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**Southwestern
Region**

Final Environmental Assessment

Tusayan Ranger District Travel Management Project

Tusayan Ranger District
Kaibab National Forest
Coconino County, Arizona



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Chapter 1

Document Structure

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

- **Introduction:** This section 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.
- **Comparison of Alternatives, including the Proposed Action:** This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental effects associated with each alternative.
- **Environmental Effects:** This section describes the environmental effects of implementing the proposed action and alternative. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison to the Proposed Action.
- **Agencies and Persons Consulted:** This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- **Appendices:** The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, and analyses of project-area resources, may be found in the project planning record located at the Kaibab National Forest Supervisor's Office in Williams, AZ.

Introduction

The Tusayan Ranger District Travel Management project encompasses the entire Tusayan District of the Kaibab National Forest. The District contains 331,427 acres. Tusayan Ranger District (TRD) is located just south of Grand Canyon National Park South Rim and borders the Navajo Indian Reservation to the east, Havasupai Indian Reservation and Arizona State and private land to the west and south. The District is not contiguous with other National Forest System lands. The District is located in portions of Townships 28, 29, 30 and 31 North, and Ranges 1 West and 1, 2, 3, 4, 5, and 6 East. Figure 1 shows a map of the project area and its proximity within the State of Arizona and National Forests within Arizona. The project area encompasses Geographic Areas (GA) 8, 9, 10, 21, and 22 as identified in the Kaibab National Forest Land Management Plan (Forest Plan), and Arizona Game and Fish Department Game Management Unit (GMU) 9.

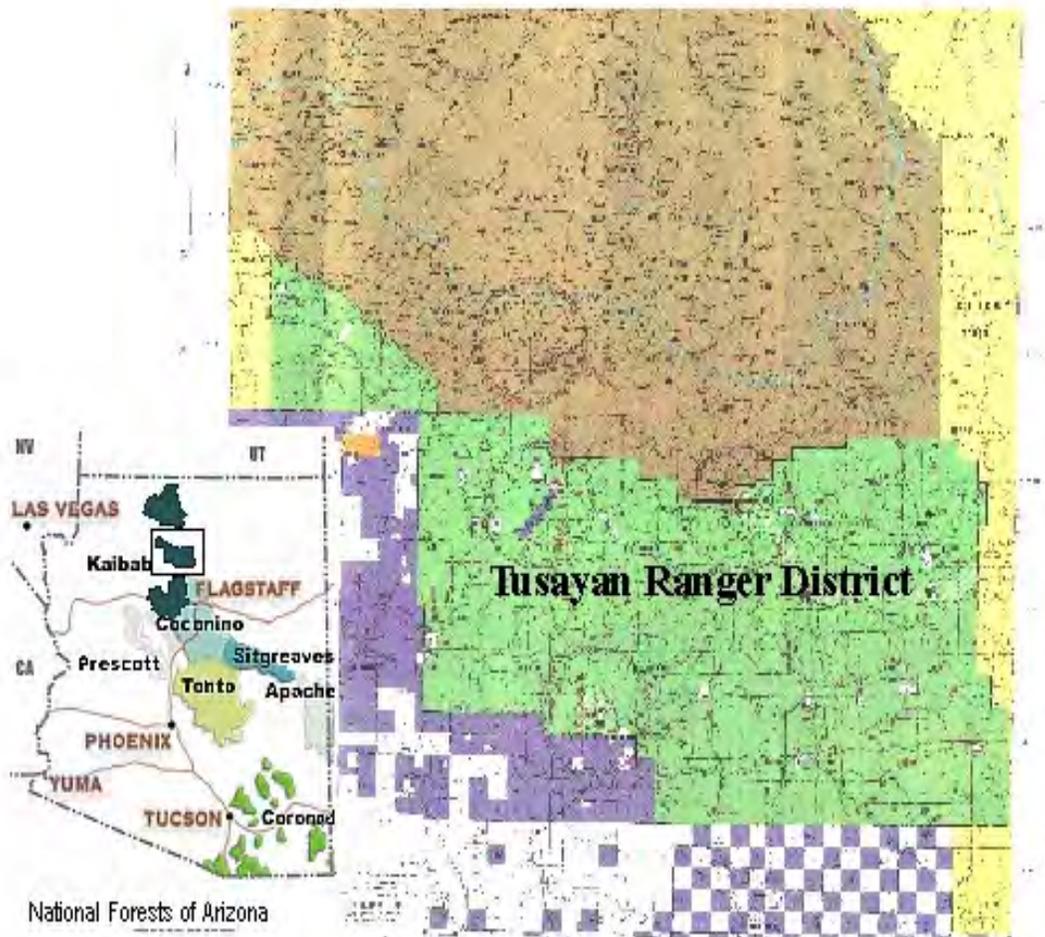


Figure 1. Map of Tusayan Ranger District and location of National Forests in Arizona.

The Geographic Areas are described in the Kaibab Forest Plan as amended (2008):

GA 10 contains 86,250 acres. The ponderosa pine vegetation type dominates the area at higher elevations. The principle elk calving, deer and pronghorn antelope fawning, and turkey nesting habitat in the TRD are located here. Most of the area is grazed by cattle from late spring until fall.

GA 21 includes the developed recreation sites on the Forest encompassing a total of 1,556 acres. For Tusayan Ranger District, developed recreation sites include Ten-X Campground and Ten-X Group Campground. These campgrounds are closed to OHV travel in the Forest Plan.

GA 22 includes proposed recreation development sites, of approximately 2,228 acres on the Forest. On Tusayan Ranger District, the Upper Basin Recreation Area was proposed for private sector

development of a campground. (There are no plans to develop any new campgrounds on the District.).

The lower elevation portions of GA 8 and 9 contain pinyon-juniper and grasslands vegetation types with scattered areas of ponderosa pine. These GA contain 195,118 acres and 43,377 acres respectively. These areas provide winter habitat for mule deer and wintering elk. The eastern portion of the area provides most of the winter habitat on the District for pronghorn antelope. Open grasslands are scattered throughout the area and are important forage areas for livestock and wildlife. There are no developed recreation sites. In GA 8 the area encompassing Red Butte is closed to all vehicles and in GA 9, the Coconino Rim escarpment is closed to motorized vehicles. Much of the rest of the district is open to motorized cross country travel. The Arizona Trail is a main non-motorized trail through the area. A segment of Great Western Trail crosses the District, providing a designated motorized route on existing forest roads.

The Forest Geographic Areas for Tusayan Ranger District are displayed in Figure 2. Additional information and management direction for these areas is found in the Kaibab National Forest Management Plan (Forest Plan).

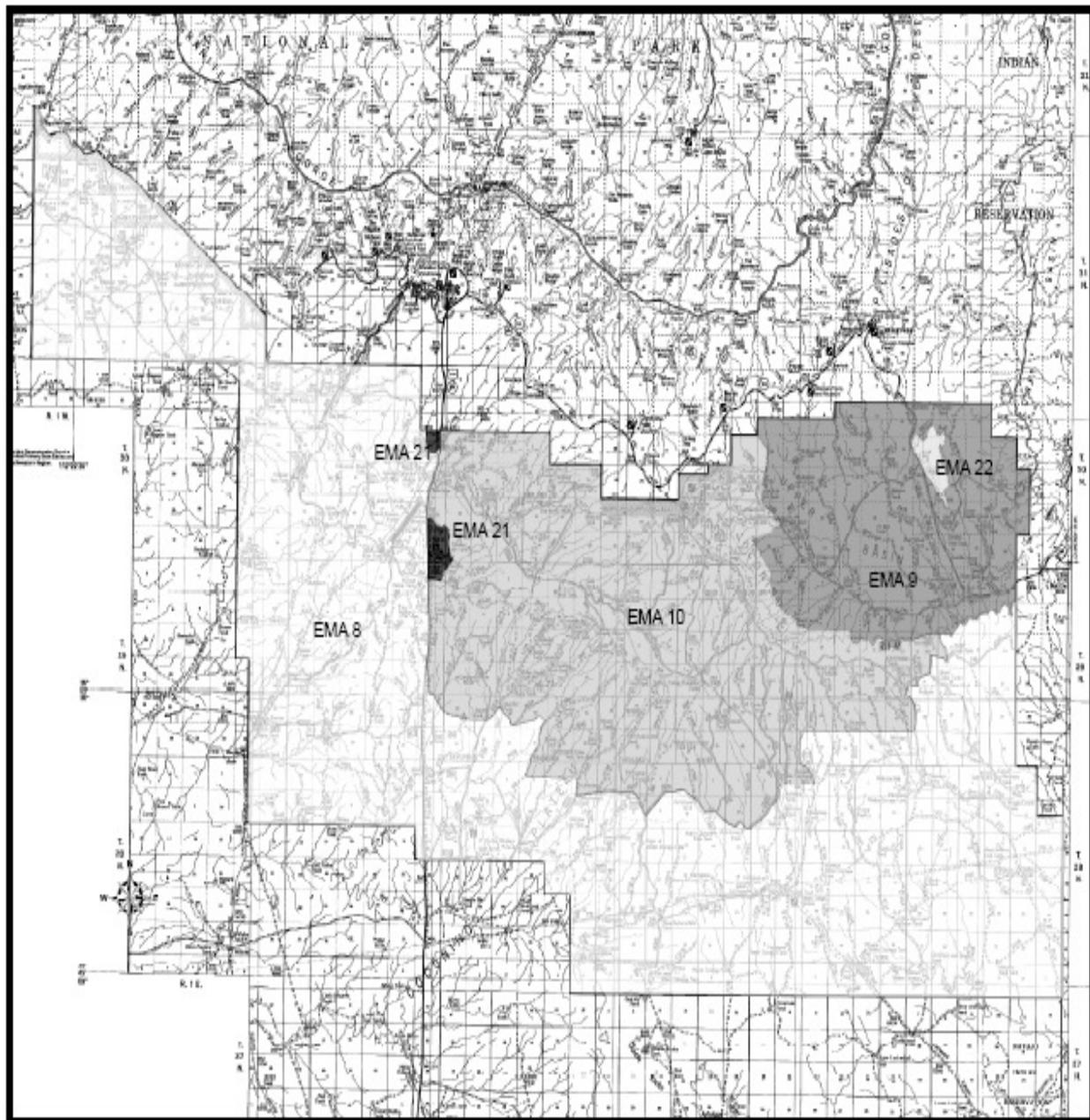


Figure 2. Location of geographic areas.

Background

On November 9, 2005, the Forest Service published final travel management regulations governing off-highway vehicles (OHV) and other motor vehicles on National Forests and grasslands. These regulations amended part 212, subpart B of part 251, subpart A of part 261, and removed part 295 of title 36 of the Code of Federal Regulations (CFR). Together, these regulations are referred to as the Travel Management Rule (TMR). The TMR was developed in response to the substantial increase in use of OHVs on National Forest System lands and related damage to Forest resources caused by

unmanaged OHV use over the past 30 years. The regulations implement Executive Order (EO) 11644 and EO 11989 regarding off-road use of motor vehicles on Federal lands.

Per the TMR, the District must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. 36 CFR 212.5 further describes the minimum system is the road system needed to achieve the following:

- Meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219);
- Meet applicable statutory and regulatory requirements;
- Reflect long-term funding expectations;
- Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance;

In order to identify the minimum road system, Forests are required to use a science-based travel analysis and involve a broad spectrum of interested and affected citizens, state and federal agencies, and Tribal governments.

The new travel management rule, hereafter referred to as the “Rule” requires each National Forest to designate those National Forest System roads, motorized trails, and areas under the jurisdiction of the Forest Service that are open to motor vehicle use. The designations are made by class of vehicle and, if appropriate, by time of year (36 CFR 212.51). It prohibits the use of motorized vehicles off the designated system, as well as use of motor vehicles on routes and in areas that are not consistent with the designations. The clear identification of roads, trails and areas for motor vehicle use is intended to enhance management of National Forest System lands; sustain natural resource values through effective management of motor vehicle use; enhance opportunities for motorized vehicle use; address needs for access to National Forest System lands; and preserve areas of opportunity on each National Forest for non-motorized travel and experiences.

This process also meets specific requirements of 36 CFR 212, subparts A and B:

1. To designate a system of National Forest System roads, National Forest System trails, and areas on National Forest system lands for motor vehicle use. Motor vehicle use off of this system is prohibited.

It partially meets specific requirements of 36 CFR 212, subparts A and B:

2. For the Forest transportation program: develop and maintain a travel management atlas, a Forest transportation atlas, and program of work for the Forest transportation system.

Since this analysis is limited to one district of the forest, it does not meet this requirement for the entire forest. This document with the accompanying Tusayan Travel Analysis help to inform the travel management atlas, forest transportation atlas and transportation program of work.

Purpose and Need

- There is a need for improving management of motorized vehicle use on National Forest System lands within the Tusayan Ranger District in accordance with provisions of the Travel Management Rule and 36 CFR parts 212, 251, and 261.
- There is a need for complying with the Travel Management Rule and 36 CFR part 261.13 which requires that Forests prohibit motor vehicle use off the system of designated roads, trails and areas.
- There is a need for complying with the Travel Management Rule, 36 CFR part 212.5, which requires that Forests identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection. There is also a need for complying with 36 CFR 212.51 (a) which requires Forests to designate a system of roads, trails and areas for vehicle use by vehicle class, and if appropriate, by time of year.

Existing Condition

Motor vehicles are used to access and engage in a wide range of recreational activities on the Tusayan Ranger District (TRD). With the exception of two closure areas, vehicles may drive on existing forest roads and drive cross-country across the district. Local tribes use motorized vehicles to access Forest areas for activities such as gathering resources for traditional medicines, ceremonial items, craft items, and other traditional uses, and collecting resources such as pinyon nuts and fuel wood for personal use. Vehicles are also used for administrative and commercial uses as support for fuels reduction and vegetation management projects, grazing management, utility maintenance, mining, special uses, and outfitter guide services.

Approximately 800 miles of roads cross the Tusayan Ranger District including state and federal highways, county roads, private roads, community roads and forest roads. The Forest Service has jurisdiction on about 709 miles of forest roads (see Table 1) and provides access to private land parcels with permitted roads¹ and will not be considered in this decision except for their cumulative effects. All existing roads on the District are displayed in Figure 1 (note that the analysis will only address the existing forest roads).

In addition to the forest roads, there are also unauthorized routes that are not part of the forest road system. At the time the inventory for this analysis was completed in 2005, there were over 160 miles of unauthorized routes.

Table 1 Existing forest road system and unauthorized routes on Tusayan Ranger District (2005 data).

Jurisdiction of Road	Approximate Number of Miles
Existing Forest Road System Open to Motorized Travel	709
Unauthorized Routes	166*
Private Roads	13
State Highway	22

¹ Alaska National Interest Landsc Conservation Act.

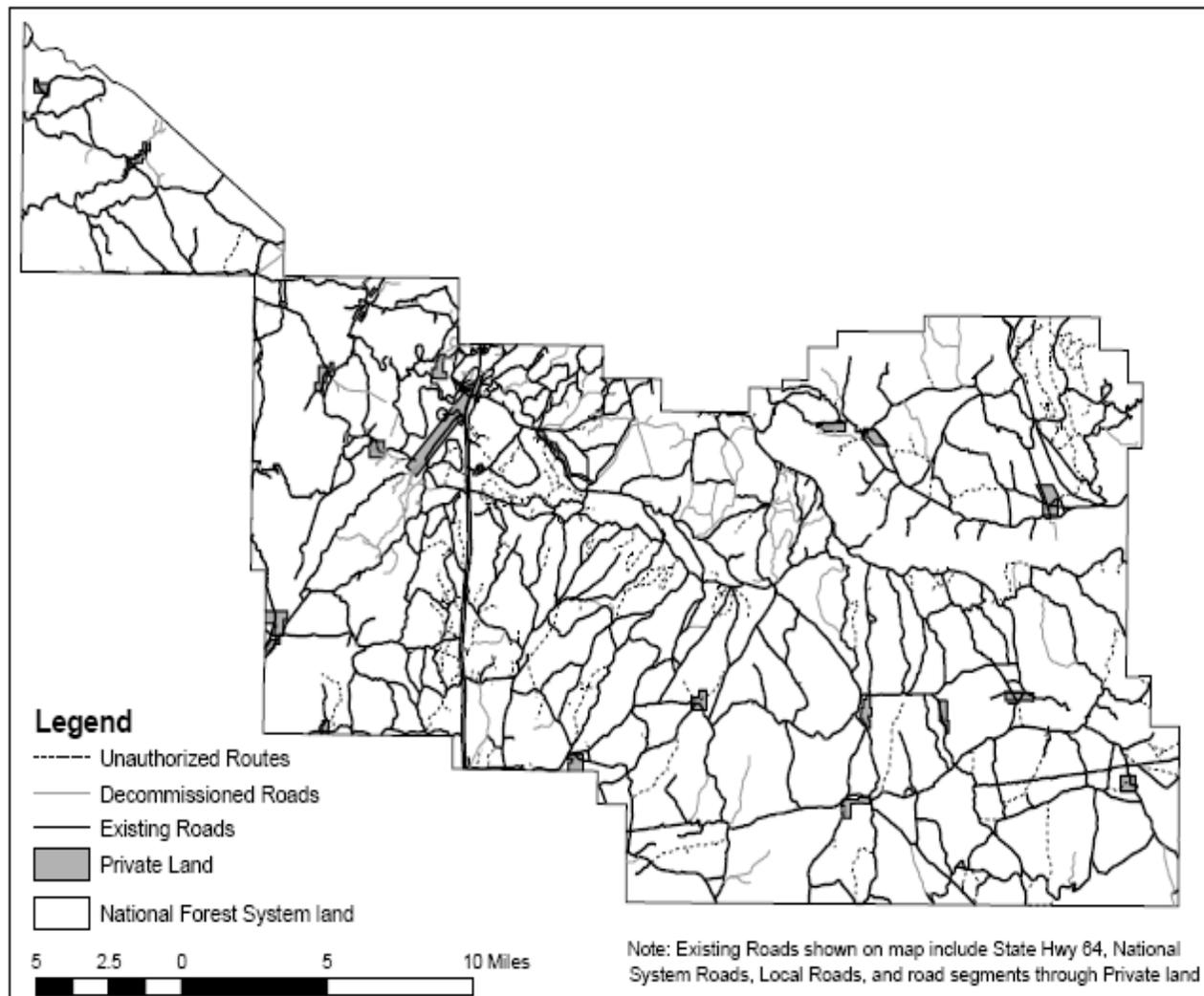


Figure 3. Existing roads and unauthorized routes crossing Tusayan Ranger District (2005 data).

The Forest Service has been directed to develop and maintain a forest transportation atlas (FTA). It displays the designated system of roads, trails and airfields of the administrative unit (see glossary). The FTA is continually updated to reflect new information, and therefore information from the FTA reflects the most current information regarding roads, trails and areas at a particular point in time. The most recent roads inventory data for Tusayan Ranger District is from 2005; this data is the basis for this analysis. When a decision on this proposal is made, the FTA will be updated.

Roads evaluated in this analysis are the existing National Forest System roads which are maintained at five different maintenance levels. Table 2 describes the existing forest roads by maintained by the Forest Service to provide motorized access to the district. The Forest Service uses five maintenance levels (ML) to classify roads, ranging from ML-1 indicating a road closed to motorized use, to ML-5, indicating a high degree of use comfort and convenience. This report will refer to passenger car roads (ML 3, 4, 5 that a typical sedan could drive down) and high clearance roads (ML 2, that require a

vehicle such as a pickup with higher clearance). Unauthorized routes are not part of the National Forest System of roads or trails and are not maintained by the agency.

Table 2. Current forest road system by maintenance level, Tusayan Ranger District (2005 data).

Maintenance Level	Approximate Miles of Existing Forest Roads*	Percent of Existing Forest Roads
2 – High Clearance Roads	612	86%
3, 4, 5 - Passenger Car Roads	97	14%
TOTAL	709	100%

*Mileages are derived from the 2005 inventory and are approximate. No ML-1 or ML-5 roads on TRD.

Per Arizona State Law beginning January 1, 2009 (Arizona SB 1167, 2008), forest roads managed at Maintenance Levels 3, 4, and 5 are subject to the Highway Safety Act and are considered maintained roads. These are open to travel by passenger cars. The State of Arizona requires that motorists using passenger car forest roads may operate OHV if the OHV is “highway-legal” (registered in the State of Arizona). Unlicensed drivers and non-highway legal OHVs as well as highway-legal vehicles can be operated on high clearance roads (Maintenance Level 2)².

Desired Condition

The desired condition for the Tusayan Ranger District is to have a designated system of National Forest System roads open for motor vehicle use. The designated road system is managed, more sustainable and consistent with District recreation opportunities and Forest Service administrative needs. Cross country motorized travel across the District is prohibited, except as specified for permitted uses, such as in a designated fuel wood gathering location. Opportunities are provided for motorized access to dispersed camping along designated corridors. A minimal amount of unauthorized routes are adopted into the designated road system to provide access to recreation opportunities (day use, dispersed campsites, etc.). Hunters may use a motorized vehicle to travel up to one mile cross-country to retrieve legally downed and tagged elk during all elk hunting seasons.

Kaibab Forest Plan Direction

The Kaibab National Forest Land and Resource Management Plan (as amended) contains the following direction relating to the proposed project:

- *Establish off-road vehicle [ORV] closures as needed to maintain other resource objectives. Manage ORV use to provide ORV opportunities while protecting resources and minimizing conflicts with other users. (Pg 18)*
- *Provide and manage a serviceable road transportation system that meets needs for public access, land management, resource protection, and user safety. Provisions are made for the construction and reconstruction, maintenance, seasonal and special closures of Forest roads; and obliteration of unnecessary roads. (p. 19)*
- *Manage road densities at the lowest level possible to minimize disturbance in Goshawk nest areas. (p.23)*

² For more information about the Arizona OHV program, go to <http://www.pr.state.az.us/partnerships/ohv/OHVindex.html>

- *Close project specific areas to off-road vehicle traffic; refer to ORV Map for location of closure areas, and ROS Map for location of SPNM [semi-primitive non-motorized] areas. (pg 73)*
- *Monitor off-road vehicle (ORV) use during scheduled patrols and revise the ORV plan to prevent resource damage and user conflicts. Provide adequate off-road vehicle (ORV) signing to advise the public of motorized restrictions. (pg 69-70)*

Proposed Action

The Tusayan Ranger District proposes to:

- Remove about 163 miles from the existing open forest road system. These roads will be for administrative uses only (not open to public motorized travel).
- Prohibit use of most unauthorized routes. About 6 miles of unauthorized routes will be added to the designated forest road system.
- Prohibit cross country motorized vehicle use on national forest system land on the Tusayan Ranger District, Kaibab National Forest, except as specified for permitted uses (administrative uses, designated fuel wood gathering areas, timber sales, required range permittee maintenance and operations, etc.).
- Provide for limited use of motorized vehicles for the purposes of dispersed camping and big game retrieval for elk, 36 CFR 212.51 (b) Approximately 17 miles of camping corridors along the national forest system of roads will be designated. These camping corridors will be 300 feet wide. Authorized cross country motorized big game retrieval for elk is limited to those persons with a legally harvested, and properly tagged animal. Hunters may travel for up to one mile from a designated route. Only one vehicle is allowed per harvested animal.

Table 3. Summary of existing and proposed action road systems for Tusayan Ranger District.

Category	Existing Road System Approx. Mileage	Proposed Action Approx. Mileage
Miles of Designated National Forest System of Open to Public Travel	709	546
Miles of Forest Roads for Administrative Use Only	0	163
Miles of Unauthorized Routes	166	0
Routes Added to Designated Motorized Road System	0	6
Area Closures	Current Acres	Proposed Acres
Acres Closed to Motorized Cross-Country Travel	9,695*	327,363**

*Existing administrative closures for motorized cross-country travel at Coconino Rim and Red Butte. **In the Proposed Action the entire District is closed to motorized cross country travel.

In addition to the motorized travel designations, the proposed action requires amending the “Kaibab National Forest Land and Resource Management Plan” (Forest Plan) to adjust plan direction that is inconsistent with the Travel Management Rule direction related to how the designations would be implemented (see Appendix 1 for specific changes to the plan). The proposed action is consistent with other direction in the forest plan as discussed in a subsequent section.

More information about the Proposed Action, No Action, and other alternatives considered are displayed in Chapter 2.

Notes on the Proposed Action and its Relation to the Motor Vehicle Use Map

The environmental analysis and decision will result in the designation of roads open to motorized use. After the designation, a motor vehicle use map (MVUM) showing the designated routes and areas will be published per section 212.56.

The MVUM will be distributed at Forest Service offices, visitor information centers, and on the internet. It will be the tool that implements the decision made about which roads are designated for motor vehicle use, in what kind of vehicle. The MVUM may be updated and changed as needed. Some of the roads proposed and designated may not show up on the first version of the map, nor may all potential dispersed camping corridors or routes for recreation access, because the survey and clearance for resources may not be finished at the time of the final decision. As clearances are completed, the roads, dispersed camping areas and routes for recreation access will be added. It will be prohibited to use motorized vehicles on roads until they are published on the MVUM. The forest will produce MVUM annually or as needed to reflect changes.

Decision Framework

Given the purpose and need, the responsible official will review the Proposed Action and the other alternatives in order to make the following decisions:

- Whether to designate a National Forest System of roads, trails, and areas for motorized travel, by vehicle class.
- Whether to prohibit motorized cross-country travel on the Tusayan Ranger District, except as specified for permitted uses (such as fuel wood gathering in a specific permit area).
- Whether to allow limited use of motorized vehicles within a specified distance of certain designated routes for the purposes of dispersed camping and/or big game retrieval for elk.

Public Involvement and Agency Coordination

A District-wide travel analysis process (TAP) was developed in May 2006 (this was updated in 2008 to more closely follow the proposed travel analysis guidance in FSM 7710.2). In the travel analysis, the existing forest road system was analyzed. Resource specialists provided input and variables for the analysis, and a risk-benefit matrix was developed based on this input. A preliminary road system was developed from the risk-benefit matrix. The preliminary road system was reviewed with the public during the 2006 TAP. Input was gathered from the public, Tribal governments and immediately-affected Tribal communities, and other agencies. Based on the public involvement, adjustments were made on the preliminary road system, and this became the Proposed Action for the Tusayan Ranger District (TRD) Travel Management project. The Tusayan Travel Analysis is available on the Kaibab National Forest website (<http://www.fs.fed.us/r3/kai/travelmanagement/index.shtml>).

In the fall of 2006, the proposed action based on the TAP was scoped with the public. Input was gathered from the public, Tribal governments and immediately-affected Tribal communities, and other agencies. During scoping, the public was advised that there would be guidance coming from the Southwestern Region addressing dispersed camping and big game retrieval. This information has been incorporated into this environmental analysis.

