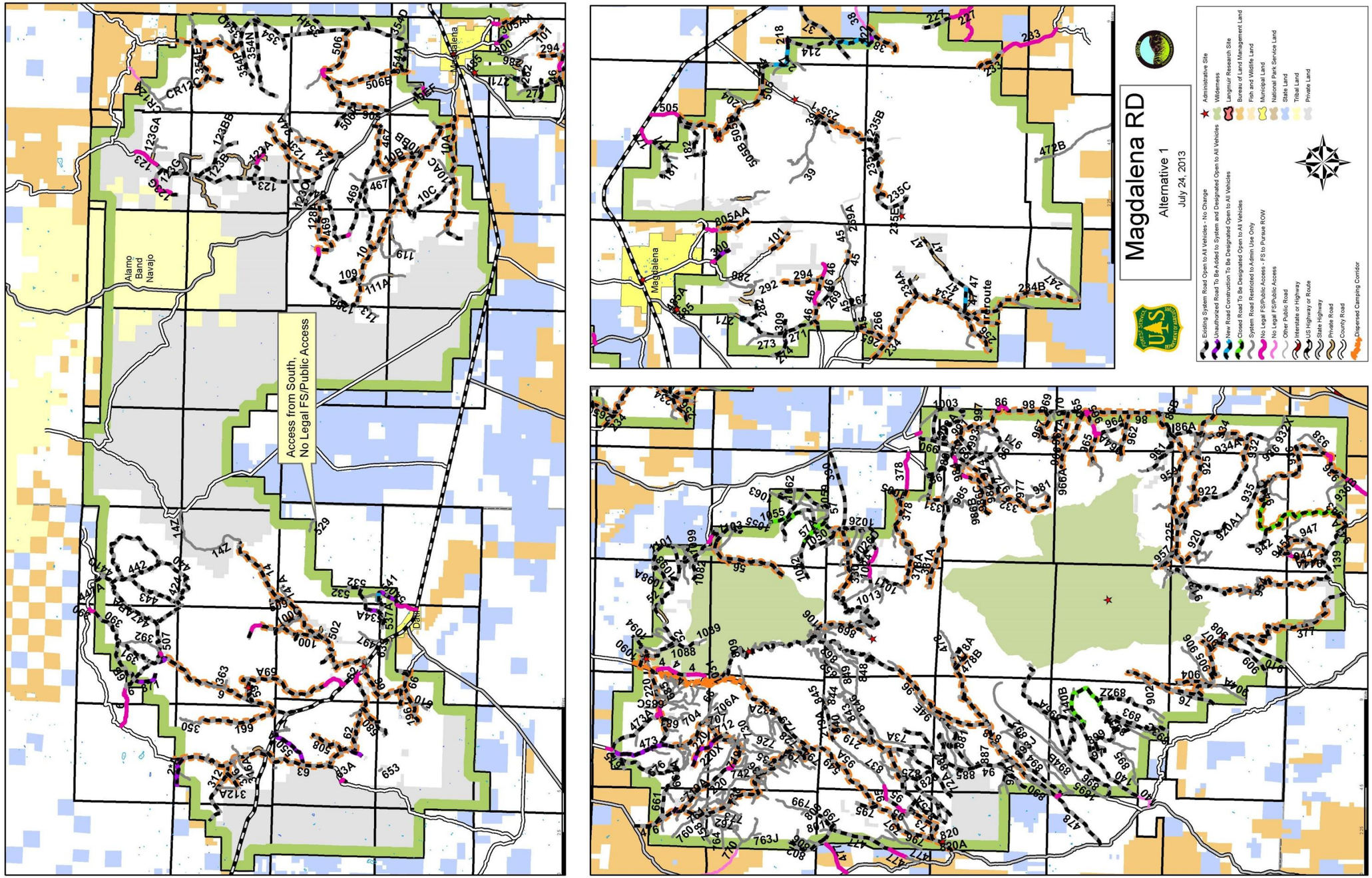
Appendix E. Travel Management Proposed Maps

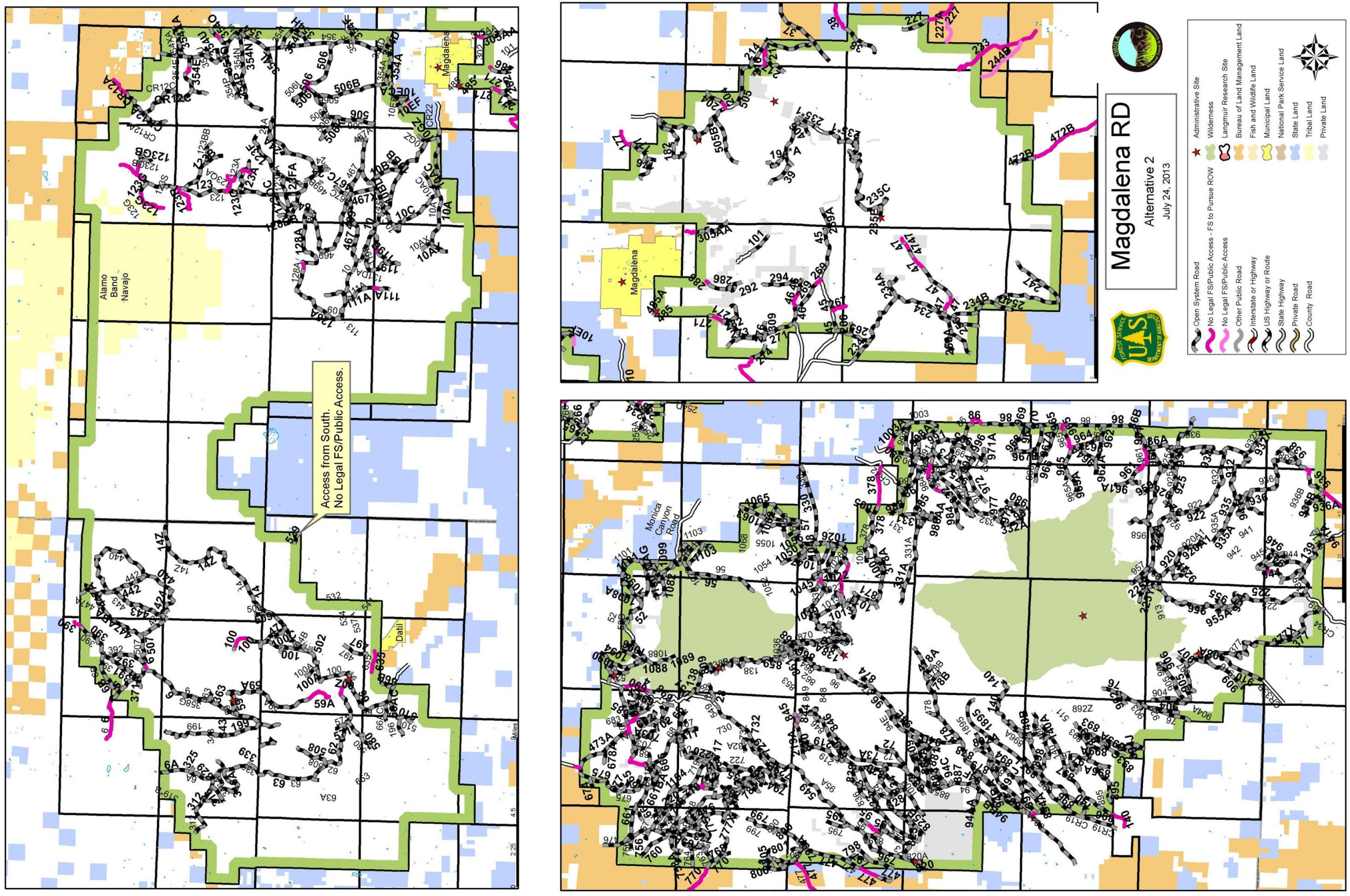
The following pages show maps of the baseline and different alternatives for the Magdalena Ranger District's travel management proposal. The maps in this section are:

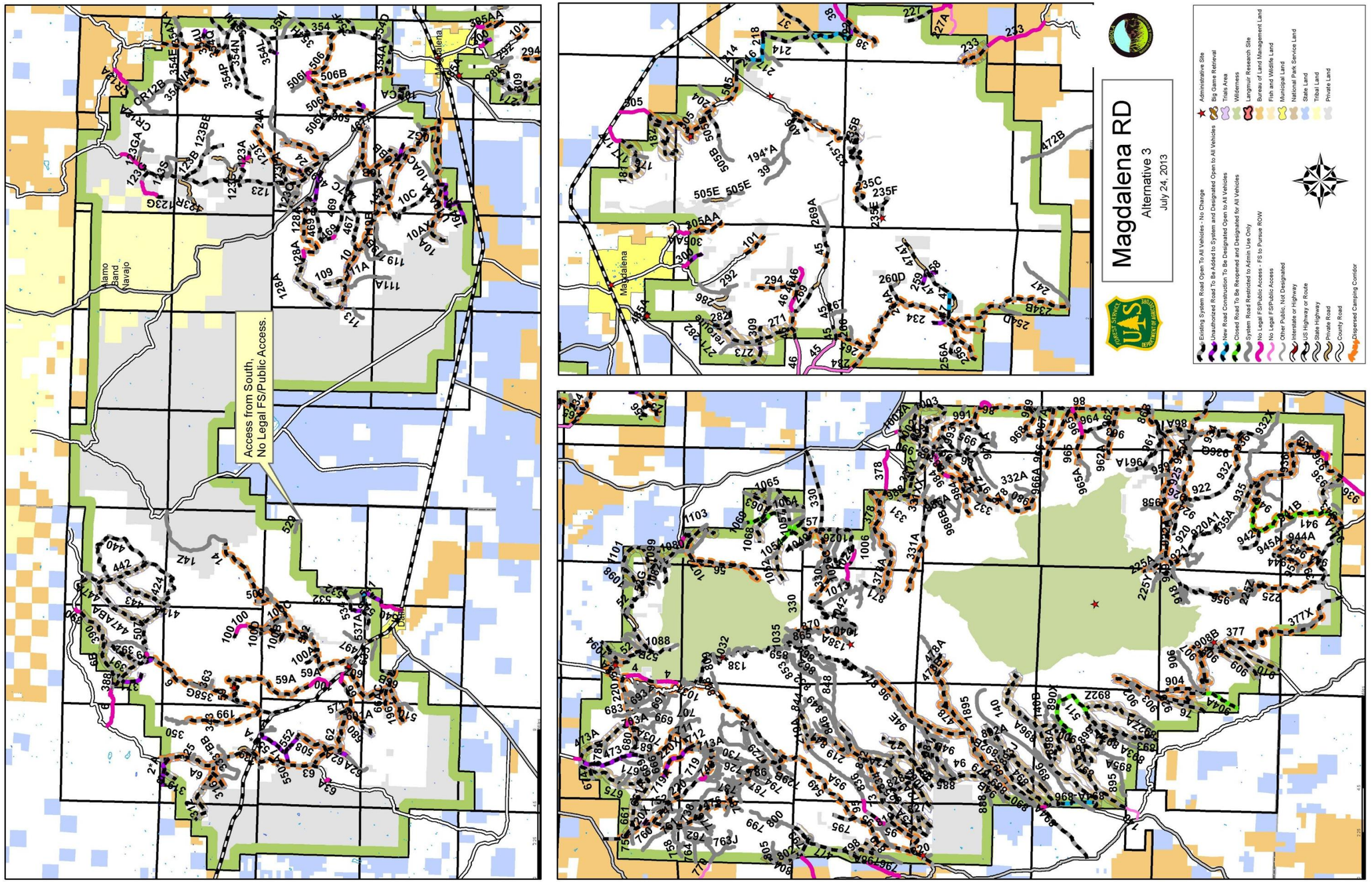
- Baseline
- Alternative 1 – Proposed Action
- Alternative 2 – Existing System
- Alternative 3
- Alternative 4

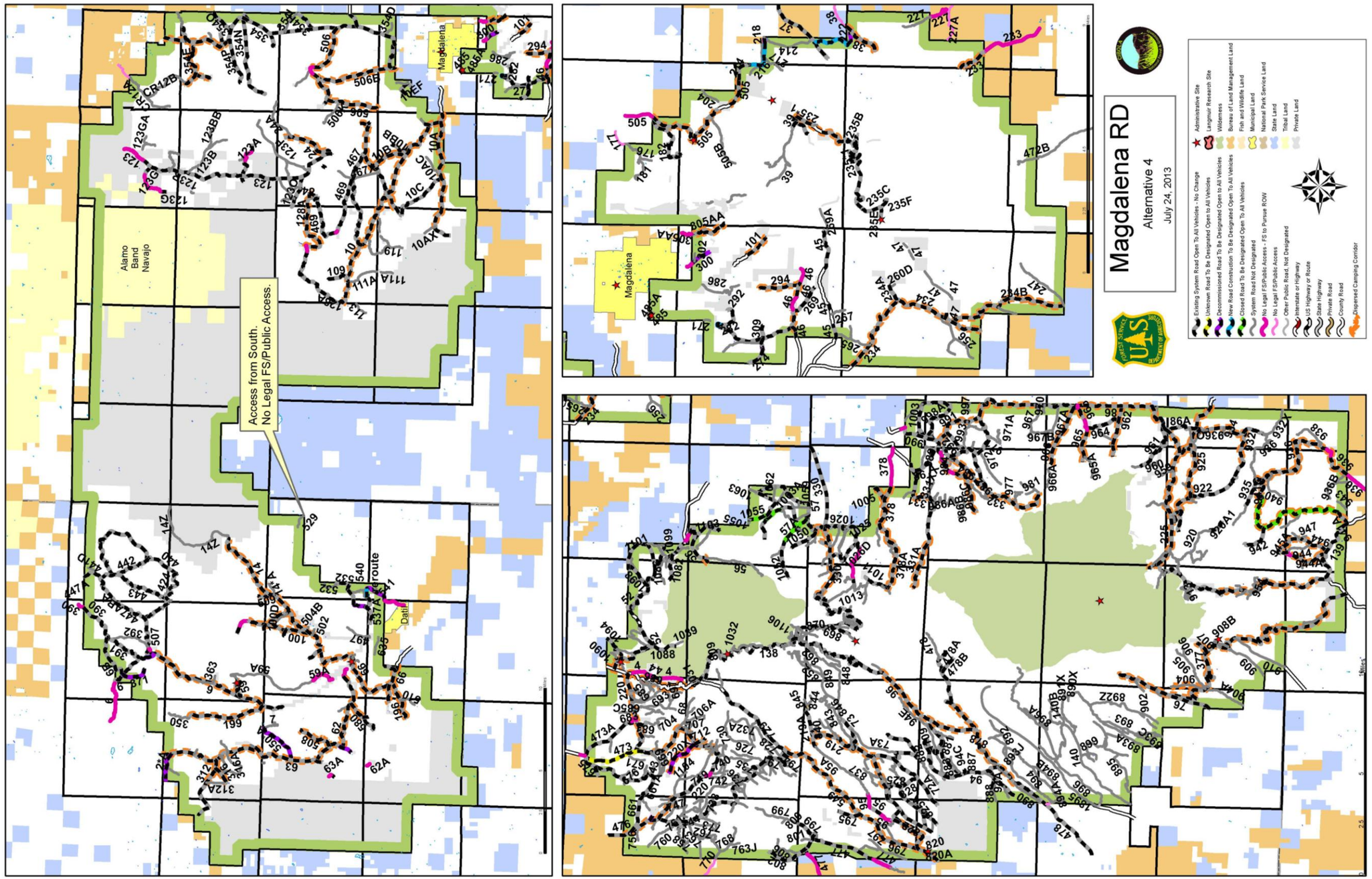
For alternative 2, please note that after the baseline data was established, discrepancies in the database were discovered. A total of 35.1 miles of road were erroneously identified as National Forest System Roads (NFSRs) that should not have been and 8 miles of NFSRs were not identified as such. These errors have been accounted for under this alternative by subtracting 27.1 miles of road from the miles of road that would be designated for motor vehicle use. This discrepancy was accounted for under alternatives 1, 3, and 4 under "roads restricted to administrative use." These database errors will be corrected prior to publishing the motor vehicle use map.)