An additional alternative was developed based on public comments during the scoping period. Alternative 3 retains additional roads identified by OHV riders that includes ties together routes the riders currently enjoy. An alternative was also proposed by local environmental groups that reduced the open road system by about 80 percent in order to provide for wildlife concerns. This proposal would use the Forest Service identified Wet Weather road system the designated system of roads open to the public for motorized travel. This proposal was discarded after preliminary analysis (see Chapter 2 alternatives eliminated from detailed analysis).

Issues

Using the comments received during the scoping period, several issues were identified. An issue is defined as a discussion, debate, or dispute regarding effects. The issues were separated into two groups: significant and non-significant issues. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other

higher level decision; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific or factual evidence, or 5) limited in duration, distribution, and intensity, so that the level of effect is not significant. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." Significant issues were defined as those that required changes in the proposed action to minimize or mitigate potential adverse effects. These issues and the agency responses are presented below.

Many comments were received identifying concerns or opinions regarding the proposed action and the Travel Management Rule. Significant issues that resulted in creation of alternatives follow:

1. Designating a minimum road system would restrict motorized recreation opportunities.

Response: There is a need to identify a minimum road system that would be responsive to recreation users as well as other management needs. Per the discussion of comments and responses in the Travel Management Rule (TMR), the availability of resources should be a consideration in designating routes for motor vehicle use; however, scarcity of resources should not lead to blanket closures of National Forest System lands to recreation users.

The Tusayan Travel Analysis Process (TAP) was used to evaluate the existing road system for risks and values to resource management activities. Public input was included in the evaluation, and the result was the minimum road system identified as Alternative 2, the proposed action.

Alternative 3 was generated in response to this issue. It includes about 20 miles of additional roads that users identified as using in a motorized tour route around the District.

2. Wildlife habitat and migration corridors will be negatively impacted unless a minimal road system is designated.

Response: Alternatives 2 and 3 would prohibit motorized cross-country travel and would reduce road density from the existing condition. These actions would be beneficial for most wildlife species.

The proposal from environmental groups to make the Wet Weather road system was reviewed, and preliminary analysis completed. The proposal was later discarded, see Chapter 2 alternatives eliminated from further analysis.

The comments and response summary for scoping can be found in Appendix 2.

Chapter 2 - Alternatives

This chapter describes and compares the alternatives considered for Tusayan Ranger District Travel Management. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

Alternatives Analyzed in Detail

Alternative 1 - No Action

A no action alternative is required by regulation and is used as a baseline for comparison of alternatives. This alternative would not implement the new Travel Management Rule (TMR) nor fulfill the purpose and need. The no action alternative is the continuation of existing motor vehicle use on the Tusayan Ranger District (TRD). It would not restrict motor vehicle use or make any changes to the transportation system at this time. Cross-country motorized travel would continue to be allowed except in areas currently closed to vehicular travel (Red Butte and Coconino Rim); existing roads would remain open and unchanged. Dispersed camping and big-game retrieval would continue as currently managed. Resource damaged caused by motorized cross-country travel would continue and increase as off-highway vehicle (OHV) use increases, as would damage caused by unregulated dispersed camping.

In the previous chapter, Figure 3 illustrates the existing road system.

Items Common to Alternatives 2 and 3

Motorized cross-country travel would be prohibited on the Tusayan Ranger District (TRD). Some vehicles and uses are exempt from the prohibitions of the designation process (36 CFR 212.51(a)) these are: (1) aircraft; (2) watercraft; (3) over-snow vehicles; (4) limited administrative used by the Forest Service; (5) use of any fire, military, emergency, or law enforcement vehicle for emergency purposes; (6) authorized use of any combat or combat support vehicle for national defense purposes; (7) law enforcement response to violations of law, including pursuit; and (8) motor vehicle use specifically authorized under a written authorization issued under Federal law or regulations” (36 CFR 212.51(a)(8)).

Implementation of TMR will require active management of all motorized use, including that related to permitted grazing activities, special use authorizations, forestry program activities, timber sale contracts, and authorized administrative uses. Operating plans for permits will include specific instructions relating to TMR. All authorizations for cross-country motorized travel are subject to existing regulations intended to protect natural and/or heritage resources. This includes National Forest Wilderness (36 CFR 261.18), National Forest Primitive Areas (36 CFR 261.21) as well as other applicable laws and regulations. Authorized Forest Service use will also be limited to that use necessary for management of national forest system lands. Personnel will be encouraged to use the designated forest road system and refrain from motorized cross-country use whenever possible.

All alternatives provide for dispersed camping and game retrieval.

Alternative 1 is the current management strategy of unrestricted motorized cross-country travel except at Red Butte and Coconino Rim closure areas.

Alternatives 2 and 3 allow for limited motorized vehicle use for dispersed camping and game retrieval per 36 CFR 212.51 (b): “In designated routes, the responsible official may include in the designation the limited use of motor vehicles within a specified distance of certain designated routes, and if appropriate within specified time periods, solely for the purposes of dispersed camping or retrieval of a downed big game animal by an individual who has legally taken that animal.”

Items Common to All Alternatives

Dispersed Camping and Access for Dispersed Recreation

No camping corridors or motorized routes to dispersed campsites will be located within ¼ mile of a water source or in locations with heritage, soil/watershed, or rare plant concerns.

1) Camping Corridors

A dispersed campsite is a place where people camp that is not in a developed campground. Dispersed campsites do not have picnic tables or fire rings provided by the Forest Service, but may have rock fire rings built by a camper. To address the observed pattern of short-term camping use by Grand Canyon National Park visitors near State Highway 64 and along major forest road corridors, limited use of camping corridors will be employed. Where appropriate, allow camping in designated corridors where a vehicle may pull a maximum of 300 feet off a designated forest road to establish a dispersed camp. The preferred motorized travel within the corridor is the most direct route to the chosen camp site. Other travel within the corridor to search for or link campsites is discouraged. Corridors will be used in limited locations that are cleared for resource concerns. A designated corridor will be identified on the MVUM as well as by a marker indicating the start and end of the corridor. Individuals may choose their campsite within this corridor.

Camping corridors are proposed along parts of forest roads 328, 302, 303, 306, 347, 688, 2703, 2732, 304, 301, 2758, 310, 307, and 320. The corridors would include a maximum of 17 miles and resource impacts on approximately 618 acres. The final miles/acres of corridors is dependent upon completion of resource clearances, (some corridors or parts of corridors may be eliminated).

2) Designate Routes to Access Dispersed Recreation Opportunities

Designate short motorized routes to access dispersed recreation opportunities. About six miles of existing unauthorized routes would be added to the open road system. Existing motorized routes will be selected that correspond to the observed patterns of use by hunters, and forest users who participate in forest product gathering, camping, and other recreation opportunities. The road segments, up to 300 feet long, may be used to park on for dispersed recreation such as camping or day-use activities. Existing routes will be used unless resource clearances identify these are unsuitable for this activity. Recent survey of the existing routes showed that only a few routes were longer than 300 feet, thus this distance was selected as the standard length. The designated segments would be shown on the MVUM, signed and included in the designated open road system. Resource impacts would impact a maximum of 32 acres (average 300 feet of road plus 100 foot x 100 foot campsite). If all routes are designated, this would add approximately 6 miles of road to the designated system of open roads. The final number of acres disturbed is dependent

upon completion of resource clearances (soils, wildlife, heritage), as some access routes may be eliminated.

Figure 4 displays the proposed camping corridors and potential routes to be designated to access dispersed recreation opportunities. Both camping corridors and access to dispersed recreation are subject to review for resource concerns, and some locations may not be included on the 2009 motor vehicle use map. Corridors are highlighted in gray, and recreation access points are black dots.

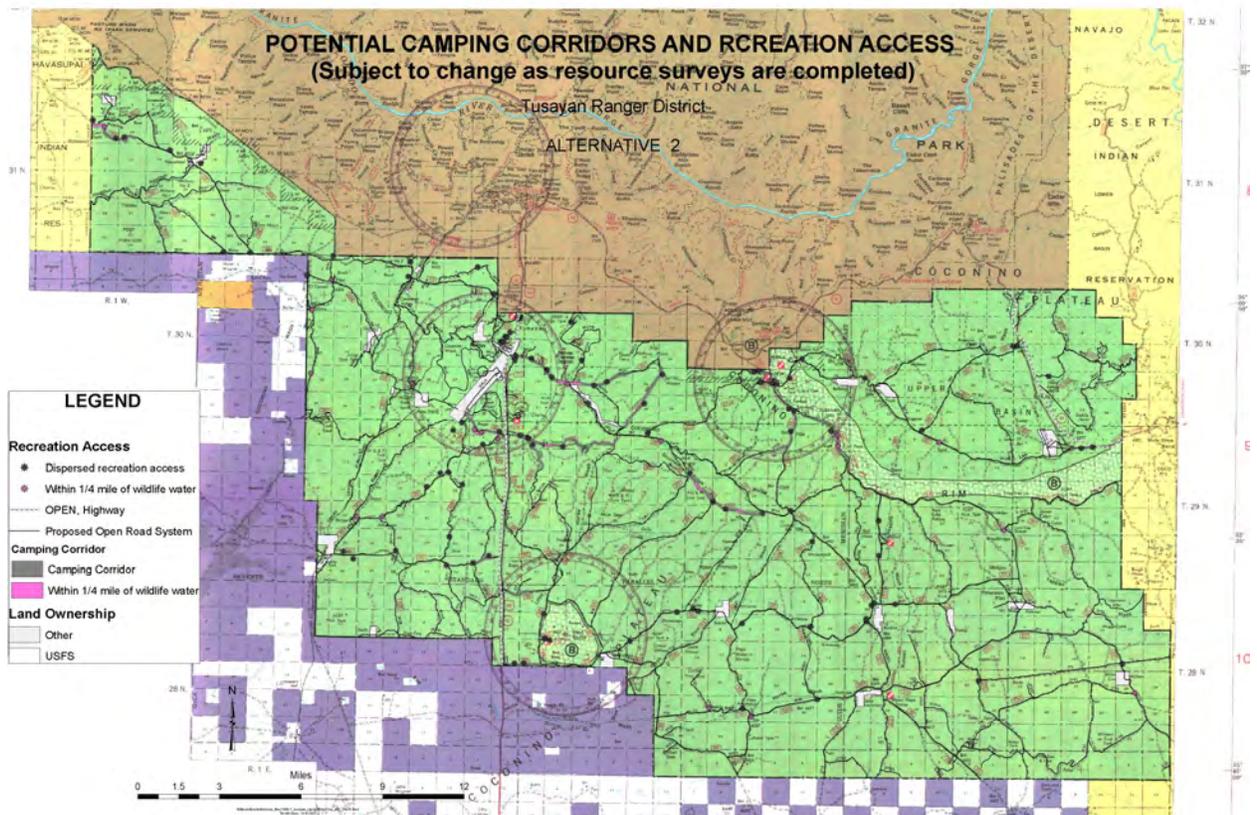


Figure 4. Locations of proposed camping corridors and recreation access routes.

Big Game Retrieval

National Forests in the Southwestern Region provide hunting opportunities that are important to the public (see notice and comment results in Appendix 3). State agencies are responsible for managing big game within the capacity of the land.

All authorizations for cross-country motorized big game retrieval are subject to other existing regulations including use of vehicles off roads (36CFR 261.15), National Forest Wilderness (36CFR 261.18), and National Forest Primitive Areas (36CFR 261.21).

In collaboration with the Arizona Game and Fish Department, cross country motorized big game retrieval on the Tusayan Ranger District is authorized for elk during elk hunting seasons. This authorization would help to meet the State big game harvest and management objectives, to avoid spoilage of meat, and to provide for State programs related to disabled hunters.

The first option for hunters is to use the designated road system to get close enough to retrieve their animal without driving cross-country. Authorized cross country motorized big game retrieval is limited to those persons with a legally harvested and properly tagged animal. Those authorized should take one vehicle in a direct and safe route that minimizes resource effects when retrieving their harvested animal, and should take the minimum number of trips to accomplish retrieval. Hunters may travel for up to one mile from a designated route. Only one vehicle is allowed per harvested animal. Legally harvested elk may be retrieved during the legal elk hunting season and for 24 hours following the end of the specific season. Motorized game retrieval would not be authorized for any other hunts.

Alternative 2 - Proposed Action

The proposed action would remove about 163 miles of existing National Forest System (NFS) roads currently open to motorized travel. Per Arizona State law, travel on passenger car roads would be limited to registered vehicles and licensed operators. The high-clearance roads would be open to operators of non-highway-legal OHV as well as other motorized vehicles. Approximately 6 miles of unauthorized routes would be incorporated into the open road system in order to provide access for dispersed recreation. Motorized cross-country travel would be prohibited, except for exempt and permitted uses (see details under items common to action alternatives, page 27).

Figure 5 illustrates the proposed road system as compared with the existing roads. Table 4 summarizes road data for the proposed action.

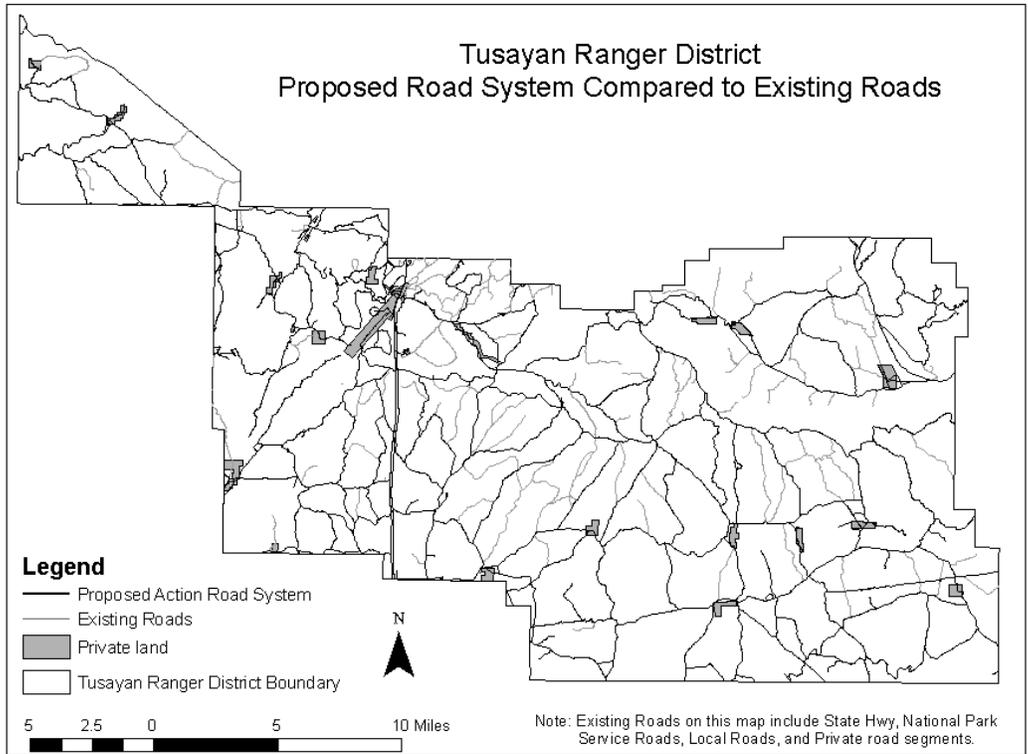


Figure 5. Proposed action road system open to motorized travel compared to existing roads.

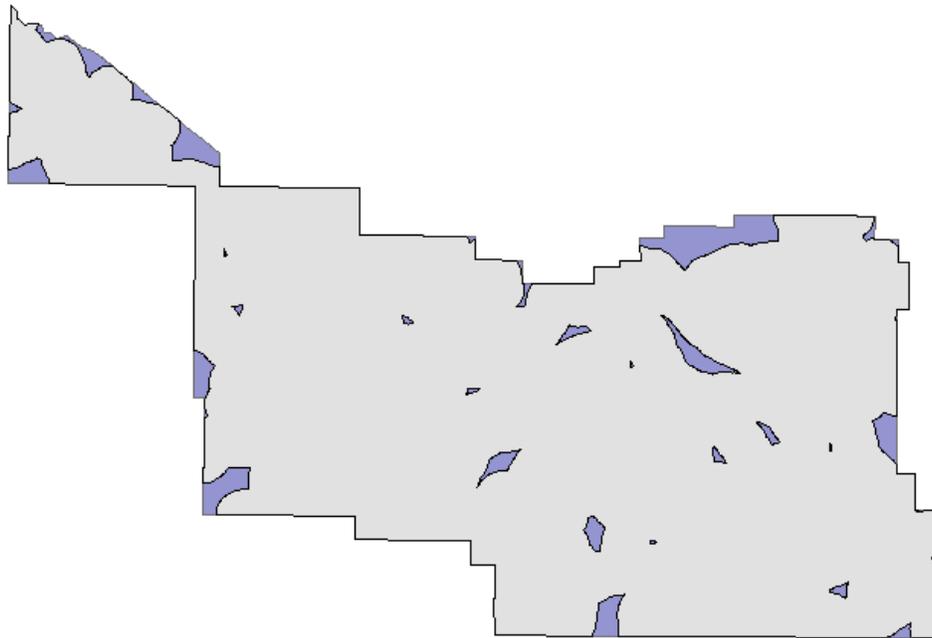
Table 4. Proposed action road summary.

Status	Approx. Miles of Road	Percent of Total Existing Roads (709 mi.)
NFS Designated Roads Remaining Open to Motorized Public Travel	546	77%
Roads for Administrative Use Only	163	23%
Proposed Action Open Roads	Miles of Road	Percent of Proposed Action Roads (546 mi.)
Passenger Car Roads Open to Public Travel	105	19%
High Clearance Roads Open to Public Travel	455	83%
Unauthorized Routes Status	Miles of Road	Percent Increase in FS Roads
Miles Added for Recreation Access	6	1%

Figure 6 illustrates the game retrieval opportunities for the proposed action with a simple one-mile buffer of the proposed action road system. Note that with the proposed one-mile vehicle access limit from the proposed road system; most of the district can be accessed for game retrieval. Existing area closures to motorized travel would continue along the Coconino Rim and at Red Butte; these areas would not be open to motorized game retrieval for elk.

Tusayan Alt 2 - TMR Mile Road Buffer

Clipped to District boundary to calculate acres



Legend

□ Roads with One Mile Buffer

Land Ownership

■ National Forest System Land



Figure 6. Proposed action motorized big game retrieval opportunities with one-mile road buffer.

Dispersed camping opportunities were shown in Figure 4 above. Camping corridors would provide camping opportunities along 17 miles of forest roads and about six miles of unauthorized routes would be added to the designated open road system to provide access for recreation activities.

Alternative 3

Alternative 3 would remove about 143 miles of the existing National Forest System (NFS) roads from public travel. It retains about 20 additional miles of open roads as compared to the proposed action. Per Arizona State law, the passenger car roads would be open to operators of registered OHV and other vehicles, and licensed drivers. The high clearance roads would be open to “non-highway-legal” OHV, as well as other motorized vehicles. Approximately 6 miles of unauthorized routes would be incorporated into the open road system in order to provide access for recreation activities. Motorized cross-country travel would be prohibited, except for exempt and permitted uses (see details under items common to action alternatives, page 27)

Figure 7 shows the road system for Alternative 3 as compared with the existing roads. Table 5 provides the miles of proposed roads compared to the existing road system.

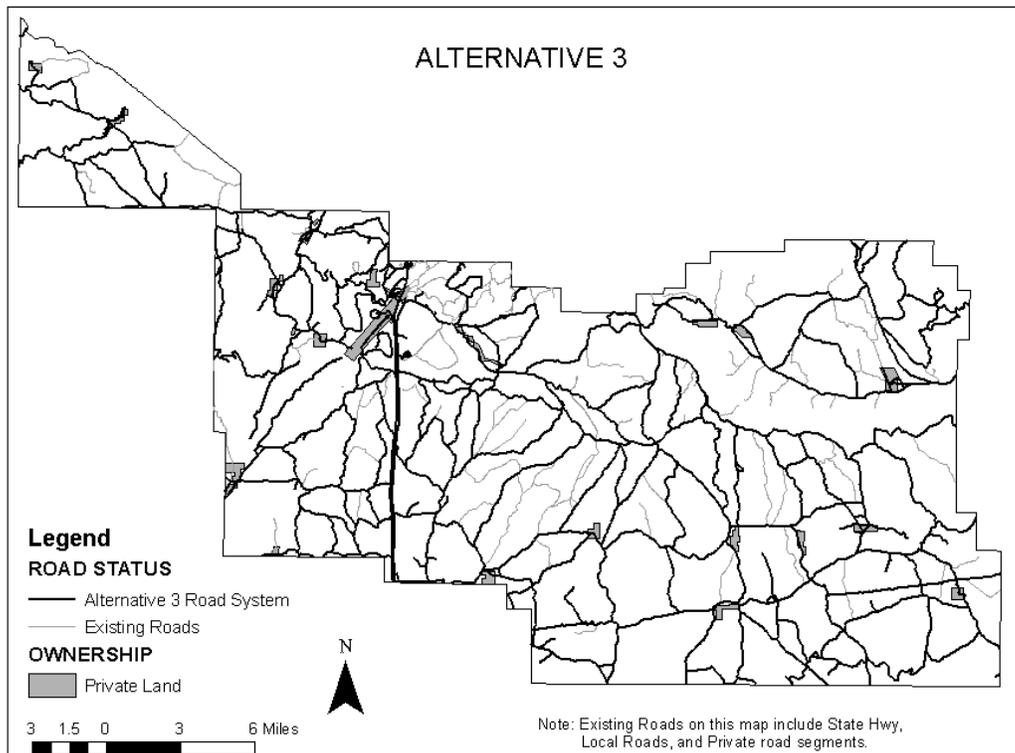


Figure 7. Alternative 3 open road system compared to existing roads.

Table 5. Existing and Alternative 3 road systems comparison.

Status	Miles of Road*	Percent of Total Existing Roads (709 mi.)
NFS Designated Roads Open to Motorized Travel	566	80%
Roads for Administrative Use Only	143	20%
Alternative 3 Roads Open to Motorized Travel	Miles of Road	Percent of Alternative 3 Roads (566 miles)
Passenger Car Roads Open to Motorized Travel	105	19%
High Clearance Roads Open to Motorized Travel	475	84%
Unauthorized Road Status	Miles of Road	Percent Increase in FS Road System
Miles Added for Recreation Access	6	1%

* Numbers are approximate.

Figure 8 illustrates the game retrieval opportunities for alternative 3 using a simple one-mile buffer of the Alternative 3 road system. Note that the one-mile driving limit from open roads for motorized game retrieval provides access from most of the district. Existing area closures to motorized travel would continue along the Coconino Rim and at Red Butte; these areas would not be open to motorized game retrieval for elk.

Dispersed camping opportunities are the same as the proposed action shown in Figure 4 above. Camping corridors provide camping opportunities along 17 miles of forest roads and about six miles of unauthorized routes would be potentially added to the road system open to motorized travel to provide access for recreation activities. Dispersed camping corridors and routes for recreation access routes will be subject to resource surveys and only those areas that have no resource conflicts will be shown on the Motor Vehicle Use Map.

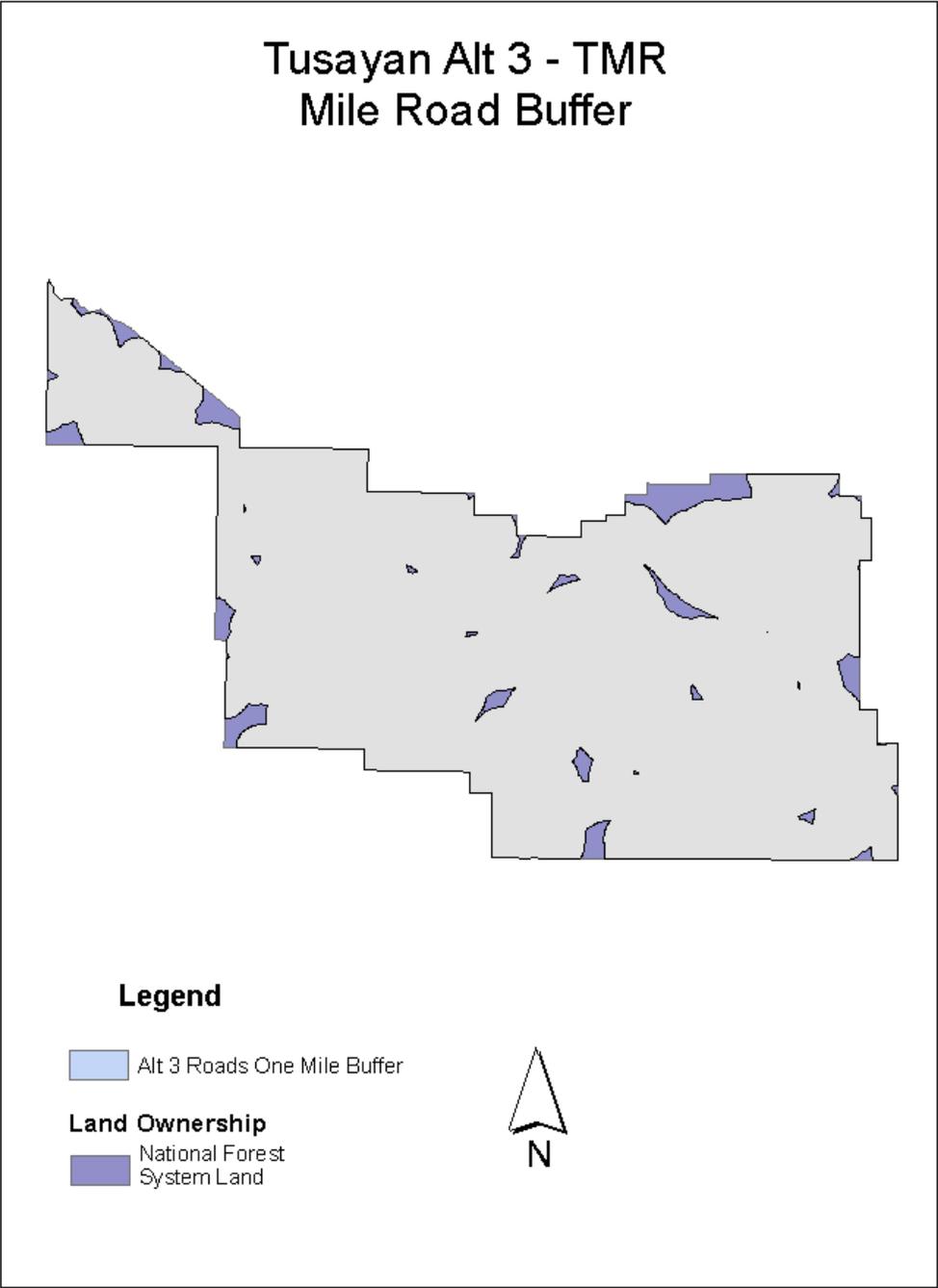


Figure 8. Alternative 3 big game retrieval opportunities with one-mile road buffer.

Comparison of Alternatives

A comparison of the alternatives is presented in Table 6. Alternatives 2 and 3 would close the District to cross-country motorized travel.

Table 6. Comparison of alternatives.

Status	Alt 1 (No Action)	Alt 2 (Proposed Action)	Alt 3 (Increased Roads)
Miles of Roads Open to Motorized Travel	709	546	566
Percent of Existing Roads	100%	77%	80%
Miles of Roads for Administrative Use Only	0	163%	143%
Percent of Existing Roads	0%	23%	20%
Miles of Routes Added to Open Road System	N/A	6	6
Percent Increase from Routes Added to Open Road System	N/A	1%	1%
Information by Vehicle Type			
Miles of Passenger Car Roads by Alternative	105	105	105
Miles of High Clearance Roads by Alternative	604	441	461

(Mileages are approximate)

Alternatives Considered, but Eliminated from Detailed Analysis

Local environmental groups proposed a road system that would designate the Forest Service Wet Weather road system as the open road system. The district scoped this alternative in 2006 and began preliminary analysis in 2007. The alternative was dropped from further analysis when it was determined it would not provide required access to private land parcels, and that it did not complying with the Travel Management Rule, 36 CFR part 212.5, which requires that Forests identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection. Resource management concerns with potential designation of the wet weather road system were identified for recreation, fire, and vegetation management. The wet weather road system would remove about 85 percent of forest roads. Many recreation sites would not have road access, the spectrum of recreation opportunities would no longer follow the Forest Plan guidance, response time for fire suppression would be reduced, and future vegetation management activities would require more miles of road reconstruction and temporary road construction. The interdisciplinary team was also concerned that the proposed road system would concentrate all users on less than 100 miles of roads, and that user conflicts would increase.

Another alternative was considered that would convert about 20 miles of forest roads removed from the designated road system to a motorized trail system. This would require construction of about 4 miles of new trail to connect the roads to form a loop system. This alternative was dropped from

further consideration since the roads proposed for conversion to motorized trails were initially removed from the system due to sensitive soils and had high concern for soil erosion. Changing from road to motorized trail would not have modified the uses that are causing the resource impacts (soil erosion and sedimentation and negative impacts to watershed). In addition, when the transportation and recreation specialists reviewed the miles of high clearance roads that are currently open to OHV riders, they found at least 455 miles of roads (depending upon the alternative) that could be used by OHV and other motorized users. High clearance roads provide a range of riding opportunities from challenging to easy, and many loop routes could be identified.

Monitoring Implemented For All Alternatives

- Monitor camping corridors and routes to dispersed recreation. If damage at a site exceeds limits of acceptable change principles developed for TMR, consider closing or relocating corridors or routes with a new planning project.
- Monitor the proposed road system identified for administrative use and determine if there are roads that could be decommissioned in future planning projects.
- Dispersed camping corridors and cross country elk retrieval areas will be monitored periodically for ruts, erosion, sedimentation of water bodies, and excessive damage to vegetation from motor vehicle use. This monitoring will occur in conjunction with other project or management activities, including enforcement of the Wet Weather Roads Policy.
 - If soil damage and/or excessive damage to vegetation are discovered, the Forest Service may temporarily or permanently close specific dispersed camping corridors or cross country elk retrieval areas to motorized vehicle use. All temporary or permanent closure proposals will follow the required NEPA process.
- Open roads, closed roads, and dispersed camping routes will be monitored periodically for ruts, erosion, or sedimentation of water bodies. This monitoring will occur in conjunction with other project or management activities, including enforcement of the Wet Weather Roads Policy.
 - If road damage, erosion, or sedimentation of water bodies is discovered, the Forest Service may repair or upgrade the roads and routes. Temporary or permanent closures of roads or dispersed camping routes may be necessary. Decommissioning of closed roads (i.e. block access rip compaction, re-vegetate) may be necessary. All closure or decommissioning proposals will follow the required NEPA process.
- Staff will continue to do annual invasive exotic weed inventory and monitoring in conjunction with other project or management activities. Areas targeted for weed surveys will include all roads, unauthorized routes, and dispersed camping corridors and routes.
 - If weed populations are discovered, the Forest Service may temporarily close specific roads, dispersed camping corridors, dispersed camping routes, or cross country elk retrieval areas to motorized vehicle use, until the weeds are controlled. All temporary closure proposals will follow the required NEPA process.

- The impact of current roads on known rare plant populations will be monitored periodically. At this time, only the Forest Service Sensitive plants Tusayan rabbitbrush (*Chrysothamnus molestus*) and Arizona leatherflower (*Clematis hirsutissima* var. *hirsutissima*) have been found along roads on the Tusayan District. Surveys for new populations of rare plants will be conducted periodically in conjunction with other project and management work in the area. Any newly discovered populations of rare plants found along roads or unauthorized routes (including new routes created by big game retrieval) will be monitored periodically for adverse effects.
 - If rare plant populations are discovered, the Forest Service may close specific roads, dispersed camping corridors, dispersed camping routes, or cross country elk retrieval areas to motorized vehicle use. Road or area closures or road decommissioning may be needed if motorized vehicle travel is harming or has the potential to harm rare plants. All closure proposals will follow the required NEPA process.

- The Kaibab National Forest will conduct an extensive floristic survey of the Upper and Lower Basins within the next few years. The objective of the survey will be to determine whether any populations of Fickeisen pincushion cactus, Kaibab pincushion cactus, or other rare plant species occur in this area. If any populations are discovered, they will be monitored periodically.
 - Fickeisen pincushion cactus survey – This survey will focus mostly on the Lower Basin (north and east of HWY 64) or other areas below 6000 feet in elevation. Potential habitat includes rocky areas and shallow soils within sagebrush and semi-desert grassland/shrub vegetation types.
 - Kaibab pincushion cactus survey – This survey will focus on level to gentle slopes within semi-desert grassland/shrub, sagebrush, grassland, pinyon-juniper woodland, and lower ponderosa pine forest vegetation types.
 - If Fickeisen pincushion cactus or Kaibab pincushion cactus plants are discovered, the Forest Service may close specific roads, dispersed camping corridors, dispersed camping routes, or cross country elk retrieval areas to motorized vehicle use. Road or area closures or road decommissioning may be needed if motorized vehicle travel is harming or has the potential to harm rare plants. All closure proposals will follow the required NEPA process.

Standard Mitigation Measures

- Cross-country travel for the purposes of dispersed camping and tagged elk retrieval is prohibited when it will result in soil damage (e.g. ruts, erosion, and sedimentation of water bodies) or excessive damage to vegetation (e.g. removal of vegetative cover, broken shrub and tree branches, dead plants).

- Implement Appendix B “Design Features, Best Management Practices, and Mitigation Measures” in the “Final Environmental Impact Statement for Integrated Treatment of Noxious or Invasive Weeds on the Coconino, Kaibab, and Prescott National Forests within Coconino,

Gila, Mojave, and Yavapai Counties, Arizona” (2004). Practices specific to this project include:

- Forest Service workers, permittees, and contractors will avoid driving or parking within populations of invasive exotic weeds.
- If administrative work is required within invasive exotic weed populations, control the weeds before work begins. Controlling the weeds means at least removing all above ground plant parts and seeds that could be spread by project activities. Wash all vehicles and equipment on site before moving to another area.
- Control populations of invasive exotic weeds in all areas.
- Avoid designating camping corridors in these areas due to rare plant concerns:
 - FR 302 – Section 29
 - FR 303 – Section 28
 - FR 310 – Sections 1 and 12
- Avoid designating camping corridors in these areas due to soils/watershed concerns:
 - FR 302 – Section 18
 - FR 303 – all Sections
 - FR 305 – Section 1
 - FR 306 – Sections 34 and 35
 - FR 310 – Sections 1 and 12
 - FR 328 – all Sections
 - FR 347 – Section 35 west of second drainage

Comparison of Effects (Summary)

The results of the effects analysis in chapter 3 are summarized in the table below.

Table 7. Summary of effects for Tusayan travel management planning by resource area.

Environmental Effect	Alternative 1	Alternative 2	Alternative 3
Transportation	709 miles of open forest roads. 1/7 of roads maintained each year. No progress toward minimal road system.	546 miles of open forest roads. 1/5 of roads maintained each year. Progress toward minimal road system.	566 miles of open forest roads. 1/5 of roads maintained each year. Progress toward minimal road system.
Recreation and Scenery	Few restrictions on motorized dispersed recreation; most of the district is open to motorized travel. Cross-country motorized	Approx. 650 acres of dispersed camping corridors and routes to dispersed recreation are provided. Cross-country motorized travel is prohibited, improving	Approx. 650 acres of dispersed camping corridors and routes to dispersed recreation. Cross-country motorized travel is prohibited,

	<p>travel becomes more wide spread across the landscape as does the resource damage from it increases. This decreases scenic integrity.</p> <p>Intrusions and damage in inventoried roadless area and semi-primitive non-motorized area increases with higher OHV use.</p>	<p>scenic integrity and reducing problems with vehicle intrusion in inventoried roadless areas and semi-primitive non-motorized areas</p>	<p>improving scenic integrity and reducing problems with vehicle intrusion in inventoried roadless areas and semi-primitive non-motorized areas. More opportunities for motorized recreation.</p>
Soils and Watershed	<p>Most areas of high erodibility and damage to watershed from cross-country motorized travel.</p> <p>Highest potential for fugitive dust and contribution to lowered air quality.</p>	<p>Cross-country motorized travel is prohibited reducing motorized vehicle damage. Some areas of high erodibility are removed from the designated road system. There is less damage to the watershed from motorized travel.</p> <p>Reduced potential for fugitive dust and less contribution to lowered air quality.</p>	<p>Cross-country motorized travel is prohibited reducing motorized vehicle damage. Some areas of high erodibility are removed from the designated road system. There is less damage to the watershed from motorized travel. Reduced potential for fugitive dust and less contribution to lowered air quality.</p>
Wildlife	<p>Negative for habitat quality. Positive for population management.</p>	<p>Increased habitat quality. Slightly negative for population management.</p>	<p>Increased habitat quality. Slightly negative for population management.</p>
Sensitive Plants	<p>Most negative alternative because of damage from motorized cross country travel.</p>	<p>Damage to plants from cross-country travel is reduced. Damage from recreation activities near roads is reduced through designation of camping corridors and limited adoption of unauthorized routes for recreation access.</p>	<p>Damage to plants from cross-country travel is reduced. Damage from recreation activities near roads is reduced through designation of camping corridors and limited adoption of unauthorized routes for recreation access.</p>
Invasive Weeds	<p>The existing road system remains the same and motorized cross country travel is allowed, both contribute to the spread of noxious weeds. No improvement with this alternative.</p>	<p>Some improvement in reducing the spread of noxious weeds due to fewer miles of roads.</p>	<p>Slightly less improvement in reducing the spread of noxious weeds due to fewer miles of roads.</p>

Heritage	Negative to cultural sites primarily from unrestricted motorized cross country travel. Limited ability to manage cultural sites due to unrestricted dispersed camping and game retrieval.	Most cross country motorized travel is eliminated. Dispersed camping is limited to areas with no heritage sites. Motorized game retrieval is restricted to elk in elk seasons; reducing potential damage to cultural sites.	Most cross country motorized travel is eliminated. Dispersed camping is limited to areas with no heritage sites. Motorized game retrieval is restricted to elk in elk seasons; reducing potential damage to cultural sites.
Range	Neutral	Slight positive range resources.	Slightly less positive range resources.
Vegetation Mgt	No direct or indirect	No direct or indirect	No direct or indirect
Fire/Fuels	Negative for suppression since unauthorized routes and cross country travel may increase fire starts. Wildland fire use is less effective because of number of roads.	Neutral to positive for fire suppression with motorized cross country use prohibited; wildland fire use improves some since there are fewer roads in the open road system.	Slightly less positive for suppression and wildland fire use than Alt. 2.
Economic/Social	No effects since the existing roads and motorized cross country use continue.	Fewer roads are open to motorized travel, but they may be better maintained. There are still opportunities to access the forest for recreation including hunting.	Fewer roads are open to motorized travel, but they may be better maintained. There are still opportunities to access the forest for recreation including hunting.

Chapter 3 - Environmental Effects

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of effects of alternatives presented in the charts above.

Transportation

There are over 800 miles of existing roads and routes crossing the TRD (a complete list of the roads is found in the Tusayan Ranger District Travel Analysis Process). The Forest Service has jurisdiction and maintenance responsibility for the forest road system. In addition to the existing forest roads, there are unauthorized routes on the National Forest that are not part of the forest road system and are not maintained by the agency. See the glossary at the end of the document for definitions.

Roads evaluated in this analysis are the existing National Forest System passenger car and high clearance roads, and any unauthorized routes added to the proposed road system. Forest roads are maintained at five different maintenance levels. The maintenance levels (ML) used to classify roads range from ML 1 indicating a closed road, ML 2 are high clearance roads, ML 3, 4 and 5 are roads suitable for passenger cars.

There are about 105 miles of passenger car roads on TRD and 604 miles of high clearance roads. There are paved forest roads at the Tusayan Administrative site and at Ten-X Campground. The passenger car roads provide the primary access points to the District. These roads typically have a crushed aggregate surface composed of limestone or volcanic material. Some roads have culverts at drainage or watercourse crossings, but due to the xeric environment, most crossings do not have culverts. Most of the remaining forest roads are classified as high clearance roads, these are unpaved, and are constructed, native-surface roads.

Of the 709 miles of forest roads on the district, about 100 miles receive maintenance annually; mostly passenger car roads. The current forest road density on the District is approximately 1.4 miles of roads per square mile of land.

Costs of Road Maintenance

Road maintenance is currently performed on passenger car roads more frequently than on high clearance roads. The passenger car roads have higher standards that must be met and are more expensive to maintain. Maintenance on high clearance roads is less costly because they are only maintained for passage by high clearance vehicles and are not subject to the Highway Safety Act. About 100 miles of maintenance is completed on the District each year. Since only a limited number of roads can be maintained due to available funds, emphasis is placed on keeping the passenger roads to standard. Very little road maintenance can be achieved on high clearance roads because of limited funds. The costs to maintain roads vary by maintenance level road requirements, gas prices, haul

distances and other variables. Table 8 summarizes the costs of maintenance for the different alternatives based on local costs (O'Brien 2008).

Table 8. Road maintenance costs by alternative.

Measure	Alt 1 (No Action)	Alt 2 (Proposed Action)	Alternative 3
Miles of high clearance roads	630	455	475
Cost of Annual Maintenance per Mile	\$230	\$230	\$230
Subtotal ML 2	\$144,900	\$104,650	\$109,250
Miles of ML 3 (passenger car roads)	105	103	103
Cost per mile for annual maintenance	\$3,435	\$3,435	\$3,435
Subtotal ML 3	\$360,675	\$353,805	\$353,805
Miles ML 4 (passenger car roads)	2	2	2
Cost per mile for annual maintenance	\$2,638	\$2,638	\$2,638
Subtotal ML 4	\$5,276	\$5,276	\$5,276
Total Cost of Road System by Alternative	\$510,851	\$463,731	\$468,331

The annual roads budget for the KNF in 2005 was \$920,000. The existing Tusayan Ranger District road system represents about 20 percent of the total roads on the forest. If the District receives about 20 percent of the roads budget, or \$184,000, only about 20 percent of the needed annual maintenance is performed each year depending upon the alternative.

Minimum Road System

The minimum road system must be identified. It is the road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands (36 CFR 212.5b). The minimum road system is that which is needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), laws and regulations, long-term funding expectations, and minimizes adverse environmental impacts. The

desired minimum road system attempts to balance these elements and make progress toward a sustainable road system.

Unauthorized Routes

Currently the Tusayan Ranger District is open to cross-country travel except in areas administratively closed to vehicular travel (Kaibab National Forest Management Plan 2008). Approximately 9,695 acres or three percent of the Tusayan District is administratively closed to motorized cross country travel. These closed areas are the Coconino Rim and Red Butte. Both areas are categorized as semi-primitive non-motorized in the Forest Plan Recreation Opportunity Spectrum mapping and guidelines. In addition the Coconino Rim is an Inventoried Roadless Area. These areas will retain their closures regardless of the decision for this document.

The district inventoried (2005 data) about 166 miles of unauthorized routes that are not part of the National Forest System road system and are not maintained by the forest. Many of the routes were created by users traveling cross-country along the same pathways. Forest Service employees have noted a substantial increase in the number of people who are using OHV's and portable geographic positioning system devices to facilitate the collection of deer and elk antler sheds in the late winter and early spring (Stahn 2008). District personnel have reported antler hunters crisscrossing the District in a grid system collecting antlers. There are also OHV riders in the Tusayan, AZ area, that have also created their own short motorized trail systems.

OHV use can damage forest resources, disturb wildlife, and can impact forest visitors seeking a quiet and secluded recreation experience in the forest due to the noise and increase in dust that they create. A recent study has concluded that OHV traffic can adversely affect natural resources regardless of the type and equipment on the individual vehicle (USDA Forest Service, 2008). The study looked at the effects of cross-country travel and user-created trails. It found vegetation was reduced by a minimum of 40 percent and was often completely eliminated as a result of repeated OHV traffic at the seven test sites (located in different vegetation types across the country). Soils were compacted, displaced or loosened, making them available for erosion by water. The ability of soil to absorb rainfall was reduced by half, while soil erosion was increased by more than a half. It was also found that OHV can cause significant amounts of dust. Low volumes of riders could generate dust loads greater than 150 micrograms per cubic meter. As the volume of riders increases, the dust concentrations could move into the unhealthy range in forested locations where air circulation is inhibited. Two other results from the study indicated that sport-model OHV (lighter weight vehicles) cause as much disturbance as utility model vehicles (heavier weight vehicles).

Alternatives 2 and 3 would prohibit use of almost all unauthorized routes except those added to the National Forest System of roads to provide access to dispersed recreation activities (approximately 6 miles).

Wet Weather Travel Policy

In unusually wet years, when deep snow or saturated soils raise concerns for public safety and/or road and resource damage from motorized vehicles, wet weather travel restrictions are implemented. Based on site-specific ground conditions, an official order implementing the wet weather road system

is signed by the District Ranger authorizing the restrictions. As soon as conditions allow, the restrictions are lifted by the District Ranger. Forest visitors are informed of travel restrictions in the Forest through signs that read, "Entering wheeled motorized restriction area. Use only roads and trails shown on official map." A second sign shows the map of open routes. Notice and maps are also available on the KNF website when the wet weather emergency road closures are in effect, <http://www.fs.fed.us/r3/kai/> . When travel restrictions are in place, motorized travelers are required to stay on those designated routes until the soils dry out. Cross-country travel is prohibited in all cases when these restrictions are in place.

The wet weather travel policy is implemented on an as-needed basis in order to be responsive to conditions in the Forest. Wet weather travel policy is **not** a part of the Tusayan Ranger District Travel Management NEPA analysis; it will continue to be used by District Rangers in response to road conditions. The roads identified in the wet weather travel policy are part of the designated system of roads for public travel in all alternatives.

Climate Change

The Southwestern Regional Office planning program has summarized some ecological and socioeconomic effects of climate change (Periman 2008). The following is an excerpt of the 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, paleoenvironmental 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 change, patterns of precipitation, drought severity and changes in vegetation patterns.

Climate modelers general agree that the Southwestern United States is experiencing a drying trend that will continue into the later part of 21st century. In the recent past, two droughts occurred, one in the 1930's Dustbowl and one in the 1950's Southwestern Drought. Climate model scenarios suggest 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 2-3 degree temperature changes in the next 20 years. Such temperature changes 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 invasive species.
- Long term shifts in vegetative patterns, such as cold-tolerant vegetation moving upslope or disappearing in some areas.
- Changes in wildlife populations, diversity, viability and migration patterns.

Potential socioeconomic effects include:

- Water shortages.
- Changes in the viability and productivity of rangeland plants.
- Impact on amenities, goods and services from forests.

Direct and Indirect Effects of Alternatives

Alternative 1 (No Action)

The no action alternative represents the existing condition. It provides almost 709 miles of open national forest system roads at different maintenance levels. It is most costly for road maintenance, and less than 30 percent of the road system can be maintained annually. The majority of the roads are not maintained annually and this creates a backlog of needed maintenance referred to as deferred maintenance. Most maintenance is accomplished on the passenger car roads because these must meet higher standards for health and safety. When these higher standard roads cannot be sufficiently maintained, the road surface breaks down, and the roads become impassable to passenger cars. It takes more resources to bring a road back to standard that has been neglected because of a lack of maintenance. While some roads are maintained, the majority become less passable and increasingly contribute to resource damage. This alternative would not make progress toward the minimal road system, does not minimize environmental impacts, does not reduce road maintenance costs, and does not implement the Travel Management Rule.

The existing unauthorized routes would remain, and additional routes would likely be created as antler shed collectors continue their activities, dispersed campers create new campsites, and fuel wood gatherers drive farther back from the edge of roads as the available dead trees are removed. While road funding could be used to close unauthorized routes, it is unlikely that substantive amounts would be allocated to this use when road maintenance needs continue to increase.

Dispersed camping and motorized game retrieval would continue per the existing condition. State projections indicate there will be some increase in the amount of OHV riders, camping, hiking and other activities (see Recreation section). The District has observed cross country driving for antler shed collection and hunters drive cross-country to scout for animals and retrieve game during hunting seasons. This motorized cross-country travel contributes to resource damage especially when soils are wet and the vehicles cause rutting resulting in loss of vegetation and increased erosion. The following photo was taken during the 2008 fall hunting season, and illustrates the type of damage observed on the District.

This alternative has the greatest potential for negative impacts to resources from climate change. It retains the greatest number of roads and allows motorized cross-country use and unauthorized routes created from this use. Damage to resources from motorized cross-country use would be exasperated by climate change especially drought. Repeated traffic along unauthorized routes results in loss of plant cover and the potential for soil erosion. If predictions for increasing OHV use and dispersed camping (see Recreation section) occur, there could be increased areas of bare ground that are vulnerable to soil movement. Bare soil is also more vulnerable to spread of invasive exotic plants.



Figure 9 . Cross-country motorized damage during 2008 hunting season.

Alternative 2 (Proposed Action)

The proposed action provides 546 miles of open national forest system roads at different maintenance levels. It would remove about 163 miles of existing roads from the road system and these would be for administrative use only. Road maintenance costs are less than in Alternative 1 and about 40 percent of the roads could be maintained annually. This alternative reduces the number of roads while providing adequate access for resource management, recreation activities, and reducing annual road maintenance costs.

Motorized travel on the majority of unauthorized routes would be prohibited. About 6 miles of unauthorized routes would be added to the designated road system providing access to dispersed recreation activities. Dispersed camping corridors would be designated along approximately 17 miles of roads. No more than 650 acres would be disturbed as a result of all dispersed camping and access for recreation activities. It is anticipated that slightly fewer acres will be disturbed when resource surveys are completed because some locations will not be designated for these uses.

This alternative closes the district to motorized cross-country travel. This will result in substantial reductions in damage to resources. Motorized game retrieval, limited to the elk seasons would be authorized, it is anticipated there would still be isolated occurrences of resource damage.

This alternative reduces the potential for negative impacts to resources from climate change. It retains about 20 percent fewer roads and prohibits motorized cross-country use and travel on 160 miles of unauthorized routes. Although damage to resources from motorized cross-country use would be exasperated by climate change especially drought, this alternative restricts such travel to designated camping corridors and limited use by hunters to retrieve legally downed elk during elk seasons.. Repeated traffic along unauthorized routes results in loss of plant cover and the potential for soil erosion would be reduced. If predictions for increasing OHV use and dispersed camping (see Recreation section) occur, there would be decreased areas of bare ground that are vulnerable to soil movement. Fewer areas of bare soil created by motorized cross-country travel would be created that are vulnerable to spread of invasive exotic plants.

Alternative 3

This alternative provides about 566 miles of open national forest system roads at different maintenance levels. It would remove about 143 miles from the open road system. Road maintenance costs are less than Alternative 1. About 39 percent of the forest roads could be maintained annually. Twenty more miles of high clearance roads would be retained, increasing maintenance costs slightly, as well as increasing the deferred maintenance burden by an additional four percent. This alternative reduces the number of roads while providing adequate access for resource management and recreation activities, and makes progress toward reducing road maintenance costs.

The effects of dispersed camping and motorized game retrieval are the same as Alternative 2.

This alternative reduces the potential for negative impacts to resources from climate change. It retains about 19 percent fewer roads and prohibits motorized cross-country use and travel on 160 miles of unauthorized routes. Although damage to resources from motorized cross-country use would be exasperated by climate change especially drought, this alternative restricts such travel to designated camping corridors and limited use by hunters to retrieve legally downed elk during elk seasons.. Repeated traffic along unauthorized routes results in loss of plant cover and the potential for soil erosion would be reduced. If predictions for increasing OHV use and dispersed camping (see Recreation section) occur, there would be decreased areas of bare ground that are vulnerable to soil movement. Fewer areas of bare soil created by motorized cross-country travel would be created that are vulnerable to spread of invasive exotic plants.

Cumulative Effects

The cumulative effects analysis area consists of the Tusayan Ranger District, and the time period is 1998 to 2018.

Past, ongoing, planned, and foreseeable projects and activities in the cumulative effects analysis area that effect transportation include: timber and fuel wood harvesting, forest thinning, grassland restoration tree removal, sagebrush restoration, prescribed burning, livestock grazing, fence construction, water tank construction and maintenance, invasive weed control, recreational activities (e.g. motorized cross-country vehicle and OHV use), dispersed camping, horseback riding, mountain biking, hiking, hunting), trail construction, road use and maintenance, mineral exploration and possible mining, pipeline and possible transmission line construction and maintenance.

Implementation of Alternative 1 would have increasingly negative cumulative effects. Fewer miles of existing national forest system roads would be maintained and more miles of road would become impassable. Resource damage would increase from existing roads on sensitive soils resulting in increased erosion and sedimentation, as well as from the resource damage such as loss of vegetation and increased erosion from motorized cross-country use. These would be compounded by permitted uses, mineral exploration, pipeline and transmission line use and maintenance. This alternative has the most potential to have effects magnified by climate change. The overall cumulative effects of not implementing TMR would result in a downward trend.

Implementation of Alternative 2 (Proposed Action) will have a positive effect for transportation. It would close some existing roads that have drainage issues and would prohibit motorized cross-country use. More miles of road would be maintained. Resource damage would be reduced compared to the existing condition. There would be an adequate system of roads to provide for forest management activities. Based on the road closures and prohibition on cross-country motorized use, there is a reduced effect on resources as a result of climate change. The net cumulative effect of implementing TMR and other natural events will result in a positive trend.

Implementation of Alternative 3 would be similar to Alternative 2. There would be a slightly reduced positive trend with this alternative.

Recreation and Scenic Resources

Affected Environment

Recreation and scenic resources are related. High-quality scenery and unique scenic resources are important to recreationists and are an integral part of high-quality recreational settings. Highly attractive and scenic landscapes, and high quality recreational facilities and attractions can be important to quality of life. They also contribute to the success and growth of a vibrant tourism industry, thus contributing to the local economy. A challenge for recreation managers is to address the needs and expectations of forest users while protecting the land's health and scenic resources.