Magdalena RD
Baseline
July 24, 2013
FS - BASIC CUSTODIAL CARE (CLOSED)
FS - HIGH CLEARANCE VEHICLES
FS - SUITABLE FOR PASSENGER CARS
FS - MODERATE DEGREE OF USER COMFORT
NO LEGAL FS/PUBLIC ACCESS
INTERSTATE HIGHWAY
US HIGHWAY OR ROUTE
STATE ROAD
PRIVATE ROAD
COUNTY
Other Public Road
Administrative Site
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land
Access from South,
No Legal FS/Public Access
Alamo
Band
Navajo
Magdalena
CR22
CR111
CR114
CR19


Magdalena RD
Alternative 1
July 24, 2013
Existing System Road Open to All Vehicles - No Change
Unauthorized Road To Be Added to System and Designated Open to All Vehicles
New Road Construction To Be Designated Open to All Vehicles
Closed Road To Be Designated Open to All Vehicles
System Road Restricted to Admin Use Only
No Legal FS/Public Access - FS to Pursue ROW
No Legal FS/Public Access
Other Public Road
Interstate or Highway
US Highway or Route
State Highway
Private Road
County Road
Dispersed Camping Corridor
Administrative Site
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land
Magdalena
Alamo Band Navajo
Access from South, No Legal FS/Public Access
Dam
Interroute


Magdalena RD
Alternative 2
July 24, 2013
Open System Road
No Legal FS/Public Access - FS to Pursue ROW
No Legal FS/Public Access
Other Public Road
Interstate or Highway
US Highway or Route
State Highway
Private Road
County Road
Administrative Site
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land
Magdalena
Alamo
Band
Navajo
Access from South.
No Legal FS/Public Access.
Monica
Canyon
Road


Magdalena RD
Alternative 3
July 24, 2013
Existing System Road Open To All Vehicles - No Change
Unauthorized Road To Be Added to System and Designated Open to All Vehicles
New Road Construction To Be Designated Open to All Vehicles
Closed Road To Be Reopened and Designated for All Vehicles
System Road Restricted to Admin Use Only
No Legal FS/Public Access - FS to Pursue ROW
No Legal FS/Public Access
Other Public, Not Designated
Interstate or Highway
US Highway or Route
State Highway
Private Road
County Road
Dispersed Camping Corridor
Administrative Site
Big Game Retrieval
Trails Area
Wilderness
Langmuir Research Site
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land
Access from South, No Legal FS/Public Access.
Magdalena
Alamo Band Navajo


Magdalena RD
Alternative 4
July 24, 2013
Magdalena
Alamo Band Navajo
Access from South.
No Legal FS/Public Access.
Existing System Road Open To All Vehicles - No Change
Unknown Road To Be Designated Open to All Vehicles
Decommissioned Road To Be Designated Open to All Vehicles
New Road Construction To Be Designated Open To All Vehicles
Closed Road To Be Designated Open To All Vehicles
System Road Not Designated
No Legal FS/Public Access - FS to Pursue ROW
No Legal FS/Public Access
Other Public Road, Not Designated
Interstate or Highway
US Highway or Route
State Highway
Private Road
County Road
Dispersed Camping Corridor
Administrative Site
Langmuir Research Site
Wilderness
Bureau of Land Management Land
Fish and Wildlife Land
Municipal Land
National Park Service Land
State Land
Tribal Land
Private Land