Motorized Recreation Opportunities

Since this is a motorized travel management project, discussion will focus on motorized recreation opportunities. Forest roads provide opportunities to access developed recreation sites, trailheads, dispersed camping areas, day-use areas and points of interest. They also are used for commercial operations including logging, ranching, mining, outfitting and guiding services, and to access electronic sites, and private land. Viewing scenery, wildlife, and touring along Forest roads are highly desired recreation activities. The Tusayan Ranger District (TRD) forest roads are heavily used seasonally by hunters. Road use is moderate by woodcutters and for gathering forest products, and relatively light by other forest users. There are approximately 709 miles of forest roads on the TRD. The majority of these are available to OHV riders. There is one designated motorized route, the approximately 20 mile Great Western Trail segment which crosses the District utilizing existing forest roads.

Motorized travel has changed over time on the district. In the past, the typical vehicles used on forest roads would have included passenger cars, pickups and other standard-sized vehicles. There was less

travel off-road, although it did occur for activities such as fuel wood gathering and game retrieval. More recently off-highway vehicle (including four-wheel drive vehicles, motorcycles and moto-cross single-wheel vehicles, all-terrain vehicles, and utility terrain vehicles, such as Polaris Ranger, a cross between a truck and OHV) use has increased dramatically.

Motorized cross-country use has increased. District personnel have noted that OHV and geographic positioning system devices are increasingly used to facilitate antler shed collecting. The value of antlers has increased as they may be sold for decorative uses. The collectors grid the district on motorized vehicles to find antler sheds and this activity, especially when repeated year after year, is resulting in damage to vegetation and creation of unauthorized routes. OHV are also used for game scouting, hunting and game retrieval. Some resource damage occurs each year from this use. The Arizona Statewide Comprehensive Outdoor Recreation Plan (SCORP) estimates that about nine percent of Arizona's residents participate in OHV riding (Arizona State Parks 2008). These same residents expect to increase their OHV activities in coming years, indicating that they would like to increase their OHV riding by 24%. TRD has experienced limited increases in recreational OHV driving and a few user-created OHV "tracks" on national forest system land have been discovered near the town of Tusayan.

Many OHV riders enjoy using Forest Service roads. The Arizona Statewide Comprehensive Outdoor Recreation Plan reports many OHV users ride 50 miles in one day (Arizona State Parks 2008). Arizona State law allows Licensed, highway-legal riders/vehicles can ride on maintained roads, (passenger car roads), as well as high clearance forest roads. Non-highway-legal vehicles can only be ridden on high clearance forest roads. There are currently over 500 miles of high clearance forest roads. OHV riders have many opportunities for loop routes on these roads as well as different levels of road condition and challenge.

The Tusayan Ranger District has national forest system roads distributed throughout the District that provide access to National Forest System lands. In some areas there are parallel roads within one-quarter to one-half of a mile of each other going to roughly the same place. Redundant roads provide little additional benefit and can potentially result in negative impacts to scenery, limit wildlife viewing opportunities, and decrease visitor satisfaction. The total miles of roads and number of road segments on the District could be reduced, while still providing for adequate access to recreation opportunities even with projected OHV riding increases.

Hunting

Hunting is one of the important recreation opportunities on the TRD. Hunters come to the TRD to scout and hunt for big game animals. The hunters are important to the economy of Tusayan, where many purchase supplies, dine, and stay at hotels. In addition, some hunters use outfitter-guide services for their hunting expeditions. Nation-wide research shows that hunting is declining as a recreation activity. Arizona State Game and Fish research also shows this trend as indicated by declines or stagnation in hunting license sales (Arizona Game and Fish Department, 2005). Even with declining numbers, hunting is a valued recreation activity and locally important for the economy. Hunting expenditures contribute almost \$12 million annually to Coconino County (Silberman, 2001).

Hunting and trapping activities are facilitated by the existing road system. Roads make it easier to access much of the forest and distribute hunting activities over a greater area. The roads facilitate access for sportsmen with disabilities.

The Travel Management Rule affects access to National Forests for people with disabilities. Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a federal program that is available to all other people solely because of his or her disability. In conformance with section 504, wheelchairs are welcome on all National Forest System (NFS) lands that are open to foot travel and are specifically exempted from the definition of motor vehicle in §212.1 of the final rule, even if they are battery powered. However, there is no legal requirement to allow people with disabilities to use OHV or other motor vehicles on roads, trails, or areas closed to motor vehicle use because such an exemption could fundamentally alter the nature of the Forest Service's travel management program (7 CFR 15e.103).

Motorized big game retrieval is proposed for all elk seasons. It is estimated that currently there are a total of 478 to 540 motorized big game retrievals (elk, deer, and pronghorn) each year on the Tusayan District. The majority of those estimated big game retrievals are for elk, which would still be allowed under Alternatives 2 and 3. Motorized big game retrieval for elk would only be authorized for hunters taking a relatively direct and safe route that minimizes resource effects, using a minimum number of trips to accomplish game retrieval.

Dispersed Camping and Recreation Access

One of the traditional and most popular uses of National Forest System lands has been for dispersed or throw-down camping in locations chosen by the forest user. (This is in contrast to camping at a developed campground such as Ten-X Campground, where amenities such as restrooms, water, and picnic tables and cooking grills are provided.) Dispersed camping is an important use of the District, and for many people is an inherent part of their recreation expectations and experience. The 2005 National Visitor Use Monitoring (NVUM) project for the Kaibab National Forest indicated that in the approximately 224,600 Forest visits, 13.7 percent of users camped in developed campgrounds, and 13.2 percent engaged in primitive camping (USDA Forest Service, 2005). Camping in designated Wilderness or semi-primitive non-motorized areas where vehicles are currently prohibited would not change, and are not subject to the Travel Management Rule.

From simple car camping with tents to trailers to RVs, motorized dispersed camping is desirable for many people and the demand for this type of motor-based recreational use is increasing. In most instances dispersed camping occurs in areas that are along main Forest roads, some of which are close to recreation opportunities such as scenic views, trails, and water. Most camping occurs within a few hundred feet of open roads. As a result of repeated use, dispersed campsites often have less vegetation and/or bare ground and one or more rock fire rings constructed by campers. Existing sites are readily apparent to the casual Forest visitor and are likely to continue to be "found" and used by future campers. Figure 12 illustrates typical dispersed camping use.



Figure 10. Dispersed camping on the Kaibab National Forest (2007).

District recreation managers have noted two general patterns of recreation activities on the TRD: 1) those who are camping en route to Grand Canyon National Park, pulling off the highway and camping overnight on National Forest System lands adjacent to existing roads (short-term stays); and 2) those who are hunting, gathering Forest products, or engaging in other recreation activities on the District, who drive farther out on the District and pull off the forest road a short distance to set up a dispersed camp or spend the day (McCurry, 2007).

Much of the summer recreation use is associated with dispersed camping and day use activities like hiking. Fall recreation use is often associated with hunting activities and forest products gathering. Hunting camps can vary from a single camper to multiple hunters and vehicles/trailers camping together.

User Conflicts

The trend toward motorized recreation activities has increased in recent years. For some users, the natural quiet associated with dispersed camping is desired and the noise and dust associated with motorized vehicles is disagreeable. Conflicts are increasing between recreationists engaging in motorized recreation activities and non-motorized activities (including hunting). Some hunters have also voiced concerns that OHV riders scare away game and reduce hunting opportunities. The TRD currently has two locations where motorized activities are restricted, Red Butte and the Coconino Rim.

Motorized Mixed Use

Designation of Forest roads for use by both highway-legal and non-highway-legal vehicles is termed “motorized mixed use”. Many motorized users enjoy driving and riding roads throughout the District.

Mixed-use becomes a safety concern especially when unlicensed minors drive higher speeds. Higher speeds and inexperienced drivers increase the potential for accidents between full sized vehicles and OHV.

Currently unlicensed riders such as children are restricted to riding on high clearance roads. The condition of these roads is generally such that slower speeds are required for safe driving. Some of the ML 2 roads receive light use, and are more appropriate for children to ride OHV's. Some of the ML 2 roads are more challenging and may require more driver experience.

Enforcement

Implementation of the Travel Management Rule through the Tusayan Travel Management project will pose some challenges. This project is similar to any change in forest recreation management in that it requires the individual forest unit to provide adequate information to the public and in turn for the public to take responsibility for its actions and become knowledgeable about the changes. This partnership has been successful in past changes, and it is anticipated that within a few years the majority of the public will be familiar with travel management since it is being implemented across the national forest system.

The district (and forest) will provide copies of the Tusayan District Motor Vehicle Use Map free of charge. Field visits with forest users will be targeted to higher use periods (hunting season, fuel wood gathering in the fall, etc.). Existing brochures will be made available, and the district has received a State grant to develop additional information stations and information.

Beyond the information piece of enforcement, Forest Protection Officers and Law Enforcement will provide enforcement. The forest also has cooperative law enforcement agreements with other agencies, and Arizona Game and Fish Department specifically schedules aerial flights to monitor hunting activities during hunt seasons. The Department will help to enforce the motorized game retrieval exception for elk seasons, and enforcement of the prohibition of motorized game retrieval during other hunting seasons.

Recreation Opportunity Spectrum

Visitors choose specific settings for their recreation activities in order to enjoy desired experiences. These settings vary by Ecosystem Management Area and are further refined by the Recreation Opportunity Spectrum (ROS), a classification system that describes different outdoor recreation settings across the Forest using seven standard classes that range from primitive, undeveloped settings to urban, highly developed settings. Attributes typically considered in describing the settings are size, scenic quality, type and degree of access, remoteness, level of development, social encounters, and the amount of on-site management. By describing existing recreation opportunities in each class, ROS helps match visitors with their preferred recreation setting. ROS can also be used to plan how areas should be managed for recreation in the future (USDA Forest Service, ROS Handbook 1986). Changes in a national forest's mix of ROS classes affect the recreation opportunities offered.

In the Kaibab National Forest Management Plan (2008), there are two areas on the District that are mapped and managed for non-motorized activities: the Coconino Rim and Red Butte. OHV use is also restricted within ½ mile of developed campgrounds; this would include the Ten-X Campground area. All other areas are open to cross-country motorized travel. Most areas of the District are

accessible by Forest roads and forest settings are managed to provide for recreation opportunities. The level of development or disturbance allowed is determined by the ROS class.

Roads adjacent to or crossing semi-primitive non-motorized areas were used as one of the risk variables analyzed in the Tusayan District Travel Analysis. Roads that pose potential threats to this ROS category were identified, and in most cases recommended for removal from the designated system of open roads.

Scenic Resources

Scenery Management is a tool for integrating the benefits, values, desires and preferences regarding scenery into land management planning, and it is an integral part of ecosystem management. The Scenery Management System (SMS) provides a framework for inventory and analysis of scenic values. The old Visual Management System and Visual Quality Objectives were updated and new mapping was adopted in the 2005 Forest Plan amendment. The outcome of the scenery management analysis is that Scenic Integrity Objectives (similar to Visual Quality Objectives) are assigned to all parts of the District. Scenic Integrity is a measure of the degree to which a landscape is perceived to be “complete”, or to have the characteristics that are appropriate for its distinct physical, biological and cultural attributes. The SIO can be used to describe the existing condition, standard for management, or desired conditions for the future.

The Tusayan Ranger District is a recreation destination and important scenic area. It represents a component of the local community’s scenic identity and image, contributing to its “sense of place” as well as contributing to the visitor experience in arriving at Grand Canyon National Park. In addition, private landowners with property within or adjacent to the District view the surrounding landscape and are likely to consider it important to their quality of life.

Also important are the “special areas” on the District, which hold high value and meaning for visitors, local residents and tribes (spiritual, aesthetic, nostalgic, or other). Red Butte and the Coconino Rim have been identified as such “special areas”. These two places have been specifically identified; there are additional areas that may be considered “special” to individuals or local Tribes.

Landscape Character Goals and Scenic Integrity Objectives (SIO) for the project area have been defined in the Forest Plan and the Kaibab ROS/SMS Guidebook (2004). Because of the scenic values around Red Butte and Coconino Rim, these areas are classified as SIO 2 (High) as are parts of Arizona Trail, Ten-X Campground, parts of Great Western Trail, and Anita Crossing. The area around the town of Tusayan is also SIO 2 primarily because of the volume of tourist traffic in and around the developed area. Much of the remainder of the district is SIO 3 or moderate, where some evidence of management is visible. Places where motorized cross country use is occurring often display loss of vegetation, rutting, and tracks criss-crossing the landscape. This type of resource damage lowers the quality of the forest scenery.

Direct and Indirect Effects on Recreation and Scenic Resources

Alternative 1 - No Action Alternative

Under the No Action alternative, no changes would be made to the existing national forest system roads and unauthorized routes would remain. Cross-country motorized travel would continue to be allowed except in designated closed areas. If projected increases in recreation use occur (see Table 9), there will be increasing amounts of motorized cross country use resulting in increasing loss of vegetation, rutting, and increased soil compaction and erosion. The scenic integrity of the area would be diminished by the OHV impacts and the contrast they make with the natural landscape character. Recreation opportunities for solitude, quiet, and enjoyment non-motorized recreation activities would decrease. There is an increasing potential for users who prefer non-motorized activities to be displaced or to be concentrated in the designated non-motorized areas of the District which could result in overuse of these areas. This alternative would have the most negative effects for both recreation and scenic resources. If recreation use increases and there is increasing damage to the landscape settings, it is anticipated there will be a downward trend in scenic quality and recreation opportunities.

Hunting opportunities on the TRD would continue unaltered in this alternative. Motorized big game retrieval could be used to retrieve any legally hunted and tagged animal during any of the hunting seasons.

Dispersed camping opportunities would be unchanged as would access for recreation activities. Campers could use existing routes to campsites, or create new routes into the forest for camping and recreation.

Alternative 2 --Proposed Action

The proposed action would remove 163 miles of existing Forest roads from the designated system of roads, and designate 546 miles for motor vehicle use. Adequate access would be maintained to private land inholdings and to adjacent tribal and other agency lands. Special use permits would continue and be managed through the annual operating plans.

The direct and indirect effects of this alternative would include the following:

Reducing the miles of national forest system roads and prohibition of motorized cross-country travel would reduce motorized recreation opportunities by about 20 percent and would restrict use to the designated road system. Recreation users such as antler shed hunters would be limited to the designated road system or non-motorized means collect these products. Other recreational motorized users would be restricted to the designated road system. Road use is light during most of the year, except during hunting season (mid-September through early December) when use on some roads may be moderate to heavy. Current increases in road use are temporary and associated with hunting seasons.

The Arizona Statewide Comprehensive Outdoor Recreation Plan (SCORP 2008) reports that State residents expect to increase their participation in both non-motorized and motorized recreation activities in the future. It is anticipated that there will be increases in motorized road use with state population increases. The proposed road system would provide 546 miles of designated forest roads that may be used to engage in motorized riding activities and access other dispersed recreation opportunities. At this time the national forest trail system is restricted to non-motorized uses. Table 9 provides the projections for Arizona residents for some recreation activities.

Table 9. Arizona resident current and expected recreation participation for selected activities SCORP 2008).

Recreation Activity	Current Days or Visits per year	Expect to increase in the future (amount of increase in percent)
Hunting	1.67	10.9%
RV Camping	2.3	25.6%
Tent Camping	3.0	32%
Ride OHV	8.93	24%
Drive for Pleasures	22.9	34.1%
Hike or jog	27.7	38.4%

The designated road system will improve non-motorized recreation opportunities somewhat because motorized cross-country travel will be prohibited. However, noise and dust related to motorized uses on roads would remain the same or potentially increase. If users are currently feeling displaced by motorized activities, closing 20 percent of the roads may be regarded as a positive development, since there would be larger areas where non-motorized opportunities are available and it may reduce some user displacement. Those recreationists desiring semi-primitive non-motorized opportunities will continue to be able to engage in these at Red Butte and the Coconino Rim.

Opportunities for forest product gathering would be reduced by about 20 percent because the number of open roads from which provide roadside wood gathering would be reduced. The Forest Service will change the district-wide policy for fuel wood gathering to one of designated fuel wood gathering areas. Fuel wood gathering and cutting will allowed by permit in these areas.

Some local tribal communities have expressed concern about reducing motorized cross-country access being concerned it will reduce opportunities for forest product gathering. Other tribes favor prohibiting motorized cross country travel. Some tribes have expressed support for reducing road density. Opportunities for personal fuel wood gathering will continue to be provided, but these will be in designated areas. Ceremonial gathering and uses will be provided on Tusayan Ranger District with coordination with Forest Service district and Heritage program personnel.

ROS classes would be maintained and existing recreational settings would not change. There would still be a spectrum of recreation opportunities provided. The Arizona SCORP indicates that both motorized and non-motorized trail users have indicated a preference for rural, undeveloped settings, and both say they engage in trail related activities to view scenery, be close to nature, and to get away from the usual demands of life. These opportunities would be maintained. The removal of 163 miles of national forest system roads and closing unauthorized routes should improve scenic integrity since there would be less visual contrast if the resource impacts from motorized cross country use are eliminate. The designated road system would still provide adequate access to the forest for enjoying the scenery.

Mixed motorized use will continue on high clearance roads. Inexperienced OHV riders would have many opportunities to ride on ML 2 roads. Some of the high clearance roads would also provide more challenging riding opportunities for experienced riders.

Opportunities for dispersed campers would be provided, and many users would still have opportunities to engage in their favorite past-time of dispersed camping, possibly even in the same location using the designated recreation access routes (for existing locations with no resource concerns). Some campers might feel a diminished freedom in choosing a location to camp, since the

dispersed camping corridors will be limited in number and size. Forest users would still have the ability to pull off of designated roads a safe distance to park and then engage in recreation activities. A maximum of 17 miles of camping corridors could be designated for dispersed corridor camping, as well as approximately 6 miles of designated routes to access dispersed recreation opportunities.

Motorized game retrieval would be provided for elk hunters. Hunters would have the opportunity to drive up to one mile from a designated road to a legally downed elk to retrieve it with a motorized vehicle. Limiting motorized big game retrieval to elk only may decrease the satisfaction of some hunters since they are currently unrestricted in using motorized vehicles to retrieve their animals (deer, antelope, etc). Some recreationists and some hunters complain that the use of motorized vehicles is intrusive because of noise and disturbance of the natural setting. Some hunters have expressed that the noise scares off animals. Commercial outfitter-guide services who guide hunters would largely be unaffected. They may have some additional opportunities to provide game retrieval assistance using horses or mules to pack downed animals out during the non-elk hunting seasons.

Alternative 2 would have positive effects on recreation settings and scenic integrity. The prevailing ROS of roaded natural would be improved with fewer redundant roads, and the scenic intactness of the landscape would be more natural when motorized cross-country use is prohibited. There would be opportunities for both motorized OHV riding as well as non-motorized opportunities. Dispersed camping will be changed somewhat as participants will have to narrow their choices to camping corridor, camping on a designated recreation access route, or pulling off the roadside a safe distance. Opportunities for the engagement in dispersed camping for the different use patterns (hunting and Grand Canyon visitors will be maintained). Hunters will retain opportunities for dispersed camping and motorized big game retrieval for elk.

Alternative 3

This alternative would increase the number of Forest roads retained by 20 miles. The additional roads kept open in this alternative were identified by OHV riders as being tied of longer-distance routes they enjoy taking on the district. Motorized cross country use would be prohibited.

The direct and indirect effects for the designated roads, dispersed camping and game retrieval are similar to Alternative 2. Adequate access would be provided for private land inholdings and permitted uses. At this time use is light on the district except for hunting season, and increases in recreation use could be accommodated. Both motorized and non-motorized recreation participation are projected to increase in the future.

Specific roads identified by OHV riders have been retained. There would be 566 miles of roads in the designated road system. There would be 475 miles of high clearance roads. Mixed motorized use will continue on high clearance roads. Inexperienced OHV riders would have many opportunities to ride on ML 2 roads. Some of the high clearance roads would also provide more challenging riding opportunities.

Opportunities for roadside forest product gathering would be enhanced slightly from Alternative 2 because the number of open roads would be increased by about 20 miles. This may not be favored by tribes that have indicated that they support reducing the number of forest roads.

The Scenic Integrity for the area would be improved through closing 143 miles of forest roads and prohibition of motorized cross-country travel. There would still be ample opportunities to access the district and to enjoy the scenery.

Alternative 3 has effects similar to Alternative 2. Opportunities for dispersed camping and game retrieval would be the same as in Alternative 2.

Cumulative Effects

Past, present and foreseeable projects on Tusayan Ranger District include vegetation management projects for forest health and fuels reduction, Grand Canyon National Park South Rim Transportation Plan, Ten-X Campground reconstruction (possibly in 2012), possibly additional special use permits for visitor tours (motorized and non-motorized), permitting roads to private property, uranium exploration and potential mining, development of further stock tanks and waters, maintenance and potential new construction of utility corridors. The cumulative effects analysis area is the District boundary, and the time period is 1998 to 2018.

Part of the recreation use on the TRD is related to visitation at Grand Canyon National Park (GCNP). Recent statistics from GCNP show that visitation at the South Rim has been increasing steadily (USDI Park Service, 2004). Much of the remaining recreation use is related to hunting and forest product gathering. These combined with the steadily growing population in the State of Arizona indicate recreation use will mostly likely continue to increase (although this is subject to changes due to national economic conditions and the price of petroleum products). Increased use without implementation of TMR in Alternative 1 would produce a negative trend for recreation settings and scenic integrity. Resource damage as a result of motorized cross-country travel, user development of additional camping sites and OHV tracks would increase, scenic integrity would be reduced, as would non-motorized recreation opportunities.

The proposed action (Alternative 2) would have positive effects especially from prohibiting motorized cross country travel this directly improves the scenic integrity (or intactness) of the landscape. Non-motorized recreation opportunities would improve with prohibition of motorized cross-country travel. The reduced road system would provide adequate access for motorized recreation opportunities. Designating camping corridors and adding routes to access recreation activities are both provide for dispersed camping and recreation access, these would be neutral to positive effects, as it confines impacts from these activities in the natural landscape and still provides recreation opportunities.

Use of motorized game retrieval for elk will be generally viewed as positive. Some hunters may be negatively affected because mule deer and antelope are not included.

There may be slight negative effects to local Tribal members' ability who gather forest products along the roadside. Tribes will continue to be able to obtain permits to cut and gather fuel wood in designated cutting areas and to work with the Forest Service to use forest products for ceremonial purposes.

In addition, the separate wet weather travel policy provides an avenue for District Rangers to respond to seasonal weather conditions by implementing temporary road closures. This in conjunction with implementation of TMR will provide improvements in road conditions by preventing rutting and other damage, as well as decreased resource damage since vehicles are restricted to the wet weather road system.

The cumulative effects of the proposed action when combined with past, present, and foreseeable projects would result in a positive trend.

Alternative 3 would have similar effects as the proposed action. The main difference in this alternative is the addition of 20 additional miles of forest roads.

The cumulative effect of alternative 3 would result in a positive trend.

Soils and Watershed

Methodology

The following analysis is largely based on information gathered from the Tusayan Ranger District GIS database and the Terrestrial Ecosystem Survey of the Kaibab National Forest.

The Terrestrial Ecosystem Survey (TES) was consulted for information on many soil and watershed characteristics including: the suitability of soils for native surface roads, erosion hazard ratings, soil condition ratings, and revegetation potential.

Existing Condition

Climate

Tusayan area (Grand Canyon National Park South Rim climate station, period of record 1904-2007) average annual precipitation is 15 inches. The semiarid climate is characterized by infrequent and erratic precipitation events and high evaporation rates. Precipitation generally falls as snow from November through April as Pacific frontal storms move through the area. High winds, warm temperatures, and a late spring to early summer drought are typical in May and June. High intensity, short duration, localized thunderstorms provide rain from July through September during the summer monsoon season. Summer moisture originates in the Gulf of Mexico and the Gulf of California. Pacific hurricanes and frontal storms sometimes provide rain to the area in September and October.

Thirty-two percent of the annual precipitation is received from February through June at a time that benefits cool season plants. Forty-three percent is received in July through October at a time that benefits warm season plants. Twenty-five percent is received during the non-growing season in November through January.

During the last 10 years (1999-2008), drought (less than 90% of average precipitation) has occurred during 3 years (2002, 2003, and 2006). Severe drought (less than 75% of average precipitation) occurred in 2002. There have been 2 wet (greater than 110% of average precipitation) years (2001 and 2004). Winter/spring drought has been more common during the last 10 years, while summer precipitation has been generally dependable.

The Tusayan Ranger District is not currently in a drought, according to the February 2009 U.S. Seasonal Drought Outlook from NOAA. However, climate scientists have theorized that global climate change may lead to higher than average temperatures and lower precipitation across the Southwest (IPCC 2007a and 2007b). Scientists have also predicted that the Southwest will have more erratic weather, including more frequent drought and more frequent severe storms with high winds and flooding (IPCC 2007b).

Increased temperatures in combination with decreased precipitation will lead to lower plant productivity and cover. The reduction in plant and litter cover will make the soils more vulnerable to wind and water erosion. More frequent and severe droughts will lead to higher tree and shrub mortality, increasing the fuels available for high intensity wildfires. High intensity wildfires will reduce soil cover, impair soil condition, and lead to higher rates of erosion.

Soils

The geology of the analysis area is dominated by limestone, calcareous sandstone, sandstone, and mudstone. At the higher elevations in the watersheds, the geology is composed of igneous deposits such as cinders, ash, and basalt. The majority of the project area is characterized by plains with a few hills and escarpments. Slopes are mostly less than 15%. A few hills and escarpments have slopes that may range up to 40%, 80% or even greater.

Soils require an adequate cover of vegetation, litter, or rocks in order to prevent excessive erosion. When excessive erosion occurs, the water holding capacity of the remaining soils is reduced causing more runoff. If the erosion rate exceeds that which will allow for soils to be productive, then the soil is described as being highly erodible. One way to measure this is with soil erosion hazard ratings. Ratings of slight, moderate and severe are used. Soils with high erosion hazards are susceptible to mechanical disturbance from motorized traffic. Seven percent of the District is covered with soils that have a severe erosion hazard. Soils with a moderate erosion hazard cover 28% of the area; slight to moderate erosion hazard 16%, and slight erosion hazard 49%.

In order to protect soils from erosion, a minimum of 20% plant and litter cover is required. On severely erodible soils, a minimum of 50% plant and litter cover is required. The TES estimates that currently about 8% of the District has inadequate plant and litter cover, and about 3 % is approaching this. Currently there are 39 miles of frequently-used roads located on soils that have a severe erosion hazard. In the lower elevation pinyon-juniper woodlands, the combination of geology and relatively dry climate results in naturally higher amounts of bare soil, soil erosion, and sediment yield when compared to higher elevation ecosystems.

Watershed

The Tusayan Ranger District is distributed across six 5th level watersheds that all drain into the Lower Colorado River. There are no perennial streams or wetlands on the Tusayan District. There are no springs within the Tusayan District and no large natural lakes. There are numerous constructed earthen tanks that provide water to livestock and wildlife. The highest elevations in a watershed are cooler, moister, and of higher productivity than lower elevation arid climates. Higher elevations produce a smaller portion of the overall sediment yield, but produce more water. Vegetative conditions at the highest elevations have the greatest affect on water yield. Currently the watersheds are in satisfactory condition.

There are approximately 950 miles of ephemeral streams on the Tusayan Ranger District (streams that flow only when the snow is melting, or during and shortly after heavy rainstorms). The ephemeral drainage network is dense, as shown in Figure 11. Ephemeral drainages contribute water and sediment to perennial streams, lakes, earthen ponds, and wetlands, including those found downstream from the Tusayan District.

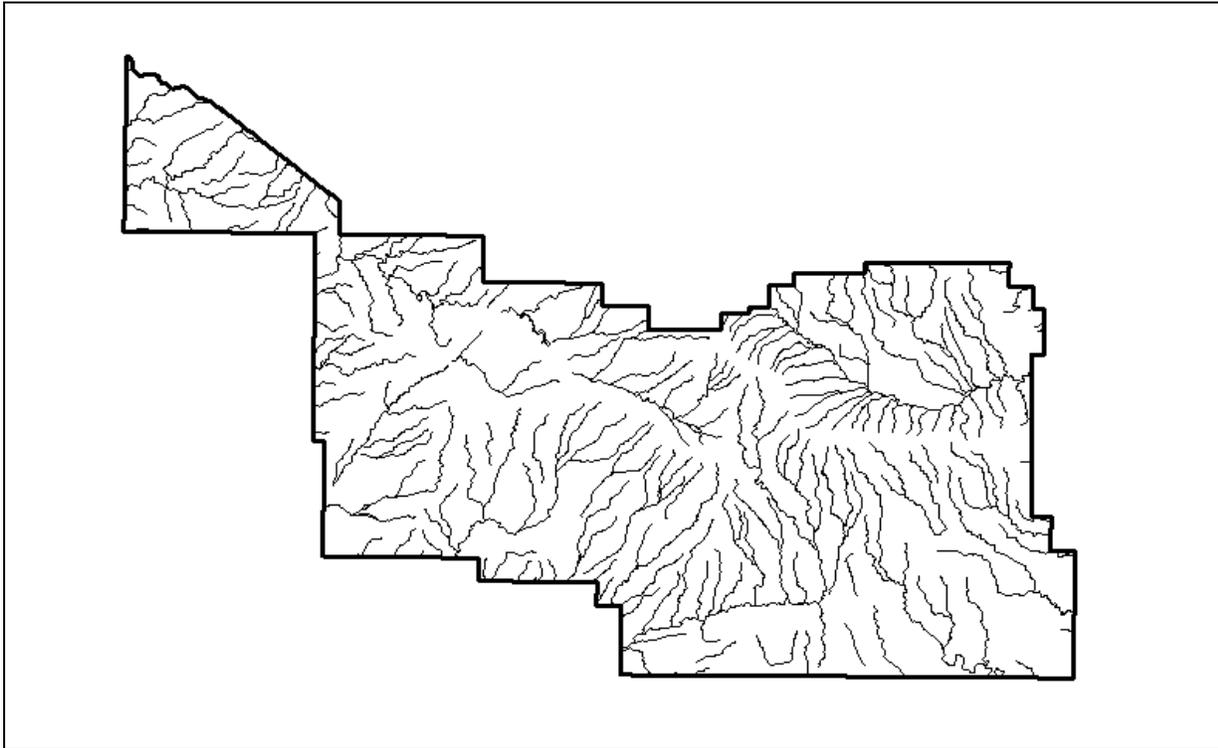


Figure 11. Drainage network of ephemeral streams on Tusayan Ranger District.

Roads that cross ephemeral streams are shown in Figure 12. Each dot in the figure represents a road crossing a stream. Roads facilitate water movement off the road surfaces into the drainage systems at road-stream intersections. Sediment from the roads is transported into the drainages at these locations. Increased sediment decreases the water quality in earthen ponds and lakes; these can fill in with sediment. In addition, the water volume is increased at the drainage points and can cause flooding and erosion.

Currently the watersheds are in satisfactory condition. A review of the 2004 and draft 2006 State of Arizona 303(d) list indicated that no TMDL limited segments or water bodies are within or adjacent to the Tusayan District.

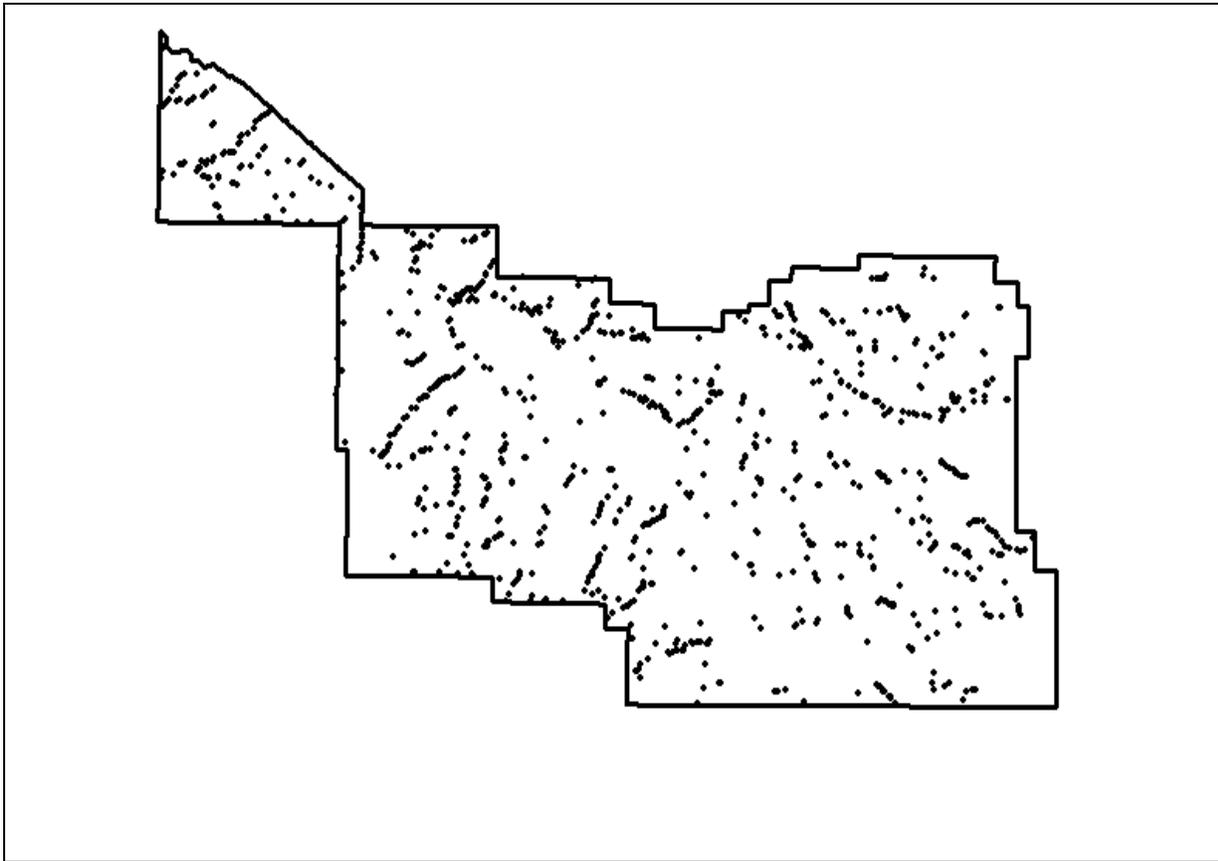


Figure 12. Existing road-ephemeral stream crossings on Tusayan Ranger District.

Most of the roads on the Tusayan Ranger District are unpaved and consist of bare, compacted soil. A few roads have a crushed aggregate surface composed of limestone or volcanic material. Some roads have culverts at drainage crossings, but due to the dry nature of the area, most crossings do not have culverts.

Approximately one-quarter of the Tusayan District is covered by soils that have low bearing strength when wet. Ruts are easily created on these soils and on roads that traverse these soils. The driving surface is damaged and may concentrate water flow that can create gullies on adjoining land. The prevalence of soils with low bearing strength makes it necessary to avoid driving on low standard and low maintenance roads when they are wet. Safe, sustainable travel is possible on roads on these soils when dry. This characterizes much of the high clearance road system. It is also possible to travel on roads during wet weather if they have a hard surface and good drainage design; these are typically the passenger car roads.

Most of the road damage and risk to natural resources occurs during periods when moisture is received and roads are wet. Generally November through April and July through September are times when snow or rain is expected and roads and soils may be susceptible to damage. The Kaibab National Forest enacted a Wet Weather Roads Policy several years ago that restricts wet weather travel to improved roads with hard surfaces and adequate drainage. This policy may be enacted by

each District Ranger as conditions occur that could damage roads. It is temporary in nature, and is lifted when the weather conditions change and improve, and the risk for road damage is decreased.

Air Quality

The Tusayan Ranger District is not located near large population centers, power plants, or industrial facilities. The District is located within 160 miles of two active coal fired power plants. These plants are located to the northeast in Page, Arizona and to the southeast in Joseph City, Arizona. The prevailing winds on most days of the year carry pollution from these plants farther away from the District. The District is located approximately 220 miles from Phoenix, Arizona, 270 miles from Las Vegas, Nevada, and 485 miles from Los Angeles, California. Pollution and haze from these and other urban/industrial centers does drift over the District. Visibility, especially in the adjoining Grand Canyon National Park, is affected by this haze. Smoke from wildfires, prescribed fires, and wood stoves also contributes particulates and haze to the District periodically.

The Tusayan Ranger District is not located within an air quality Non-Attainment Area designated by the Arizona Department of Environmental Quality (DEQ). The closest Non-Attainment Areas are the Bullhead City Area for PM10 (particulate matter) and the Phoenix Area for PM10 and ozone.

The Regional Haze Rule (40 CFR 51.309(d)(7)) requires states to assess and reduce pollutants that cause haze in order to improve visibility at Class I Areas, including Grand Canyon National Park. The Regional Haze State Implementation Plan for the State of Arizona from December 23, 2003 states that “road dust is not a measurable contributor on a regional level to visibility impairment in the 16 Class I areas. Due to this finding, no additional road dust control strategies are needed...” The Plan also states that the State of Arizona will “perform further assessments of road dust impacts on visibility. Based on these assessments, if road dust emissions are determined to be a significant contributor to visibility impairment, the State of Arizona commits to implement emissions management strategies...”

The Kaibab National Forest must submit prescribed burn plans to the Arizona DEQ in order to minimize smoke, but it is not required to reduce fugitive dust or vehicle emissions.

The majority of roads on the Tusayan Ranger District are unpaved. These gravel and dirt roads are sources of fugitive dust in dry weather, especially when there is frequent vehicle traffic. Vehicles driving cross country may also create fugitive dust.

Water Quality

Two of the largest potential issues facing water quality on the Tusayan District are exceeding standards related to turbidity and siltation. Unmaintained native surface roads and cross country motorized vehicle use can result in decreased vegetative cover, rapid runoff, and increased erosion, thus contributing to siltation and turbidity. Sediment is deposited in downstream water bodies or in lower gradient stream channels. Earthen ponds and lakes lose capacity, fish eggs and insect eggs and larvae may be killed by the weight of material or the lack of oxygen, and floodplains may be expanded. Roads that follow drainages may contribute the most sediment. These roads may also be damaged by flooding and erosion.

Desired Condition

The overall desired condition is maintenance of sustainable ecosystems within and surrounding the Tusayan Ranger District, in which roads and off road vehicle use does not impair important ecosystem functions, such as maintaining soil stability and productivity, watershed health, water quality, and vegetation diversity and productivity.

- Minimize soil erosion, fugitive dust, and sedimentation of downstream water bodies caused by roads and off road vehicle use by maintaining a stable to upward trend toward good or excellent in soil condition and maintaining or reducing percent bare ground across the District.
- Reduce the quantity of water lost in excess runoff from the watershed by reducing the number of roads and tracks per square mile on the District.
- Protect watershed resources such as ephemeral lakes and ephemeral stream channels and downstream water bodies from adverse effects.
- Prevent soil compaction and its detrimental impacts (i.e. rapid runoff and loss of vegetative productivity) by prohibiting most off road vehicle use.
- Maintain a stable to upward trend in litter cover by prohibiting most off road vehicle use.

Direct and Indirect Effects of Alternatives on Soils and Watershed

Alternative 1- No Action

Alternative 1 would allow motorized vehicle travel to continue on and off road in almost all areas of the District. Current travel management would not change.

The Wet Weather Travel Policy will continue to be implemented on the District. This policy allows the District Ranger to temporarily close roads and close the Forest to cross country travel when soils are wet and susceptible to damage by vehicles.

Direct and Indirect Effects

Recreation and other land uses are expected to increase over the years. More people will use the abundant roads that exist on the District. Road maintenance would continue at present levels, leaving most roads in need of maintenance.

Unauthorized routes would continue to be used. More unauthorized routes and dispersed camping areas would be developed by Forest users especially in areas near scenic views, productive wildlife habitat (water, open grasslands, open sagebrush), and near developed recreation areas and private lands. The number of stream crossings and the number of user-created routes that follow drainages is likely to increase. Cross country tracks and dispersed camping areas will continue to be created by Forest users on soils with a moderate or severe erosion hazard, on soils in unsatisfactory or impaired condition, and on soils with low revegetation potential. These disturbances will cause more accelerated erosion and runoff, sedimentation, and loss of soil, watershed, and vegetative health and productivity.

New cross country tracks will continue to be created on soils that have low bearing strength when wet. Some Forest Service System Roads already exist on this type of soil. Continued implementation of the Wet Weather Travel Policy each year should help reduce damage to System Roads and to the soils in the Forest.

Vehicles will continue to create fugitive dust along all Forest roads and cross country tracks. The amount of dust will probably increase as more vehicle tracks are created across the District.

Continuation of current management (Alternative 1) will increase the stress on plants that may already be dealing with higher temperatures and drought due to climate change. The plants could become less resilient and more susceptible to mortality. As bare ground increases, there will be an increase in soil erosion and sedimentation of water bodies. There will also be an increase in fugitive dust.

Continuation of current management (Alternative 1) will lead to a reduction in soil and watershed condition and productivity. It will also lead to an increase in fugitive dust. Compared to all other alternatives, Alternative 1 will not improve the protection of soils, watersheds, and air quality.

Alternative 2 - Proposed Action

Alternative 2 (Proposed Action) would close 163 miles of Forest Service System Roads and most of the user-created unauthorized routes. Up to 6 miles of user-created unauthorized routes would be adopted into the Forest Service Road System for use as recreation access routes after they receive resource concern clearances. Up to 17 miles of dispersed camping corridors will be established along portions of 14 roads, if there are no resource concerns. Within the corridors, vehicles may be driven up to 300 feet off a designated road in order to establish a campsite. Dispersed campers will also be allowed to park within a safe distance of any Forest Service System Road unless the road section is posted with a no camping sign. Dispersed camping is not allowed within ¼ mile of a wildlife or livestock water source.

The closed Forest Service System Roads will not be obliterated at this time, but will be closed to public use. The closed roads will still be available for administrative or permitted use, if necessary. If funding is available, the first 200 feet of closed user-created unauthorized routes will be blocked with berms, boulders, or logs and de-compacted in order to promote natural revegetation. In the future, these roads could be considered for decommissioning (obliteration) as part of other projects.

Cross country motorized vehicle use would be prohibited in most areas of the District except for specific purposes in specific areas and by permit. Cross country motorized vehicle use would be allowed by Forest Service employees, Forest Service contractors, or individuals with a permit to operate on the District. Cross country motorized vehicle use would only be allowed on a temporary basis when access is absolutely necessary at that time and when there is no other reasonable way to access the area.

Cross country vehicle use would be allowed in order to access dispersed camping sites in designated dispersed camping corridors. Dispersed camping will be allowed within 300 feet of the main road. Cross country vehicle use would also be allowed in order to retrieve a legally tagged elk during all

legal elk hunting seasons. Hunters may travel cross country in areas outside of motor vehicle restricted areas (i.e. Red Butte and Coconino Rim).

The Wet Weather Travel Policy will continue to be implemented on the District. This policy allows the District Ranger to temporarily close roads and close the Forest to cross country travel when soils are wet and susceptible to damage by vehicles.

Direct and Indirect Effects

Recreation and other land uses are expected to increase over the years. More people will use the roads that exist on the District.

The Forest Service could provide better road maintenance because there would be 23% fewer miles of road to maintain for public use. It might even be possible to make road improvements to some roads (i.e. hard surfaces and/or drainage enhancements). The smaller public road system would be in better condition, so there would be less erosion and sedimentation caused by the open Forest Service System Roads. However, the closed roads would not be obliterated and revegetated at this time. Many would continue to be used periodically by Forest Service personnel or by people who hold valid permits, if they are not blocked or signed.

Alternative 2 (Proposed Action) does not propose to close all the Forest Service System Roads that could be causing erosion and sedimentation. Many roads that would remain open follow drainages in soils that have a moderate to severe erosion hazard. Some open roads are located on impaired or unsatisfactory condition soils. These roads could be evaluated for possible closure and/or relocation in the future as part of other projects. If the roads are important for management or recreation access, then they could be improved with a hard surface and/or enhanced drainage features.

Current unauthorized routes will not be obliterated and revegetated at this time; but they will be closed to all use.

Alternative 2 (Proposed Action) would not allow recreationists and campers to create new unauthorized routes at random along drainages, on erodible soils, on soils in poor condition, on soils with low bearing strength when wet, or on soils with low revegetation potential. Hunters would not be allowed to drive cross country while hunting, but they could do so in order to retrieve a legally tagged and downed elk. Implementation of Alternative 2 (Proposed Action), with its reduction in cross country vehicle travel, would cause a reduction in compaction, loss of vegetative cover, ruts, erosion, runoff, sedimentation, and water diversion.

Alternative 2 (Proposed Action) will reduce the number of road miles that are accessible to the public. It will also restrict most cross country travel. Although vehicles will still create fugitive dust during dry periods, the amount could be reduced compared to Alternative 1 (No Action).

Implementation of Alternative 2 (Proposed Action) will reduce the damage to plants from cross country vehicle travel. Plants will have the potential to be healthier and more resilient to climate change. The maintenance of (and possible increase in) plant cover will protect the soil from water erosion and wind erosion (fugitive dust).

Implementation of Alternative 2 (Proposed Action) will reduce the damage to soil and watershed condition and productivity from motorized vehicle travel compared to Alternative 1 (No Action). It also has the potential to reduce the amount of fugitive dust created on the District.

Alternative 3

Alternative 3 would close 143 miles of Forest Service System Road and most of the user-created unauthorized routes. The other actions to be implemented within Alternative 3 are the same as for Alternative 2 (Proposed Action).

Implementation of Alternative 3 would produce approximately the same effects to soil and watershed condition and productivity as Alternative 2, but to a slightly lesser degree. Alternative 3 would keep 20 more miles of Forest Service System Roads open compared to Alternative 2. See Alternative 2 for a discussion of the effects of road closures, limits on cross country vehicle use, designation of dispersed camping corridors and routes, and the allowance of cross country vehicle use for elk carcass retrieval.

Direct and Indirect Effects

The effects of Alternative 3 are almost the same as Alternative 2. The main difference is that the public will not be able to travel on 20 more miles of closed roads.

Implementation of Alternative 3 will reduce the damage to soil and watershed condition and productivity from motorized vehicle travel compared to Alternative 1 (No Action). It also has the potential to reduce fugitive dust on the District. Alternative 3 protects soils, watersheds, and air slightly less than Alternative 2 (Proposed Action).

Cumulative Effects

The cumulative effects analysis area consists of the Tusayan Ranger District surrounded by a one mile buffer. The cumulative effects analysis time period is 1998 to 2018.

Past, ongoing, planned, and foreseeable projects and activities in the cumulative effects analysis area that will have an effect on soils and watersheds include: timber and fuel wood harvesting, forest thinning, grassland restoration tree removal, sagebrush restoration, prescribed burning, livestock grazing, fence construction, water tank construction and maintenance, vehicle driving and horseback riding off road to herd cattle and maintain fences, noxious and invasive exotic weed control, recreational activities (e.g. vehicle and ATV use off road, dispersed camping, horseback riding, hiking, hunting), road use and maintenance, mineral exploration and possible mining, pipeline and transmission line use and maintenance, and residential developments and activities. Natural conditions, events, and activities that have an effect on soils and watersheds include climate and weather, wildfires, and elk grazing.

The net cumulative effect of all human activities and natural events will be an improvement in forest and rangeland health on the District and an improvement in soil/watershed condition and

productivity. It is also expected that there will be a reduction in the amount of fugitive dust created on the District.

Wildlife

Affected Environment

Effects of the different travel management alternatives were evaluated for a wide variety of focal wildlife species, including species listed under the Endangered Species Act, Species classified as Sensitive by the Southwestern Region of the Forest Service, Kaibab National Forest Management Indicator Species (MIS), migratory birds, and other species potentially affected by travel management. The Tusayan Ranger District covers an area of approximately 331,430 acres just south of Grand Canyon National Park. Elevation ranges from 6,000 to 7,326 feet at the top of Red Butte. Bedrock across the district is Kaibab Limestone. Dominant cover types are pinyon-juniper woodland, ponderosa pine forest, sagebrush-grass, and grassland. Geographic Areas (GAs) 8 and 9 are dominated more by pinyon-juniper woodland, and Geographic Area 10 is dominated more by ponderosa pine forest. Common tree species are pinyon pine, Utah juniper, and ponderosa pine. Gambel oak is common in some areas. Common shrub species are big sagebrush, cliffrose, rubber rabbitbrush, disturbed rabbitbrush, broom snakeweed, four-wing saltbush, winterfat, and wax currant. Common grasses include blue grama, muttongrass, and mountain muhly.

For species listed under the Endangered Species Act, all animal species identified for Coconino County, Arizona by the U.S. Fish and Wildlife Service were evaluated (<http://www.fws.gov/arizonaes/>). This list includes species classified as Candidate or Proposed and species with conservation agreements. The Tusayan District is either outside of the known range or lacks suitable habitat for each animal species identified on the U.S. Fish and Wildlife Service Coconino County list except California condor. Most of the animal species on the Coconino County list are dependent on aquatic habitats (Apache trout, Chiricahua leopard frog, humpback chub, Kanab ambersnail, little Colorado spinedace, razorback sucker, California brown pelican) or riparian habitats (southwestern willow flycatcher, yellow-billed cuckoo). The Tusayan District has no perennial streams, rivers, lakes, or springs. Natural waters consist of small ephemeral water bodies that develop in low-lying areas where seasonal runoff collects. A variety of water sources have been developed historically on the Tusayan District. Most of these water developments are earthen tank livestock water developments or trick tank wildlife water developments.

The Tusayan District is located outside of the range of reintroduced black-footed ferrets, and there are no known colonies of Gunnison's prairie dogs large enough to support black-footed ferrets. There are no known Mexican spotted owl detections on the Tusayan District, and there are no spotted owl Protected Activity Centers (PACs) or designated spotted owl Critical Habitat.

The Tusayan District is within the experimental nonessential population area designated for the California condor. Condors primarily occur within and along the south rim of the Grand Canyon, the Kaibab Plateau on the north side of Grand Canyon, Marble Canyon, the Vermillion Cliffs, and parts of southern Utah (Southwest Condor Review Team 2007). Condors are opportunistic scavengers that feed primarily on large dead mammals such as deer, elk, bighorn sheep, and domestic livestock. Although condors forage frequently on the Kaibab Plateau on the north side of the Grand Canyon,

condor foraging on the south side of the Grand Canyon on the Tusayan District has so far been limited and infrequent. There are no known condor nest sites or roost sites on the Tusayan District.

Species classified as Sensitive by the Southwestern Region of the Forest Service that are known to occur or potentially occur on the Tusayan District are bald eagle, northern goshawk, burrowing owl, American peregrine falcon, Merriam's shrew, spotted bat, Allen's lappet-browed bat, Townsend's big-eared bat, and Mogollon vole.

Management Indicator Species and the habitats they represent are listed in the most recent Kaibab National Forest Management Indicator Species report (Forest Service 2008). Of these, the Tusayan District contains suitable habitat for the following species: northern goshawk, wild turkey, hairy woodpecker, pygmy nuthatch, juniper titmouse, Abert's squirrel, elk, mule deer, and pronghorn antelope. The district lacks suitable aquatic habitat for aquatic macroinvertebrates; suitable wetland habitat for cinnamon teal; low-elevation riparian habitat for Lucy's warbler and yellow-breasted chat; high-elevation riparian habitat for Lincoln's sparrow; suitable canyon, riparian forest, pine-oak, or mixed conifer forest for Mexican spotted owl; aspen forest for red-naped sapsucker; and mixed conifer or spruce-fir forest for red squirrel.

Each of the most important game species on the Tusayan District is a Kaibab National Forest Management Indicator Species: elk, mule deer, pronghorn antelope, and wild turkey. Hunting is an important recreational activity on the Tusayan District, and hunting opportunities are greatly affected by aspects of travel management. The Tusayan District is located within Game Management Unit (Unit) 9. Unit 9 is famous for large bull elk. Hunters spent a total of 5,096 days hunting elk in Unit 9 during 2006 (Arizona Game and Fish Department 2008), and an estimated 80-90% of elk hunted in Unit 9 are hunted on the Tusayan District. Hunters spent a total of 1,078 days hunting deer in Unit 9 during 2006 (an estimated 65-75% of deer hunted in Unit 9 are hunted on the Tusayan District). Hunters spent a total of 206 days hunting turkey in Unit 9 during 2006 (nearly all of the turkey hunted in Unit 9 are hunted on the Tusayan District). Hunters spent a total of 53 days hunting pronghorn in Unit 9 during 2007 (an estimated 20-30% of pronghorn hunted in Unit 9 are hunted on the Tusayan District). Small game hunted on the district include mourning doves, Abert's squirrels, and cottontail rabbits.

Much of the mule deer fawning, elk calving, and wild turkey nesting that occurs on the Tusayan District occurs in GA 10, which is where most of the ponderosa pine forest habitat on the district occurs. GAs 8 and 9 provide important winter and transitional range for mule deer, elk, and turkey. Pronghorn are common on state and private lands to the southwest and south of GA 8. Within the Tusayan District, pronghorn primarily utilize habitat in the Upper Basin in GA 9, the southeastern portion of GA 8, and small grasslands and sagebrush-grass communities in GA 10.

Numerous migratory bird species occur on the Tusayan District. Effects of the proposed action were evaluated for Arizona Partners in Flight (PIF) Priority Species. PIF priority species are identified by habitat type. Arizona PIF habitat types that occur on the Tusayan District are pine habitat, pinyon-juniper woodland, cold desertscrub, and high elevation grassland (Latta et al. 1999:page 14). Priority species identified in Arizona PIF for pine habitat are northern goshawk, olive-sided flycatcher, Cordilleran flycatcher, and purple martin. Priority species for pinyon-juniper habitat are gray flycatcher, pinyon jay, gray vireo, black-throated gray warbler, and juniper titmouse. Priority species

for cold desert scrub habitat are sage thrasher, sage sparrow, and Brewer's sparrow. Priority species for high elevation grasslands are Swainson's hawk, ferruginous hawk, burrowing owl, and grasshopper sparrow. There are no designated Important Bird Areas within the district.

Direct and Indirect Effects of Alternatives

Numerous papers have been published on the effects of roads and motorized travel on wildlife. The scientific literature documents a variety of negative effects of roads and motorized travel on wildlife (e.g., see literature reviews in Boyle and Samson 1985, Forman and Alexander 1998, Trombulak and Frissell 2000, Wisdom et al. 2000, Brown et al. 2001). It is not the objective of this analysis to summarize the vast amount of literature on this subject. The objective is to use this scientific literature in evaluating the potential effects of the different alternatives on various wildlife species within the context of species present on the Tusayan District and the specific road and travel conditions that exist on the district.

Potential effects of motorized travel on wildlife can be categorized in many ways, but effects relevant for travel management on the Tusayan District include:

- habitat impacts caused by roads and cross-country motorized travel;
- barrier to animal movement caused by roads;
- animal mortality due to vehicle collisions;
- human disturbance of animals associated with motorized travel;
- loss of logs and snags associated with fuel wood harvesting along roads;
- harvest or collection of wildlife facilitated by motorized travel;
- effects on wildlife habitat related to fire and fuels management;
- effects on wildlife habitat related to the spread of noxious weeds.

In addition to the analyses of wildlife effects below, a separate biological evaluation of effects to wildlife species listed under the Endangered Species Act and Forest Service Sensitive species has been completed and can be found in the project record. Also, a separate report on the effects to Management Indicator Species and migratory birds has been completed and included in the project record.

Alternative 1 - No Action

Direct and Indirect Effects

Habitat impacts caused by roads and cross-country motorized travel: Potential habitat impacts include habitat loss and fragmentation caused by roads and habitat degradation caused by cross-country motorized travel. Habitat loss occurs as a result of loss of vegetation within the actual footprint of the road and shoulder. There are a total of 709 miles of open Forest Service roads on the Tusayan District, which is equivalent to an open road density of 1.37 miles/mile² (area of the district is 331,430 acres or 518 mile²). 612 miles of the 709 total miles are Maintenance Level 2, 103 miles are Level 3, and 2 miles are Level 4. Average road width of Level 2 roads on the district is 12-14 feet. Approximately half of the Level 3 roads on the district are double lane with an average width of 22-24 feet. The other half of Level 3 roads are single lane, which are 12-16 feet wide.

In addition to direct loss of wildlife habitat, roads create edge effects and can cause habitat fragmentation. Potential habitat fragmentation effects depend on the configuration of the surrounding habitat and the particular wildlife species. The contrast between a road corridor and an adjacent dense, homogeneous forest is much greater than the contrast between a road corridor and an adjacent habitat with an open vegetation structure such as a grassland or woodland. Contrasts between road corridors of Forest Service roads and adjacent habitats on the Tusayan District are not as great as many other areas because the district is characterized by relatively open vegetation communities (e.g., open ponderosa pine forest, pinyon-juniper woodland, and sagebrush-grass communities).

Certain wildlife species or categories of species are affected more by habitat fragmentation than others (e.g., certain bird species associated with interior forest habitats are potentially impacted more by habitat fragmentation than other species such as the brown-headed cowbird, a species that benefits from habitat fragmentation).

Motorized cross-country travel affects wildlife habitat as a result of impacts to vegetation, soil, and water resources. The degree of potential impacts depends on various factors, including 1) size of vehicle (OHV or full-size truck), 2) frequency of travel at a specific area, and 3) vegetation, soil, or water conditions at the time of travel (e.g., whether soils are wet or dry). Under current management, cross-country vehicle travel has the greatest impacts on soil and vegetation resources during times when soil conditions are wet. Cross-country OHV travel on the Tusayan District has increased substantially in recent years. This increase partly reflects general increases in OHV recreational use, but also reflects a substantial increase in the use of OHVs to collect shed elk antlers on the district in recent years.

Under Alternative 1, no new roads would be constructed, so there would be no additional habitat lost due to road construction. Potential habitat fragmentation effects caused by existing roads would continue. Motorized cross-country travel would be allowed to continue and would likely increase during the next 10 years. The primary habitat effects of continued motorized cross-country travel would be decreased habitat quality for certain wildlife species as a result of continued localized impacts to vegetation and soil resources.

Barrier to animal movement caused by roads: The degree to which roads inhibit animal movement depends on both the type of road corridor and the animal species. In general, wider road corridors, roads with more traffic, and roads with faster vehicle traffic are more likely to inhibit animal movement than narrower road corridors and roads with slower and less traffic. Roads are more likely to inhibit the movement of smaller animals than larger animals.

Pronghorn antelope is a species whose movement patterns are known to be affected by certain types of road corridors. In addition to characteristics of the actual road, characteristics of fences that parallel roads affect animal movement, especially for pronghorns because pronghorns do not cross fences as readily as do other ungulates such as mule deer and elk. State Highway 64, which crosses the district in a north-south direction, likely inhibits east-west pronghorn movement and thus creates at least a partial movement barrier. Fence modifications can reduce the impact of both roads and fences on pronghorn. For example, AGFD telemetry data has shown that raising the bottom wire to a

minimum of 18 inches above the ground and replacing the bottom strand with a smooth wire greatly reduces the impact of fencing on pronghorn. It is unlikely that the relatively narrow corridors and low traffic volumes of Forest Service Level 2 and 3 roads on the district create movement barriers for pronghorns (Brown and Ockenfels 2007:page 29) or other large ungulates such as elk and mule deer.

Forest Service roads on the Tusayan District are unlikely to be a significant barrier to movement of most vertebrate species because most of the roads are relatively narrow dirt roads characterized by low traffic volumes and speeds. Of the focal species evaluated, animal species whose movements are most likely to be affected by Forest Service roads on the Tusayan District are small species such as Merriam's shrew and Mogollon vole. Forest Service roads on the district may impede movements of other small animals such as invertebrates, some species of lizards, and other small mammal species.

Animal mortality due to vehicle collisions: The frequency of animal-vehicle collisions varies by species and by characteristics of the road corridor. Roads with more vehicle traffic generally have more animal-vehicle collisions than roads with less traffic, unless the traffic is so great that it inhibits attempted animal crossings. Roads with greater vehicle speeds also have greater frequencies of animal-vehicle collisions than roads with lower vehicle speeds. Physical characteristics of the road corridor can have substantial effects on frequencies of animal-vehicle collisions. For example, road corridors with fences and animal crossings such as underpasses can have greatly reduced frequencies of animal-vehicle collisions. Clearing trees and tall shrubs from the immediate road corridor also can reduce frequencies of animal-vehicle collisions.

Frequency of animal-vehicle collisions is low on Forest Service roads on the Tusayan District as evidenced by how rare it is to see dead animals along the sides of these roads. Animal-vehicle collisions are likely rare due to the low traffic volumes and low vehicle speeds of these roads. The majority of Forest Service roads on the district are Level 2 (86%), and Level 2 roads are characterized by low traffic volume and low speed (Forest Service 2005:page 31). Maintenance Level 3 roads are characterized by low- to moderate-traffic volume and low speeds (Forest Service 2005:page 19). It is unlikely that mortality due to vehicle collisions on Forest Service roads on the Tusayan District occurs frequently enough to be causing population-level impacts for any of the focal species evaluated.

Animal injury and mortality is possible due to cross-country vehicle travel which is currently allowed on the Tusayan District. Animals potentially affected by collisions due to cross-country motorized travel are invertebrates, ground-nesting birds, lizards, snakes, and small mammals such as mice and voles. However, because of the low vehicle speeds typical of off-road travel, direct mortality of animals from cross-country motorized travel on the Tusayan District probably does not occur frequently enough to be causing population declines of any of the focal species evaluated.

Human disturbance of animals associated with motorized travel: Human presence and various human activities can negatively affect the behavior and health of individual animals. Human activity can cause animals to shift movement or habitat use patterns, disrupt important breeding and parental care behaviors, and cause physiological stress. For the purposes of this analysis, all of these potential negative effects to animal behavior and health are referred to simply as human disturbance effects.

Motorized travel provides people access to different parts of the national forest. Animal species vary in the degree to which they are affected by human disturbance. The degree to which animal species are affected by human disturbance can also vary seasonally: many animal species are potentially affected more by human disturbance during the breeding season than during the non-breeding season. Species for which an important biological activity such as mating, giving birth, feeding, or drinking is spatially concentrated in a single or few specific areas are typically more vulnerable to adverse disturbance effects than species for which these activities are widely dispersed across a landscape. For most of the focal species evaluated, key biological activities of mating, giving birth, and feeding are not concentrated in a few key areas, but are instead dispersed across the landscape in suitable habitats.

California condor is the only animal species currently listed under the Endangered Species Act that occurs on the Tusayan District. Condors commonly occur just north of the district along the South Rim of the Grand Canyon, but only rarely occur on the Tusayan District. Human disturbance associated with motorized travel under current management potentially affects California condors because they occasionally occur on the district feeding on road-killed elk along State Highway 64 and other large mammal carrion. Vehicle traffic can disturb condors that are feeding on large mammal carrion and cause condors to fly away. This has been observed to occur along state Highway 64, but is unlikely to occur along Forest Service roads on the district because elk, deer, or pronghorn are so rarely hit by vehicles along Forest Service roads. Condors probably occasionally feed on large-mammal carrion and gut piles from hunter-killed animals on the district, and vehicle traffic and cross-country motorized travel could result in potential disturbance of these condors. It is possible that individual condors could be injured or killed as a result of collisions with vehicles, but this is unlikely to occur on Forest Service roads on the district because of low traffic speeds and volumes on these roads.

Human disturbance associated with motorized travel under current management is unlikely to be causing population-level impacts for any of the Forest Service Sensitive species. There are no known bald eagle nest sites on the Tusayan District. Bald eagles occur in small numbers on the district during winter, but they don't occur at particular sites consistently. They are primarily seen roosting near sites where carrion is present. Thus, similar to condors, vehicle traffic and cross-country motorized travel probably results in occasional disturbance of individual bald eagles. Golden eagles nest and occur year-round on the Tusayan District. The only known golden eagle nest on the district is in one of the motor vehicle restricted areas where motorized travel is not allowed off existing roads. Although peregrine falcons nest just north of the Tusayan District on cliff ledges in Grand Canyon National Park, there are no known peregrine falcon nest sites on the district. Cliffs along the Coconino Rim may provide potential nest sites. Similar to Red Butte, the Coconino Rim is already designated as a motor vehicle restricted area where motorized travel is not allowed off of existing Forest Service roads.

There are several known goshawk territories located across parts of GAs 8 and 10 on the district. A number of goshawk nest sites that have been found on the Tusayan and Williams Districts are located in close proximity to Forest Service roads. Grubb et al. (1998) found that logging trucks passing approximately 500 meters from two active goshawk nests on the Kaibab Plateau did not cause discernible behavioral responses from individual goshawks at the nests.

Certain bat species such as Townsend's big-eared bat are considered to be vulnerable to human disturbance at their roost sites. Townsend's big-eared bats and other bat species commonly roost in caves, abandoned mines, and old buildings. All of the known abandoned mine shafts and natural caves on the Tusayan District were surveyed for bats in 2008. Townsend's big-eared bats were detected at several of the abandoned mines and several of the caves. In general, roads and cross-country motorized travel provide people greater access to sensitive bat roost sites. The largest of the abandoned mine shafts has been fenced to keep people from entering (the fencing allows bats to still use the mine shaft for roosting). The Kaibab National Forest is in the process of fencing or gating the smaller mine shafts and adits that pose a safety risk. Bat-compatible closure methods will be used. Known caves on the district are small and do not appear to receive much recreational cave use.

Of the Management Indicator Species, human disturbance associated with motorized travel is most likely to affect elk, mule deer, and pronghorn. Much of the mule deer fawning, elk calving, and turkey nesting that occurs on the Tusayan District occurs throughout GA 10, which is where most of the ponderosa pine forest habitat on the district occurs. GAs 8 and 9 provide important winter and transitional range for mule deer, elk, and turkey. Human disturbance on critical winter range can adversely affect wild ungulates such as mule deer, pronghorn, and elk in northern geographic regions where winters are severe and snow depths great. This is probably less of an issue on the Tusayan District where winters are less severe and snows less deep. Human disturbance associated with motorized travel likely causes some level of disturbance to elk calving and mule deer and pronghorn fawning. However, these potential disturbance effects are unlikely significant at a population level because 1) traffic volumes and speeds are low on Tusayan District Forest Service Level 2 and 3 roads; 2) elk calving, mule deer fawning, and pronghorn fawning activity is dispersed across available suitable habitats on the district; 3) motorized big game retrieval occurs from September to December, outside of elk calving, mule deer fawning, and pronghorn fawning seasons; and 4) the majority of cross-country OHV travel for antler hunting occurs during February, March, and April, before elk calving, mule deer fawning, and pronghorn fawning seasons.

Human disturbance associated with motorized travel likely also affects black bears and mountain lions to some degree, and movement patterns of each of these species have been shown to be influenced by roads or road traffic (e.g., Van Dyke et al. 1986, Brody and Pelton 1989). Both species occur on the Tusayan District, but at low densities. Potential disturbance effects of motorized travel on black bears and mountain lions are unlikely significant because Forest Service roads on the district are natural surface roads characterized by low traffic volumes and speeds.

Human disturbance associated with motorized travel may affect elk, mule deer, and pronghorn and other wildlife species at water developments where these animals must come to drink. During dry periods, relatively few water developments on the district hold water, so these animals must concentrate their drinking activity at relatively few sites. To reduce the risk of human disturbance to wildlife, Arizona state law prohibits camping within 1/4 mile of a natural water hole or a man-made watering facility containing water in such a place that wildlife or domestic stock would be denied access to the only reasonably available water (Arizona Revised Statute 17-308).

Loss of logs and snags due to fuel wood harvesting along roads: Logs and snags serve important habitat functions for many wildlife species (Chambers and Germaine 2003). After an extensive review of the literature, Wisdom et al. (2000) included reduced densities of logs and snags as one of the negative effects of roads on wildlife habitat. Evaluating patterns of fine-scale forest conditions across the Interior Columbia Basin, Hann et al. (1997) found that roaded areas had lower densities of large-diameter trees, snags, and logs compared to unroaded areas. They concluded that this was because roaded areas had higher levels of fuel wood harvesting and commercial timber harvesting.

Although personal fuel wood harvesting is managed by permit and thus outside of the scope of the travel management decision being made, aspects of travel management may affect how personal fuel wood harvesting is managed on the district. Currently, a personal use fuel wood permit can be purchased that allows people to harvest dead and down wood and standing dead trees. Various restrictions on size and species of standing dead trees apply. Fuel wood can be harvested from Forest Service lands across most of the district outside of specified closure areas. Because cross-country motor vehicle travel is currently allowed (outside of the Coconino Rim and Red Butte motor vehicle restricted areas), there is no maximum distance from the road from which motor vehicles can be used to access fuel wood. The current open road system and cross-country motorized travel facilitate widespread geographic distribution of fuel wood harvest across the district, both permitted (legal) fuel wood harvest and unauthorized (illegal) fuel wood harvest.

Harvest or collection of wildlife facilitated by motorized travel: Motorized travel increases hunter opportunities, and hunting is the key tool used by AGFD to manage populations of game species. In addition, hunting is one of the most common recreational activities that occurs on the Tusayan District.

Population management of elk is important on the Tusayan District because elk can have substantial impacts on various forage and browse plant species, in addition to impacts on other resources such as wildlife and livestock water developments. AGFD manages elk population density through the harvest of cow elk, and cow elk harvest is determined through AGFD's management of antlerless elk hunts. Motorized travel plays an important role in AGFD's ability to manage antlerless elk hunts, as well as other hunts. Many antlerless elk hunters, as well as other hunters, rely on a core system of Forest Service roads to access different parts of the Tusayan District during their hunt. Many of these hunters also rely on motorized dispersed camping during their hunt. In addition, most elk hunters on the Tusayan District currently retrieve their harvested animal using motorized big game retrieval.

Just as motorized travel facilitates legal harvest of wildlife, it also facilitates illegal harvest (poaching). However, illegal harvest of game species (elk, mule deer, pronghorn antelope, and wild turkey) on the Tusayan District is not considered to be a significant problem by AGFD or Forest Service law enforcement officials.

Effects on wildlife habitat related to fire and fuels management: Fire can have significant effects on wildlife habitat: high-severity wildfires can have substantial negative effects on wildlife habitat, and prescribed fire and wildland fire use can be used to improve wildlife habitat and achieve other natural resource management objectives. Because fire has significant effects on wildlife habitat, effects of

roads and motorized travel on fire and fuels management is important. Effects of motorized travel on fire and fuels management are discussed in a separate section.

Effects on wildlife habitat related to the spread of noxious weeds: Noxious weeds have the potential to negatively affect wildlife habitat. Noxious weeds can displace native plant species and alter ecosystem function. Noxious weed distributions are often strongly associated with travel corridors such as roads and trails. Effects of roads and cross-country motorized travel on noxious weeds are discussed in a separate section.

Summary of Direct and Indirect Effects of Alternative 1

Motorized travel has a wide variety of potential negative effects on wildlife, although it is difficult to quantify these effects. Effects associated with roads and cross-country motorized travel on the Tusayan District are likely negatively affecting to some degree various wildlife species as a result of habitat impacts caused by roads and cross-country motorized travel, human disturbance of wildlife associated with motorized travel, barriers to animal movement caused by roads, mortality of wildlife due to vehicle collisions, and the spread of noxious weeds. Although ongoing effects of roads and motorized travel would continue under Alternative 1, no new roads would be constructed and no additional areas would be authorized for cross-country motorized vehicle use.

Cumulative Effects of Alternative 1

The cumulative effects analysis area is defined as the Tusayan District and a 1-mile buffer (total area of 418,164 acres or 653 square miles). This area is sufficiently large to include multiple home ranges for each of the wildlife species evaluated in this report.

Many of the existing core Forest Service roads on the Tusayan District were constructed before 1950. The majority of the rest of the existing Forest Service road system on the district was constructed between the mid-1960s through mid-1980s. The only new road construction projects during the past 10 years have been relatively short sections constructed as part of road realignments, primarily to move old road sections out of drainage bottoms. Several decisions to close roads on the district have been signed during the past 10 years. In 2003 and 2004, approximately 73 miles of Forest Service roads on the western part of the district in GA 8 were closed and obliterated.

Under Alternative 1, direct and indirect effects related to cross-country motorized travel and roads would continue to negatively affect various wildlife species. Because no new roads would be constructed and no new areas would be authorized for motorized cross-country travel, it is likely that the effects of Alternative 1, when added to the effects of past, present, and reasonably foreseeable future actions, would not result in population declines or threats to population viability for any of the species evaluated. However, under Alternative 1, the current trend of increasing cross-country motor vehicle use (e.g., trend of increased cross-country motor vehicle use for collection of shed elk antlers) would likely continue. Long-term effects of increasing cross-country motorized travel may result in population declines of certain wildlife species (e.g., certain species of lizards, snakes, ground-nesting birds, or small mammals).

Direct and Indirect Effects Common to Alternatives 2 and 3

Prohibiting cross-country motorized travel except for specified permitted uses and big game retrieval for harvested elk would result in a decrease in overall cross-country motor vehicle use. Cross-country motorized travel would no longer be allowed for activities such as collection of shed elk and deer antlers and general recreational riding. Effects of a reduction in motorized cross-country travel on the district would include: 1) decreased impacts to vegetation and soil resources which would result in increased habitat quality for various wildlife species; 2) decreased levels of human disturbance to wildlife species; and 3) decreased risk of injury and mortality of individual animals such as small mammals, ground-nesting birds, lizards, and snakes due to vehicle collisions.

Motorized Big Game Retrieval

To estimate how the frequency of motorized big game retrieval (MBGR) would change under the Alternatives 2 and 3, the following analysis was conducted. First, data from *Hunt Arizona* were used to calculate the average number of big game animals harvested in Game Management Unit 9 (Arizona Game and Fish Department 2008). (The Tusayan Ranger District is located entirely within Game Management Unit 9.) The average was determined for the years 2004, 2005, and 2006. This average value was then multiplied by the estimated proportion of each big game species harvested in Unit 9 that is typically harvested on the Tusayan District, and by the estimated proportion of harvested animals typically retrieved using some kind of motor vehicle. These proportions were estimated by AGFD (Larry Phoenix, Field Supervisor for AGFD Region 2, personal communication). Estimates are presented in Table 10.

Table 10. Estimated numbers of motorized big game retrievals occurring annually on Tusayan Ranger District 2004-2006.

Big Game Species	Average harvest in Game Management Unit 9	Estimated proportion of animals harvested on Tusayan District	Estimated proportion of harvested animals retrieved by motor vehicle	Estimated number of motorized big game retrievals
Elk	541	0.8 - 0.9	0.9	390 - 438
Mule Deer	145	0.65 - 0.75	0.9	85 - 98
Pronghorn	16	0.2 - 0.3	0.9	3 - 4
Total				478 - 540

It is estimated that currently there are a total of approximately 480-540 motorized big game retrievals (elk, deer, and pronghorn) each year on the Tusayan District. Eliminating MBGR opportunity for mule deer and pronghorn thus represents a decrease of approximately 90-100 motorized big game retrievals each year on the district (decrease of approximately 18% in total frequency of motorized big game retrievals).

Changes in MBGR policy could have indirect effects on certain voluntary lead reduction efforts. Lead poisoning caused by ingestion of lead bullet fragments in hunter-killed animal carcasses and gut piles is the leading cause of death for California condors and the main obstacle to a self-sustaining condor population in northern Arizona and southern Utah

http://www.peregrinefund.org/conservation_category.asp?category=California%20Condor%20Restoration). Lead poisoning caused by ingestion of lead bullet fragments has been documented to impact wildlife species other than California condors, including bald eagles, golden eagles, and ravens (e.g., Hunt et al. 2006, Craighead and Bedrosian 2008, Bedrosian and Craighead 2009). Bald eagles and ravens have been observed feeding on gut piles of hunter-killed animals on the Tusayan and Williams Ranger Districts.

To reduce risks of lead poisoning to California condors, AGFD and The Peregrine Fund have encouraged hunters to use non-lead ammunition, or if they use lead ammunition, to remove the entire game carcass and gut pile from the field (Green et al. 2009, Sieg et al. 2009). Although AGFD encourages big game hunters in Game Management Unit 9 (Tusayan District) to use non-lead ammunition or to remove the entire game carcass and gut pile from the field if they are using traditional lead ammunition (Arizona Game and Fish and Department 2008:page 56), few hunters are currently doing so and voluntary lead reduction efforts in northern Arizona have so far focused on the Kaibab Plateau.

Assuming that big game hunters are less likely to voluntarily haul out entire game carcasses and gut piles from the field without a motor vehicle, a potential indirect effect of reduced MBGR opportunity could be reduced effectiveness of ongoing and future voluntary lead reduction efforts. Because few hunters are currently removing gut piles from the field on the Tusayan District, however, potential effects of the small reduction in MBGR opportunity would be on potential future lead reduction efforts and difficult to estimate.

Alternative 2

Direct and Indirect Effects

Designating 163 fewer miles of Forest Service roads for motorized public travel would result in an approximate 23% decrease in open road density, from 1.37 miles/mile² to 1.05 miles/mile². Potential effects of this level of reduction in roads open to motorized public travel would include reduced spatial distribution of motor vehicle-related human disturbance of wildlife, and reduced risk of injury and mortality for certain small animals due to vehicle collisions along roads. Designating 163 fewer miles of Forest Service roads for motorized public travel and eliminating cross-country motorized travel except for MBGR of elk would likely result in a decrease in the spatial distribution of fuel wood harvest, but not necessarily any change in the total volume of fuel wood harvested annually. Fuel wood harvesting may be concentrated more along the remaining open roads. Because personal fuel wood harvesting would continue to be managed by permit independently of travel management, it is difficult to evaluate indirect effects of the proposed action on the removal of logs and snags as a result of fuel wood harvesting.

Effects of Alternative 2 on hunting include: 1) 23% decrease in miles of road access for hunters; 2) elimination of motorized big game retrieval opportunity for deer and pronghorn hunts; and 3) a decrease in motorized dispersed camping opportunity resulting from designating 163 fewer miles of roads open to motorized public travel (currently, dispersed camping is allowed along all open Forest Service roads). Although these effects would result in reduced motorized recreational opportunities for hunters, these same effects would result in increased hunt quality and satisfaction for a certain percentage of hunters as a result of decreased motor vehicle disturbance. Although 163 fewer miles

of existing roads would be designated as open to motorized public travel under Alternative 2, the remaining open road system would likely still provide sufficient hunter access to different parts of the district for AGFD to meet its population management objectives for elk and other game species.

Cumulative Effects

The cumulative effects analysis area is defined as the Tusayan District and a 1-mile buffer (total area of 418,164 acres or 653 square miles). This area is sufficiently large to include multiple home ranges for each of the wildlife species evaluated in this report.

Many of the existing core Forest Service roads on the Tusayan District were constructed before 1950. The majority of the rest of the existing Forest Service road system on the district was constructed between the mid-1960s through mid-1980s. The only new road construction projects during the past 10 years have been relatively short sections constructed as part of road realignments, primarily to move old road sections out of drainage bottoms. Several decisions to close roads on the district have been signed during the past 10 years. In 2003 and 2004, approximately 73 miles of Forest Service roads on the western part of the district in GA 8 were closed and obliterated.

The primary direct and indirect effects on wildlife of designating 163 fewer miles of roads open to motorized public travel and reducing motorized cross-country travel under Alternative 2 would be decreased motor vehicle-related human disturbance and increased habitat quality for a wide variety of wildlife species. Because the primary direct and indirect effects of Alternative 2 on wildlife would be positive, these effects when added to the effects of past, present, and reasonably foreseeable future actions would not result in population declines or threats to population viability for any of the species evaluated.

Alternative 3

Direct and Indirect Effects

Designating 143 fewer miles of roads open to motorized public travel would represent a 20% reduction in open road density, from 1.37 miles/mile² to 1.09 miles/mile². Potential effects of this level of reduction in roads open to motorized public travel would include reduced spatial distribution of motor vehicle-related human disturbance of wildlife, and reduced risk of injury and mortality for certain small animals due to vehicle collisions along roads. Designating 143 fewer miles of Forest Service roads for motorized public travel and eliminating cross-country motorized travel except for MBGR of elk would likely result in a decrease in the spatial distribution of fuel wood harvest, but not necessarily any change in the total volume of fuel wood harvested annually. Fuel wood harvesting would likely be concentrated more along the remaining open roads. Because personal fuel wood harvesting would continue to be managed by permit independently of travel management, it is difficult to evaluate indirect effects of the proposed action on the removal of logs and snags as a result of fuel wood harvesting.

Effects of Alternative 3 on hunting include: 1) 20% decrease in miles of road access for hunters; 2) elimination of motorized big game retrieval opportunity for deer and pronghorn hunts; and 3) a decrease in motorized dispersed camping opportunity resulting from designating 143 fewer miles of roads open to motorized public travel (currently, dispersed camping is allowed along all open Forest Service roads). Although these effects would result in reduced motorized recreational opportunities

for hunters, these same effects would likely result in increased hunt quality and satisfaction for a certain percentage of hunters as a result of decreased motor vehicle disturbance. Although 143 fewer miles of existing roads would be designated as open to motorized public travel under Alternative 3, the remaining open road system would likely still provide sufficient hunter access to different parts of the district for AGFD to meet its population management objectives for elk and other game species.

Cumulative Effects

The cumulative effects analysis area is defined as the Tusayan District and a 1-mile buffer (total area of 418,164 acres or 653 square miles). This area is sufficiently large to include multiple home ranges for each of the wildlife species evaluated in this report.

Many of the existing core Forest Service roads on the Tusayan District were constructed before 1950. The majority of the rest of the existing Forest Service road system on the district was constructed between the mid-1960s and mid-1980s. The only new road construction projects during the past 10 years have been relatively short sections constructed as part of road realignments, primarily to move old road sections out of drainage bottoms. Several decisions to close roads on the district have been signed during the past 10 years. In 2003 and 2004, approximately 73 miles of Forest Service roads on the western part of the district in GA 8 were closed and obliterated.

The primary direct and indirect effects on wildlife of designating 143 fewer miles of roads open to motorized public travel and reducing motorized cross-country travel under Alternative 3 would be decreased motor vehicle-related human disturbance and increased habitat quality for a wide variety of wildlife species. Because the primary direct and indirect effects of Alternative 3 on wildlife would be positive, these effects when added to the effects of past, present, and reasonably foreseeable future actions would not result in population declines or threats to population viability for any of the species evaluated.

Invasive Weeds and Sensitive Plant Species

Existing Condition

Invasive Weeds

Noxious and invasive weeds found on the Tusayan Ranger District include: cheatgrass, Dalmatian toadflax, diffuse knapweed, Scotch thistle, bull thistle, and leafy spurge. Cheatgrass occurs throughout the District. Dalmatian toadflax has been found in and around Tusayan, including along Highway 64. Diffuse knapweed has been found in Tusayan and along Highway 64 from the eastern boundary of Grand Canyon National Park to the Navajo Nation boundary. Scotch thistle has been found along Highway 64 at the eastern boundary with Grand Canyon National Park and on many forest roads in the Upper and Lower Basins. A few scattered bull thistle plants have been found in the interior of the District. Leafy spurge has been found within the Hull Cabin Historic District. Most of these populations have been treated using manual, chemical, or biological control methods. Invasive exotic weed monitoring, new treatments and re-treatments occur annually on the District.

Most invasive exotic weed infestations have been found next to or near roads. Vehicles are the most common cause of weed introduction and spread. Road density, road locations, and the number of miles of new unauthorized routes can be used to predict the location and rate of spread of invasive

exotic weeds. Many exotic invasive weed seeds and plant parts are spread by muddy vehicle tires. A dense road network increases the risk that existing weeds will be spread further and that new weeds will be introduced. Noxious and invasive weeds may also be spread by hikers, bicyclists, horses, livestock, and wildlife. Seeds and other plant parts are spread after sticking to muddy feet or tires or to clothing, fur, or hair. Weeds may also be spread by wind and water.

Sensitive Plant Species

A review was conducted to determine if any Threatened, Endangered, Candidate, Conservation Agreement, or Forest Service Sensitive plant species and/or habitats were known to occur in Coconino County and on or near the Kaibab National Forest. The following references were used: USFWS Internet list of Threatened, Endangered, Candidate, and Conservation Agreement species occurring in Coconino County; Arizona Game and Fish Department Heritage Data Management System; USDA Forest Service Region 3 Sensitive Species List; NatureServe Explorer Internet site; and Arizona Rare Plant Field Guide.

One Management Indicator Species, Arizona bugbane (*Actaea arizonica*, formerly *Cimicifuga arizonica*), is found on the South Zone of the Kaibab National Forest. However, it is only found on the moist north slope of Bill Williams Mountain on the Williams District. There is no suitable habitat on the Tusayan District. Arizona bugbane is also a USFWS/FS Conservation Agreement species and a Forest Service Sensitive species.

At this time, no Federally Listed, Proposed, Candidate, or Conservation Agreement plant species have been found and only two Forest Service Sensitive plant species are known to exist on the Tusayan District – Tusayan rabbitbrush (*Chrysothamnus molestus*) and Arizona leatherflower (*Clematis hirsutissima* var. *hirsutissima*).

Although plant populations have not been found on the Tusayan District, suitable habitat does exist for these Forest Service Sensitive plants: Mt. Dellenbaugh sandwort, Flagstaff pennyroyal, Flagstaff beardtongue, and Grand Canyon rose.

Suitable habitat may also exist in the Lower and/or Upper Basin areas for Fickeisen pincushion cactus (*Pediocactus peeblesianus* var. *fickeiseniae*), a Forest Service Sensitive and Candidate species, and Kaibab pincushion cactus (*Pediocactus paradinei*), a Forest Service Sensitive and USFWS/FS Conservation Agreement species. Adequate surveys are needed in order to rule out the existence of suitable habitat for, and populations of, these *Pediocactus* species on the Tusayan District. (Phillips 2009)

Rare plants are not generally found right alongside forest roads due to the frequent disturbance. If the Forest Service wants to construct a new road, it must survey the area first for rare plants and avoid and/or mitigate the impacts. Unauthorized roads do not go through this planning and analysis process. As a result, recent unauthorized roads may destroy rare plants and introduce invasive weeds into their habitat.

Desired Condition for Invasive Weeds and Sensitive Plant Species

- Maintain a stable to upward trend in total herbaceous plant cover by prohibiting most off road vehicle use.

- Protect Threatened, Endangered, and Sensitive plant species from adverse effects caused by roads and off road vehicle use.
- Eradicate or contain as many existing populations of noxious and invasive exotic weeds as possible and prevent new introductions of weeds caused by vehicle use on the District.

Direct and Indirect Effects of Alternatives

Invasive Weeds

Effects Common to All Alternatives

Noxious and invasive exotic weeds can negatively affect the forest and rangeland in other ways as well. Weeds can aggressively out-compete most native plants for growing space, sunlight, soil moisture, and soil nutrients. They can displace many species of native plants, not just rare plants, leading to a reduction in biodiversity. Weeds may also reduce the scenic and natural beauty of the area.

Alternative 1

The current rate of spread of existing noxious and invasive exotic weeds and the current rate of introduction of new weeds will continue. As recreation use of the District increases in the future, the rate of spread of weeds will probably increase as well.

The increased populations of weeds may increase soil erosion, reduce forage for wildlife and livestock, reduce wildlife habitat, displace native plants, reduce biodiversity, increase the risk of fire, and reduce scenic and natural beauty.

Unmanaged cross country motorized vehicle travel is a major threat to the forest. Vehicles can crush and kill native vegetation, drive through existing populations of noxious and invasive exotic weeds, open up ruts and bare patches of soil, cause soil erosion, and spread weed seed onto the newly created seedbeds. The most vulnerable areas include gentle slopes, areas with an open canopy of trees and shrubs, areas near water developments, and scenic views.

Global climate change may lead to higher temperatures, lower precipitation, more frequent and severe droughts, and more wildfires. Noxious and invasive exotic weeds have a competitive advantage during droughts and after fires and could expand their ranges at the expense of native plants. The continuation of current travel management could lead to an even greater rate of weed introduction and spread if global climate change predictions are correct.

Continuation of current management (Alternative 1) could lead to a large annual increase in the number of weed species found on the District and in the number of acres infested.

Alternative 2

The Travel Management Process provides an opportunity to reduce the density of the road network and to remove or reduce the number of roads and unauthorized routes near vulnerable areas such as wilderness, parks, scenic areas, important wildlife habitat, areas with a lot of rare plants, or other points of interest. The Kaibab National Forest is actively managed and provides multiple uses such as recreation, hunting, ranching, and wood products. These activities have the potential to introduce exotic plants to the Forest. These exotic plants may then spread to adjoining lands, including the

Grand Canyon National Park. The Park Service is mandated to eradicate exotic plants that occur within the Park. It faces many challenges in controlling exotic plants. It is important for the Kaibab National Forest and Grand Canyon National Park to reduce further opportunities for the spread of exotic plants. One way to do that is to reduce the road density along the boundary between the Park and the Forest.

Reducing the number of miles of road open to public travel on the District reduces the number of opportunities for noxious and invasive exotic weeds to be introduced and spread. The closure of 23% of the Forest Service System Roads, the closure of most user-created unauthorized routes, and the ban on most cross country motorized vehicle travel will greatly reduce the spread of existing noxious and invasive exotic weeds and the introduction of new weeds. Fewer disturbances of soil and native vegetation will occur and fewer weed seeds will be spread by motorized vehicles.

The reduced incidence of weeds will help conserve the soil, forage for wildlife and livestock, wildlife habitat, native plants, biodiversity, and scenic/natural beauty.

Some cross country travel will still be allowed by Forest Service employees, Forest Service contractors, permittees, hunters, and campers. Soil and vegetation disturbance and weed seed dispersal away from roads is still possible.

Best management practices and mitigation measures will be used on all Forest projects in order to reduce the spread of noxious and invasive exotic weeds. For example, the Forest Service attempts to control known populations of weeds before projects begin. Loggers, miners, and utility crews are required to wash their heavy equipment before entering the Forest. Vehicles are not allowed to be used when soils are wet enough to cause soil damage.

Designating dispersed camping corridors and routes will provide the Forest Service with a way to track and control noxious and invasive exotic weeds. Designated corridors and routes will be periodically surveyed for weeds, so that the weeds may be controlled. Disturbed areas may be revegetated as needed.

Continued implementation of the Wet Weather Travel Policy will help reduce the spread of noxious and invasive exotic weed seeds that cling to muddy tires and vehicles.

Cross country motorized vehicle use by hunters to retrieve elk has the potential to introduce and spread invasive exotic weeds. Vehicles could travel almost anywhere on the District at random. This vehicle use will only occur during elk seasons, approximately August through December. During the other half of the year, cross country travel would be greatly reduced. Therefore, it is expected that there will be a reduction in the introduction and spread of weeds

Implementation of Alternative 2 (Proposed Action), with its reduction in road and cross country vehicle use, will improve the ability of native plants to grow and survive. The reduction in bare ground will improve the ability of the forest and rangeland to better resist invasion by weeds, especially during a period of climate change.

Implementation of Alternative 2 (Proposed Action) will reduce the introduction and spread of noxious and invasive exotic weeds compared to Alternative 1 (No Action). It will also improve the ability of the Forest to monitor and control weeds.

Noxious and invasive exotic weeds will continue to be spread by hikers, bicyclists, horses, livestock, wildlife, wind, and water. But implementation of Alternative 2 will reduce the introduction and spread of weeds by vehicles, which are the most common vectors of weed dissemination.

Alternative 3

Alternative 3 is virtually the same as Alternative 2 (Proposed Action). Alternative 3 will have slightly less positive effects since 3% more roads would be left open to public travel. Refer to the discussion of effects for Alternative 2 above for more information.

Implementation of Alternative 3 will reduce the introduction and spread of noxious and invasive exotic weeds. The reduction will be slightly less than for Alternative 2. It will also improve the ability of the Forest to monitor and control weeds.

Cumulative Effects

Past, ongoing, and planned projects and activities in the cumulative effects analysis area that will have an effect on invasive weeds include: timber and fuel wood harvesting, forest thinning, grassland restoration tree removal, sagebrush restoration, prescribed burning, livestock grazing, fence construction, water tank construction and maintenance, vehicle driving and horseback riding off road to herd cattle and maintain fences, invasive weed control, recreational activities (e.g. dispersed camping, horseback riding, hiking, hunting), mineral exploration and possible mining, pipeline and transmission line use and maintenance, and residential developments and activities.

The net cumulative effect of all human activities and natural events will be an improvement in forest and rangeland health on the District and a reduction in the introduction and spread of noxious and invasive exotic weeds.

Sensitive Plant Species

Threatened, Endangered, Candidate, and Conservation Agreement Plants

Direct and Indirect Effects

Suitable habitat may exist in the Lower and/or Upper Basin areas for Kaibab pincushion cactus (*Pediocactus paradinei*). At this time, it is not known whether plant populations exist in this area. Adequate surveys are needed in order to rule out the existence of suitable habitat for and populations of Kaibab pincushion cactus on the Tusayan District. (Phillips 2009)

Suitable habitat may exist in the Lower and/or Upper Basin areas for Fickeisen pincushion cactus (*Pediocactus peeblesianus* var. *fickeiseniae*). At this time, it is not known whether plant populations exist in this area. Adequate surveys are needed in order to rule out the existence of suitable habitat for, and populations of Fickeisen pincushion cactus, on the Tusayan District. (Phillips 2009)

Threats to Kaibab pincushion cactus and Fickeisen pincushion cactus include off road vehicle travel, road maintenance, dispersed camping, trampling, collecting, and the spread of invasive exotic weeds. Roads could exist and cross country travel could occur in suitable habitat due to the gentle slopes, if the ground is not too rocky and not covered by tall shrubs. Authorized off road vehicle travel could damage individual plants and/or habitat.

Alternative 1

No populations of Threatened, Endangered, or Proposed plant species have been found and no suitable habitat is known to exist on the Tusayan Ranger District.

Continuation of current management (Alternative 1) will have No Effect.

Forest Service Sensitive Species

Tusayan or disturbed rabbitbrush and Arizona leatherflower are Forest Service Sensitive species that occur on the Tusayan Ranger District.

There are no known populations occurring on Tusayan Ranger District, but there is suitable habitat for these species: Mt. Dellenbaugh sandwort, Flagstaff pennyroyal, Flagstaff beardtongue, Grand Canyon rose. Fickeisen pincushion cactus (USFWS Candidate) and Kaibab pincushion cactus (USFWS/FS Conservation Agreement) are also Forest Service Sensitive species.

Continuation of current management (Alternative 1) May Affect Individuals or Habitat, but is Not Likely to Contribute to a Trend toward Federal Listing or Loss of Viability to Populations or the Species, because no populations are known to exist on the Tusayan District. This alternative poses the greatest risk to the plants, if they are found to exist on the District.

All other Forest Service Sensitive Plants:

There are no known populations and no suitable habitat on the Tusayan District for these Forest Service Sensitive plant species: Arizona bugbane (*Actaea arizonica*), gumbo milkvetch (*Astragalus ampullarius*), Marble Canyon milkvetch (*Astragalus cremnophylax* var. *hevronii*), cliff milkvetch (*Astragalus cremnophylax* var. *myriorrhaphis*), Rusby milkvetch (*Astragalus rusbyi*), Kaibab paintbrush (*Castilleja kaibabensis*), rock fleabane (*Erigeron saxatilis*), Morton wild buckwheat (*Eriogonum mortonianum*), Atwood wild buckwheat (*Eriogonum thompsonae* var. *atwoodii*), Kaibab bladderpod (*Lesquerella kaibabensis*), and Mt. Trumbull beardtongue (*Penstemon distans*).

Continuation of current management (Alternative 1) will have No Effect on these other Forest Service Sensitive plant species.

Alternative 2

Determination of Effect on Threatened, Endangered, or Proposed Plant Species:

No populations of Threatened, Endangered, or Proposed plant species have been found and no suitable habitat is known to exist on the Tusayan Ranger District.

Implementation of Alternative 2 will have No Effect.

Implementation of Alternative 2 will reduce the potential damage to Forest Service Sensitive Plant Species occurring on the Tusayan Ranger District. Tusayan rabbitbrush and Arizona leatherflower populations and their habitat compared to Alternative 1 (No Action). Most cross country travel will be prohibited. Healthy plants will be more resilient and adaptable during a time of climate change.

Implementation of Alternative 2 May Affect individuals or habitat due to the continuation of motorized cross country elk retrieval, but Will Not Likely Contribute to a Trend Toward Federal Listing or the Loss of Viability of the Species.

Implementation of Alternative 2 will reduce the potential damage to Mt. Dellenbaugh sandwort, Flagstaff pennyroyal, Flagstaff beardtongue, Grand Canyon rose. Fickeisen pincushion cactus (USFWS Candidate) and Kaibab pincushion cactus (USFWS/FS Conservation Agreement) populations and their habitat compared to Alternative 1 (No Action). Most cross country travel will be prohibited. Healthy plants will be more resilient and adaptable during a time of climate change.

Implementation of Alternative 2 May Affect individuals or habitat due to the continuation of motorized cross country elk retrieval, but Will Not Likely Contribute to a Trend Toward Federal Listing or the Loss of Viability of the Species.

All other Forest Service Sensitive Plants:

There are no known populations and no suitable habitat on the Tusayan District for these Forest Service Sensitive plant species: Arizona bugbane (*Actaea arizonica*), gumbo milkvetch (*Astragalus ampullarius*), Marble Canyon milkvetch (*Astragalus cremnophylax* var. *hevronii*), cliff milkvetch (*Astragalus cremnophylax* var. *myriorrhaphis*), Rusby milkvetch (*Astragalus rusbyi*), Kaibab paintbrush (*Castilleja kaibabensis*), rock fleabane (*Erigeron saxatilis*), Morton wild buckwheat (*Eriogonum mortonianum*), Atwood wild buckwheat (*Eriogonum thompsonae* var. *atwoodii*), Kaibab bladderpod (*Lesquerella kaibabensis*), and Mt. Trumbull beardtongue (*Penstemon distans*).

Implementation of Alternative 2 will have No Effect on these Forest Service Sensitive plant species.

Alternative 3

No populations of Threatened, Endangered, or Proposed plant species have been found and no suitable habitat is known to exist on the Tusayan Ranger District.

Implementation of Alternative 3 will have No Effect.

Implementation of Alternative 3 will reduce the potential damage to Forest Service Sensitive Plant Species, Tusayan rabbitbrush and Arizona leatherflower populations and their habitat, occurring on the Tusayan Ranger District compared to Alternative 1 (No Action). Most cross country travel will be prohibited. Healthy plants will be more resilient and adaptable during a time of climate change.

Implementation of Alternative 3 May Affect individuals or habitat due to the continuation of motorized cross country elk retrieval, but Will Not Likely Contribute to a Trend Toward Federal Listing or the Loss of Viability of the Species.

Implementation of Alternative 3 will reduce the potential damage potential habitat for Mt. Dellenbaugh sandwort, Flagstaff pennyroyal, Flagstaff beardtongue, Grand Canyon rose. Fickeisen pincushion cactus (USFWS Candidate) and Kaibab pincushion cactus (USFWS/FS Conservation Agreement) compared to Alternative 1 (No Action). Most cross country travel will be prohibited. If populations are found during plant surveys, plants populations will be more resilient and adaptable during a time of climate change.

Implementation of Alternative 3 May Affect individuals or habitat due to the continuation of motorized cross country elk retrieval, but Will Not Likely Contribute to a Trend Toward Federal Listing or the Loss of Viability of the Species.

All other Forest Service Sensitive Plants:

There are no known populations and no suitable habitat on the Tusayan District for these Forest Service Sensitive plant species: Arizona bugbane (*Actaea arizonica*), gumbo milkvetch (*Astragalus ampullarius*), Marble Canyon milkvetch (*Astragalus cremnophylax* var. *hevronii*), cliff milkvetch (*Astragalus cremnophylax* var. *myriorrhaphis*), Rusby milkvetch (*Astragalus rusbyi*), Kaibab paintbrush (*Castilleja kaibabensis*), rock fleabane (*Erigeron saxatilis*), Morton wild buckwheat (*Eriogonum mortonianum*), Atwood wild buckwheat (*Eriogonum thompsonae* var. *atwoodii*), Kaibab bladderpod (*Lesquerella kaibabensis*), and Mt. Trumbull beardtongue (*Penstemon distans*).

Implementation of Alternative 3 will have No Effect on these Forest Service Sensitive plant species.

Cumulative Effects

The cumulative effects analysis area consists of the Tusayan Ranger District surrounded by a one mile buffer. The cumulative effects analysis time period is 1998 to 2018. Past, ongoing, and planned projects and activities in the cumulative effects analysis area that will have an effect on rare plants include: timber harvesting, forest thinning, grassland restoration tree removal, sagebrush restoration, prescribed burning, livestock grazing, fence construction, water tank construction and maintenance, vehicle driving and horseback riding off road to herd cattle and maintain fences, invasive weed control, recreational activities (e.g. vehicle and ATV use off road, dispersed camping, horseback riding, hiking, hunting), road use and maintenance, mineral exploration and possible mining, pipeline and transmission line use and maintenance, travel management (i.e. road closures and elimination of most off-road motorized vehicle use), and residential developments and activities.

The net cumulative effect of all human activities and natural events will be an improvement in forest and rangeland health and a reduction in damage to rare plant populations and habitats.

Heritage

Affected Environment

Cultural Resources: During the past 30 years, Kaibab National Forest Heritage Resource specialists in compliance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, have intensively inventoried 76,354 of the District's 331,428 acres (23%). Archaeologists have identified 1,770 cultural resources, listed 6 of them on the National Register of Historic Places,

declared 300 eligible for the National Register of Historic Places, considered 1365 sites unevaluated, and determined that 95 are not eligible for the National Register. 60% of these sites are artifact scatters (n=1062) associated with the hunting and gathering camps ranging from ca. 9000 BC through the early Euro-American historic contact period ca. AD 1850.

Archaeologists have recorded 379 sites with above ground masonry architecture. Most of these habitation sites date to ancestral Puebloan occupation of the Forest between AD 700 and AD 1200. After AD 1200, many of the prehistoric occupants migrated southeastward (Weintraub et al 2006). Between AD 1200 and the arrival of Euro-American settlers, ancestral Pais and Hopis hunted and gathered leaving scant evidence of their presence (Cleeland et al 1992).

In the late 1800s, Euro-American settlers arrived in the Grand Canyon area with hopes of successfully mining copper. As a result, investors built the Grand Canyon Railway that helped open the area to the timber, ranching, mining, tourism industries and the Forest Service. Researchers have thoroughly documented the history of the Tusayan Ranger District and it need not be recanted here (Putt 1993 and Stein 2006). Archaeologists have documented 259 Historic period sites that include cabins, mines, mining camps, railroad grades and camps, line shacks, water storage features and even an historic Airport hangar.

The Forest has also been an important area for traditional Native American uses (Cleeland et al 1992). As a result, archaeologists have recorded historic period sweat lodges, hogans and pinyon nut gathering camps.

USDA Forest Service Heritage Policies Regarding Travel Management

In a policy statement drafted by the Forest Service in consultation with the Advisory Council on Historic Preservation, it was stated that any restriction of motorized travel on designated routes, and the prohibition of unmanaged cross-country travel will serve to protect historic properties across a broad landscape and that such a clearly designated system will “(p)rotect natural and cultural resources.” (Forest Service 2005)

In 2006, the Advisory Council, the Forest Service Region 3 and the State Historic Preservation Officers of New Mexico, Texas, Oklahoma and Arizona, in an appendix to the Programmatic Agreement agreed that the designation of a system of roads and trails, already open for motor vehicle use, will have little or no potential to affect historic properties (USDA Forest Service 2006).

Archaeologists evaluated all of the proposed alternatives in relationship to these policies. In sum, the widest range of potential direct and indirect effects occurs under the no action alternative (Alternative 1). The remaining alternatives propose different levels of reduction of these same indirect and direct effects, so their evaluations do not recant them.

Tribal Consultation and Scoping of Tribal Communities

The Kaibab National Forest recognizes that area tribes have cultural ties and knowledge about the lands now managed by the Forest Service. Many tribal members regularly visit the Kaibab National Forest to gather traditional resources and to visit traditional cultural properties and sacred sites. Therefore, tribes share an interest in protecting important natural and cultural resources from damage,

including that caused by uncontrolled cross country motor vehicle traffic. Roads on the Tusayan Ranger District also access Indian reservation land on both the Havasupai and Navajo reservations. Therefore, access and maintenance of these roads is a significant concern for these tribes.

Due to the level of use of the forest by tribal members and the unique interests of area tribes, the Kaibab National Forest conducted extensive tribal consultation and scoping of tribal communities for the Tusayan Travel Management process. This consultation process reflects a long standing commitment by the Kaibab National Forest to share the stewardship of public lands with area tribes. For the current project tribal consultation was conducted at the government to government level with concerned tribes according to established Memoranda of Understanding with the tribes and pertinent laws and regulations. Additionally, the forest scoped tribal communities and individual tribal members that utilize the forest. Such scoping assures that affected publics are scoped as required by the National Environmental Policy Act and other laws and regulations.

The Kaibab National Forest has heard comments and concerns from area tribes about the management of forest roads and off road travel for many years. Specific issues with road access, obliteration, and maintenance have been addressed on a case by case basis. By 2005, the Kaibab National Forest initiated broader discussions with tribes regarding the management of the forest wide road system as initial analysis for the Five Forest OHV EIS and the Tusayan Roads Analysis project. These discussions included government to government meetings with the Hopi Tribe in Kykotsmovi, AZ on 1/18/2006 and 2/24/2006, and the Havasupai Tribe on 4/6/2006 and 5/12/2006 in Supai, Arizona. On 11/12/2006 forest representatives attended a meeting of the Cameron Chapter of the Western Navajo Agency to identify local concerns with Navajo tribal members.

On 4/1/2006 the Tusayan Travel Management Project was added to the Kaibab National Forest Fiscal Year 2006 Third Quarter Schedule of Proposed Actions. A copy of the SOPA was sent to the Havasupai Tribe, the Hualapai Tribe, the Hopi Tribe, the Yavapai-Prescott Indian Tribe, the Navajo Nation, and the Bodaway/Gap, Cameron, Coalmine Canyon, Leupp, and To'Nanees'Dizi Chapter Houses of the Western Agency of the Navajo Nation. Copies of the SOPA have been mailed to the parties above on a quarterly basis since that time, including updated information about the project.

Over the last two years, forest representatives have updated the tribes on the Travel Management process during regularly scheduled government to government consultation meetings with the Hopi Tribe in Kykotsmovi, Arizona on 2/21/2007, 6/21/2007, and 2/20/2008, the Havasupai Tribe on 2/6/2006 and 3/18/2008, the Hualapai Tribe in Peach Springs, AZ on 3/4/2008, the Navajo Nation in Window Rock, Arizona on 1/31/2007, 11/19/2007, 2/14/2008, and the Yavapai-Prescott Indian Tribe on 2/19/2008. Additionally, The Kaibab Navajo Liaison has updated the Western Navajo Agency Chapters about the project at regularly scheduled Chapter Meetings. The project was specifically discussed at the Cameron Chapter on 3/21/2007, the Bodaway/Gap Chapter on 7/12/2007, and the Coalmine Chapter on 8/12/2007.

On February 1, 2008 Williams Travel Management project was added to the Kaibab National Forest Fiscal Year 2006 Second Quarter Schedule of Proposed Actions. A copy of the SOPA was sent to the Havasupai Tribe, the Hualapai Tribe, the Hopi Tribe, the Yavapai-Prescott Indian Tribe, the

Navajo Nation, and the Bodaway/Gap, Cameron, Coalmine Canyon, Leupp, and To’Nanees’Dizi Chapter Houses of the Western Agency of the Navajo Nation.

Tribal Concerns with the Tusayan Travel Management Project

As stated above, the majority of tribal concerns submitted during the consultation and scoping process involve access to special areas on the forest or maintenance and management of the forest road system. The Havasupai tribe voiced concerns about leaving open several roads accessing the Havasupai reservation and campsites near the boundary and near Red Butte. All of the roads identified by the tribe will remain open under each Alternative. The Hopi tribe has also identified several roads on the forest that must remain open in order to access ceremonial sites or traditional cultural properties. All of these roads will remain open under each Alternative or a separate written instrument will be used to ensure Hopi access to these areas.

A number of concerns have been voiced by both the Navajo tribal government and the local Navajo Chapters. Concerns include access to resources such as fuel wood and pinyon nuts, access to reservation lands via FS system roads, and safety of vehicles parked along major travel routes during gathering activities.

It should be noted that in general the tribes have voiced concern over increased off-road travel and user created roads, and have stated support for restricting such travel.

Methodology for Addressing the Effects of the Travel Management Rule on Heritage Resources

To apply the aforementioned protocols for the Travel Management Rule, Kaibab archaeologists have worked closely with the ID Team to designate an open road system that will help protect and preserve heritage resources in their natural environment. Archaeologists used their Geographic Information Systems in all phases of the ID Team analysis. In this manner, they were able to identify areas of heritage sensitivity that require exclusion from dispersed camping corridors and unsuitable unauthorized routes.

The ID Team members have identified about 6 miles of short unauthorized routes that often lead to dispersed campsites and may be used for recreation access. These routes will only be open for the first 300 ft. and most of these dead end roads do not surpass that distance. Archaeologists will be inventorying all of these roads to determine if they affect heritage resources and if so, then they will not appear on the motorized vehicle use maps (MVUM).

Because proposed alternatives (other than Alternative 1 that has no designated camping corridors) include designating 300 ft. dispersed camping corridors, archaeologists expect increased impacts within these areas. ID Team members identified corridors that have historically been the most popular dispersed camping areas on the District. To minimize the potential increased effects to heritage resources within those corridors, archaeologists worked with the ID Team to produce maps of areas that minimizes the number of heritage resources within these designated corridors. In doing so, the team identified 17 miles where designated dispersed camping is appropriate.

Within the camping corridors area, archaeologists have previously identified 33 heritage resources. Archaeologists have inventoried 1508 of the 2080 acres within these corridors, thus indicating a very

low risk to heritage resources, or 14 sites per square mile. Since the average site on the Kaibab is about 0.75 acres, about (10.5 acres per square mile) have archaeological materials, or less than 2% of the inventoried dispersed camping areas.

Prior to the implementation of the corridors, and the production of the MVUM, archaeologists will have completed additional surveys within the corridors where they expect to find additional sites and survey all user created roads that are proposed for the MVUM. As part of this survey, they will also document the condition of the 33 previously recorded sites within the corridors so that archaeologists can devise a monitoring plan to assess the future effects of dispersed camping in these newly designated corridors.

They will also devise a monitoring plan for any sites that may be adjacent to any user created roads on the MVUM. If effects do occur, then these designated areas and routes can be removed from the maps.

As needs may arise for further dispersed camping or recreation access in future NEPA projects, a phased approach to inventorying non-surveyed areas will be implemented in accordance with the aforementioned protocols between the National Forests, Advisory Council and SHPOs.

Desired Future Condition

With regards to heritage resources, the desired future condition is that the travel management rule will protect and preserve heritage resources in their natural environment. Any of the alternatives provided below, other than Alternative 1 the no action alternative, greatly reduces the risk of damages to heritage resources from off road vehicles. Under the “no action” alternative, virtually all of the 1770 heritage resources on the Tusayan Ranger District (except for 60 sites located in previously designated Red Butte and Coconino Rim roadless areas), are at risk to damages from off road vehicles.

Alternative 1. No Action Alternative

Of the No Action Alternative’s open trails and roads, archaeologists have inventoried 57% of the open road system (10563 of 18439 acres). On the Kaibab, archaeologists normally survey roads 100 ft. on both sides of a road’s centerline. Many of these roads also fall within areas surveyed for large timber sales. Because Alternative 1 leaves all roads open for use and off road driving allowed, all cultural resources (both known and unknown) on the Tusayan Ranger District remain at risk to direct and indirect effects from off road travel.

Table below illustrates the proximity of cultural resources to Alternative 1’s open roads system. Almost 74% (n=1302) of the Tusayan Ranger District’s known cultural resources are less than ¼ mile from any open road.

Table 11. Proximity of cultural resources to open roads.

Distance from Open Road	Number of sites	Percentage of Tusayan Ranger District Sites (n=1770)
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Sites within 10 ft	202	0.11
Sites within 25 ft	238	0.13
Sites within 50ft	289	0.16
Sites within 100ft	379	0.21
Sites within 200 ft	527	0.29
Sites within 500ft	807	0.46
Sites within 1/4 mile	1302	0.74
Sites within 1/2 mile	1649	0.93
Sites within 1 mile	1759	0.99

Direct and Indirect Effects of Mechanized Big Game Retrieval and Off Road Travel

With the popularity of OHV use beginning just after World War II and the availability of new, more versatile ATVs in the 1980s, access to even the most remote areas of public lands became possible. Presently, the Tusayan Ranger District is open to motorized cross-country travel.

Under all Alternatives, hunters can drive where they need to with any type of vehicle. Arizona Game and Fish data collected between 2001-2005 shows that hunters harvest an average of 565 elk and deer per year on the Tusayan Ranger District. The same study estimates that 50% of the hunters harvest their game with ATVs. For our study, ID Team members estimated that hunters would travel an average of ¼ mile to harvest game. Therefore, hunters will make an average of 282 off road trips per year to harvest their game. This totals 70 miles of off road driving per year.

Direct impacts of mechanized big game retrieval and off road travel involves the physical contact of tires or an undercarriage traveling over or through archaeological sites or traditional use areas altering the ground surface and any archeological materials on the site. OHV use in areas with sensitive or moist soils can create tracks, ruts and new user routes that may crush, displace, and/or destroy cultural materials (i.e. artifacts, features, traditionally used plants), and damage significant information that may contribute to our understanding of history. These ruts may then lead to rill and gully formations, which could further damage sites. As a result, an eligible or listed property may become ineligible for listing on the National Register. For example, during a 2003 archaeological site inventory survey in the Coconino National Forest near the Timberline subdivision, archaeologists observed numerous OHV tracks and routes that passed through and over important features and artifacts on prehistoric sites, often noting irreparable damage (Lyndon 2003). In sum, the No action alternative, allowing for motorized big game retrieval and allowing off road travel will most likely increase user created roads, cause erosion, and other forms of inadvertent damages.

Direct and Indirect Effects of Dispersed Camping

Recreational activities and resource procurement have also caused inadvertent or unintentional damage to sites. A pioneering study by the University of Cincinnati's Upper Basin Archaeological Research Project on the Kaibab NF discovered that the increased recreational use of OHVs and ATVs had resulted in inadvertent vandalism to nearly 20% of more than 660 prehistoric activity areas in their 12.5 km sample area (Roos 2000). In using OHVs to access campsites and other Forest resources, the study shows that driver's ruts and tracks have caused both direct and indirect damages to prehistoric sites. It also noted that campers unintentionally damaged sites by taking rocks from prehistoric structures or archaeological features to build campfire rings and for weights to tack down their tents (see Figure 1). Researchers noted numerous "collection piles" of distinctive artifacts. This

displacement of artifacts negates the ability for archaeologists conduct contextual studies thus altering the eligibility of a site's designation to the National Register of Historic Places.



Figure 13. Kaibab Forest Archaeologist inspects cultural site heavily impacted by campers.

Cumulative Effects

Archaeologists consider the No Action Alternative to have the greatest potential for cumulative effects. Direct and indirect effects would continue and most likely increase from new user roads created by off road travel. Dispersed camping will continue to occur and damage additional sites. This alternative is the least effective action to protect and preserve heritage resources in their natural environment.

Alternative 2. Proposed Action

Direct and Indirect effects:

This alternative greatly reduces the direct and indirect effects to cultural resources. When compared to Alternative 1, the proposed action's allowance for off-road travel for only seasonal big game retrieval will likely lessen but not eliminate the direct and indirect effects (see earlier discussion) to cultural resources. There is the possibility that more hunters will purchase ATVs to retrieve their game. Limiting off road travel will greatly reduce the chances for direct and indirect effects to cultural resources from dispersed camping and off road travel. However, this reduction in dispersed

camping District wide may increase the direct and indirect effects in the corridors that the Forest Service designates as open for camping.

Cumulative Effects

The proposed action greatly reduces the cumulative effects that are likely to occur with the implementation of the Travel Management Rule. Because this alternative will greatly reduce off-road travel (other than seasonal big game retrieval), the negative effects of off-road travel will be reduced. Archaeologists do expect to see an increase in cumulative effects in the corridors that the Forest Service designates as open for camping.

Mitigation Measures

Under this alternative, roads designated for mechanized rehabilitation and established dispersed camping zones are undertakings subject to compliance with Section 106 of the National Historic Preservation Act of 1966. By reducing the opportunities for dispersed camping across the District, archaeologists expect increased impacts within designated 300 ft. corridors; however, archaeologists have worked with the ID Team to produce maps of areas that have a limited number of heritage resources within these corridors. Prior to the implementation of the corridors, and the production of the MVUM, archaeologists will have completed additional surveys within the corridors where they expect to find additional sites and all survey all user created roads that are proposed for the MVUM. As part of this survey, they will also document the condition of the 33 previously recorded sites within the corridors so that archaeologists can devise a monitoring plan to assess the effects of dispersed camping in these newly designated corridors. They will also devise a monitoring plan for any sites that may be adjacent to any user created roads on the MVUM. If effects do occur, then these designated areas and routes can be re-evaluated. As needs may arise for further dispersed camping, a phased approach to inventorying non-surveyed areas will be implemented in accordance with the aforementioned agreements between the National Forests, Advisory Council and SHPOs.

Alternative 3

Direct and Indirect Effects

The only difference between Alternative 2 and Alternative 3 is that the latter leaves an additional 20 miles of roads open to public motorized travel. Since these are existing roads, there will be no significant increase in direct or indirect effects.

This alternative greatly reduces the direct and indirect effects to cultural resources. When compared to Alternative 1, Alternative 3's allowance for mechanized big game retrieval will likely lessen but not eliminate the direct and indirect effects to cultural resources, and just as in Alternative 2, there may be more hunters using ATVs to retrieve their game. Limiting off road travel will greatly reduce the chances for direct and indirect effects to cultural resources from dispersed camping and off road travel. However, this reduction in dispersed camping District wide may increase the direct and indirect effects in the aforementioned designated corridors.

Cumulative Effects

Like Alternative 2, Alternative 3 greatly reduces the cumulative effects that are likely to occur with the implementation of the Travel Management Rule. Because this alternative will greatly reduce off-

road travel (other than seasonal big game retrieval), the negative effects of off-road travel will be reduced. Archaeologists do expect to see an increase in cumulative effects in the corridors that the Forest Service designates as open for camping. The obliteration of closed roads may also cause direct effects to cultural resources.

Mitigation Measures

Similar to Alternative 2, under this alternative, roads designated for mechanized rehabilitation and established dispersed camping zones are undertakings subject to compliance with Section 106 of the National Historic Preservation Act of 1966. By reducing the opportunities for dispersed camping across the District, archaeologists expect increased impacts within designated 300 ft. corridors; however, archaeologists have worked with the ID Team to produce maps of areas that have a limited number of heritage resources within these corridors. Prior to the implementation of the corridors, and the production of the MVUM, archaeologists will have completed additional surveys within the corridors where they expect to find additional sites and all survey all user created roads that are proposed for the MVUM. As part of this survey, they will also document the condition of the 33 previously recorded sites within the corridors so that archaeologists can devise a monitoring plan to assess the effects of dispersed camping in these newly designated corridors. They will also devise a monitoring plan for any sites that may be adjacent to any user created roads on the MVUM. If effects do occur, then these designated areas and routes can be re-evaluated. As needs may arise for further dispersed camping, a phased approach to inventorying non-surveyed areas will be implemented in accordance with the aforementioned agreements between the National Forests, Advisory Council and SHPOs.

Vegetation Management

Affected Environment

Vegetation management occurs on many parts of the District. This work is not expected to be effected by TMR. The primary concern for vegetation management is provision of an adequate transportation system in order to provide access for vegetation management projects. Roads are needed in order for contractors to access work areas in order to load and haul timber as well as small diameter wood. Roads are also needed for fuel wood, Christmas tree cutting, and forest product collecting. These are expected to continue as permitted activities.

Desired Condition

An adequate number of open roads is provided in order to carry out vegetation management activities. Closed roads are reopened and temporary roads augment the open road system to facilitate this work. These roads are reclosed or decommissioned after work is completed. Fuel wood, Christmas tree and forest product gathering are conducted as permitted. Motorized cross-country use will be used sparingly, and will be permitted if it is necessary to meet vegetation management objectives.

Direct and Indirect Effects on Vegetation

Effects Common to All Alternatives

Vegetation management will continue with any temporary road construction, obliteration or use of closed roads covered under the environmental planning and contract preparation the sale. Fuel wood,

Christmas tree cutting and forest product collection will continue as designated for each permitted activity.

Alternative 1 – No Action

There are no direct effects on vegetation management with the existing condition. There may be indirect effects related to unmanaged cross-country use, if soil erosion and soil productivity are decreased. These are expected to be slightly negative over time.

Alternative 2 - Proposed Action

This alternative will not have direct effects on the Vegetation Management program. Closed roads and temporary roads would still be used. Fuel wood, Christmas tree cutting and forest product collecting might be negatively affected since the open road system would be reduced by about 24 percent.

There is no effect from dispersed camping or motorized big game retrieval for elk seasons.

Alternative 3

The effects of these alternatives are the same as Alternative 2.

Cumulative Effects

There are no direct and minimal indirect effects on the Vegetation Management program; therefore there are no cumulative effects.

Fire and Fuels Management

Existing Condition

Currently there is roughly a minimum of one Maintenance Level (ML) 3 road traversing every township (36 square miles) of the District. In addition, ML 2 roads provide further access to areas between the Level 3 roads. The present density of roads is such that few areas of the District are more than one mile from a road. At this density, there is wide-spread dispersal of Forest visitors; this may also contribute to a higher number of human-caused wildfires. Roads at this density have the undesirable effect of limiting wildland fire use (low to moderate intensity) projects, since they are often stopped prematurely due to a break in fuels at the road edge.

Desired Condition

There is an average of one ML 3 road per township for the purposes of fire management. The combined numbers of ML 2 and 3 roads provide easy access across the District and aid in movement of suppression resources. Patrolling, responding to a fire starts, and movement of resources for a large incident is done safely and effectively with little risk of damage to vehicles due to collisions or poorly maintained roads. Few areas of the District are more than two miles from a road. This density provides adequate access and opportunities for suppression actions such as burning from roads while still providing for the movement of desirable wildland fire use.

Direct and Indirect Effects of Alternatives on Fire and Fuels Management

Alternative 1- No Action

The current density of roads adequately facilitates patrolling, initial attack response and movement of suppression resources. The spread of desirable wildland fire is often hampered by the break in fuel continuity at the edge of roads. All Level 2 and 3 roads are used extensively by the visiting public and OHV use is expected to increase. Human-caused fires in dispersed areas will likely increase, especially given the expected increase in off-road driving. As dispersed visitation increases, the ability to make adequate fire prevention contacts will diminish without additional personnel, vehicles and related funding. Damage to patrol vehicles will likely increase as well, from driving rough roads in the effort to make adequate contacts over a wider area.

It can be reasonably expected that the effects of Alternative 1 - No Action will result in a negative trend for fire management. The road system provides dispersed access to most areas of the Ranger District for Forest Service employees, permittees and contractors, as well as the visiting public. In terms of patrolling, initial attack response and movement of suppression resources, this is desirable. However, downward funding trends and a growing road maintenance back-log equate to continued degradation of road conditions and the resulting increase in maintenance and repair costs for patrol and fire response vehicles. An increase in dispersed camping and associated human caused fires in remote areas can also be expected. As visitation and OHV use increases, the current level of prevention patrolling will likely be inadequate to meet the needs for forest protection. Increased staffing will require increased funding for personnel and equipment. This may be difficult to secure given past and current budget trends.

Human caused fires in remote areas require longer response times and are more likely to result in larger, more costly, dangerous and difficult to manage wildfires. An increase in user-developed roads can be expected as OHV use proliferates. These roads invariably cause ecological damage and tend to accelerate erosion and soil degradation. This often results in plant mortality, gullies and removal of natural fuels. An increase in roads of any type will further limit the opportunities for desirable (low to moderate intensity) wildland fire to move across the landscape unimpeded by human caused breaks in surface fuels.

Alternative 2 - Proposed Action

Closing approximately 170 will have very little impact on the ability to move suppression resources, adequately patrol and provide initial attack response, particularly since they are Level 2 roads often in need of maintenance and located within a few miles of roads that are not being considered for closure. While it may be several years before sufficient vegetation covers the closed road to provide a continuous fuel bed for the spread of desirable wildland fire, the reduction will be a favorable step in that direction. Visitor use, especially camps, will be less dispersed making it easier to patrol and facilitate prevention contacts. Limited road maintenance funds will not be spread as thin as they are currently. This should result in better road conditions overall and less damage to patrol vehicles.

Alternative 3

From the perspective of fire management, the effects of Alternative 3 are similar to Alternative 2.

Cumulative Effects

The geographical extent of this cumulative effects analysis is confined to the Ranger District. A 20-year timeframe was selected for this cumulative effects analysis, 2000 - 2020 (8 years past + 12 years post). This timeframe was selected because the effect of not reducing the motorized transportation system and no prohibition of cross-country travel has occurred for the past 8 years, and the effects of the proposed action would stabilize in about 12 years.

Past, ongoing, and planned projects and activities in the cumulative effects analysis area that will have an effect on fire and fuels management include: timber and fuel wood harvesting, forest thinning, grassland restoration tree removal, sagebrush restoration, prescribed burning and wildland fire use, livestock grazing, fence construction and removal, water tank construction and maintenance, vehicle driving and horseback riding off road to herd cattle and maintain fences, invasive weed control, recreational activities (e.g. dispersed camping, horseback riding, hiking, hunting), recreational trail construction and maintenance, mineral exploration and mining, pipeline and transmission line use and maintenance, and residential developments and activities.

The cumulative effect for Alternative 1 is generally positive for fire suppression and prevention. Roads provide opportunities to stop an undesirable wildfire, provide access for suppression resources and prevention patrols. The cumulative effect for wildland fire use with Alternative 1 is negative due to the abundance of roads that will cause a desirable fire to stop prematurely. Alternatives 2 and 3 are expected to result in a neutral to positive cumulative effect for fire and fuels management.

Range

Existing Condition

Livestock grazing has occurred on the Tusayan District since late-1800. At times the area was grazed by both sheep and cattle; actual numbers were not recorded. Once allotments were formally established and grazing permits were issued, livestock numbers began to be reduced.

There are four grazing allotments in the project area: Rain Tank, Anita, Cameron, and Moqui. The Rain Tank Allotment is approximately 64,700 acres in size. There are approximately 50 miles of fence, 25 water sources, 8 waterlots, and 9 Parker 3-Step range clusters within the Rain Tank Allotment. The 1996 Rain Tank Environmental Analysis reported an increase in range resource values and trend compared to the 1978 inventory. Soil condition scores increased from 1978 to 1996 indicating an increase in soil cover and a reduction in erosion potential.

The Anita and Cameron Allotments are 101,910 acres and 103,412 acres respectively. On Anita Allotment there are at least 22 different segments of fence and the permittee has maintenance responsibilities for approximately 80 miles. There are 45 water sources, 19 waterlots, 2 corrals, and 16 Parker 3-Step range clusters. Cameron Allotment has at least 25 different segments of fence, totaling approximately 107 miles, 43 water sources, 3 corrals, 25 waterlots, and 14 Parker 3-Step range clusters. The Moqui Allotment is approximately 55,094 acres in size. There are at least 10 different segments of fence, totaling approximately 42 miles of permittee responsibility, 18 water sources, 6 waterlots, and 17 Parker 3-Step range clusters.

The 2004 Environmental Assessment for Anita, Cameron, and Moqui Allotment Management Plan Revisions reported an increase in acres of improved range condition (from 22,607 acres in 1966 to 31,257 acres in 2004) on the Anita Allotment; and an increase on the Cameron Allotment (from 472 acres in 1983 to 64,018 acres in 2004). There has been an increase in acres of improved range condition on the Moqui Allotment from 6,311 acres in 1968 to 11,917 acres in 2004.

Most of the water sources on the allotments are earthen tanks. They were built in the early 1900's in basins or drainages to catch snow melt or run-off. In recent years many tanks were built adjacent to roads, in order to catch road run-off.

Direct and Indirect Effects of Alternatives on Range Values

The Kaibab National Forest has a long history of permitted domestic grazing use. Domestic livestock grazing is an important and valued use on National Forests in the Southwest and those activities are an integral part of the tradition, culture, and social fabric of communities throughout the Southwest.

Beneficial consequences of a forest road system for grazing permittees include easy access to their livestock and to range improvements such as fences and waters. Roads have replaced stock driveways for transporting sheep and cattle to and from allotments. Undesirable consequences for a permittee may include disturbance to the herd and vandalism of range improvements by members of the public who have the same easy access to these sites.

Forest roads can affect site productivity by removing and displacing topsoil, altering soil properties, changing microclimate, and accelerating erosion. The direct effect of roads on soil productivity is estimated to range from 1 to 30 percent of the landscape area in managed forest lands. Losses of productivity associated with road-caused accelerated erosion are site specific and highly variable in extent (USDA Forest Service 2001). Essentially no scientific information exists that analyzes the ecological, administrative, or economic effects of roads on administering the Forest Service range management program. The high degree of variability in the road-related erosion effects, for example 3,314 to 99,428 acres, makes these data difficult to apply in a meaningful manner.

Direct and Indirect Effects Common to Action Alternatives

If the miles of forest roads on the District are converted into acres, 1,791 acres (0.5% of the District) are removed from forage production (740 miles of roads that are 20 feet wide). This has no effect for all alternatives.

There may be slight positive effects by limiting motorized travel to a designated road system; there may be less harassment of animals, especially during calving and fewer gates left open and/or fences being vandalized.

Since range permittees will continue to be able to operate as needed to fulfill their obligations under their grazing permits and operating plans, the effects of the action alternatives will be neutral.

Alternative 1- No Action

Alternative 1, the no action alternative, would leave all roads open; no roads will be closed or decommissioned; motorized cross-country travel would continue, as would motorized use for game retrieval for any species; dispersed camping would not be restricted in any way.

Approximately 2,202 acres are removed from forage production forever (740 miles of Forest road and 170 miles of user created roads). An additional 3,314 to 99,428 acres may be affected in a negative way by accelerated erosion coming off all roads. This would result in a cumulative effect on approximately 5,516 to 101,630 acres (see Table 1). The creation and use of new user-created routes would continue to negatively affect soil productivity and possibly interfere with a grazing permittee's operation.

There would be no need to address motorized use by grazing permittee's in their AMP's or AOI's. Permittees would be free to access their livestock and improvements by any route (cross-country, Forest roads or user-created roads). Forest Service range personnel could do the same in order to administer the permit.

Alternative 2 - Proposed Action

Alternatives 2 and 3 are very similar and their effects are virtually inseparable. In Alternative 2 approximately 1,355 acres are removed from forage production (560 miles of road 20 feet wide). An additional 3,314 to 99,428 acres may be affected in a negative way by accelerated erosion coming off all roads, open and closed. This would result in a cumulative effect on approximately 4,669 to 100,783 acres. Approximately 170 miles of user created roads would be decommissioned which would have a positive cumulative effect on 411 acres.

Motorized retrieval for elk would be allowed in all seasons for up to one mile cross-country. It is unknown how many successful hunters actually travel cross-country to retrieve their elk and virtually impossible to predict how many will in the future. However, we know there is an average hunter success rate of 50% (from 2003 thru 2007), and we will assume that 90% of those successful hunters will travel cross-country to get their elk; this will provide our baseline. For the year 2007, those figures would convert to 506 hunters traveling 1,012 miles (assuming they would go out the same way they went in). If the average increase of elk tags of 10% per year continues, by the year 2018 a total of 3,237 elk tags would be issued; 1,618 hunters would be successful; and 1,456 of them would be traveling 2,912 miles cross-country to get their animal. This may never happen as described but this exercise is intended to describe a potential effect to 2.13% of the District. It is considered to be "no effect" for all action alternatives assuming that cross-country travel for elk retrieval occurs only on dry or frozen ground. Travel on wet ground that causes ruts, however minimal, would be considered an additional negative effect.

Dispersed camping is restricted to designated corridors or on designated routes to those campsites for a total of approximately 60 acres. Keeping this use confined to these areas will have a positive effect on the range resource as new "impacted zones" won't be created which replace grasses with bare, compacted soil. Grazing permittees would be authorized to use closed roads as long as it is specified in their Annual Operating Instructions (AOI) and follows the guidance from the TMR Implementation Guidelines. Range personnel could also use those roads if needed to efficiently administer the grazing permits. Regular use on any closed road by either permittee or Range personnel will be discouraged in favor of utilizing the open road system. However, there will be times when use of a closed road may be needed without prior approval or clearance (ex: a sick cow needs to be retrieved, or a road is found to be closed that accesses an historic range study site). Legitimate motorized use may continue in these situations unless there are compelling natural and/or heritage resource issues require postponement or modification of the activity.

Alternative 3

The effects of Alternatives 3 and 4 are similar to those for Alternative 2. It is anticipated that more use of closed roads and cross-country motorized travel would be necessary with Alternative 4.

Cumulative Effects

The geographical extent of this analysis is confined to the Tusayan Ranger District. Past and ongoing uses and actions within the analysis area that could affect range condition include tree thinning, prescribed burning, wildlife habitat management, and developed and dispersed recreation. All of these uses are expected to continue indefinitely into the future.

The level of motorized cross-county use by permittees is not expected to be high under any alternative. Most of the range improvements are accessible by roads and even if closed, the permittees will be granted access. Each permittee's Annual Operating Instructions (AOI) will include a brief discussion of the use of vehicles and a description of annually anticipated level of cross-country use if an action alternative is selected.

Given the increase in range condition on all four allotments (mainly due to decreased livestock numbers in past decades), the cumulative effect to range conditions under the action alternatives is neutral to slightly positive. Even though entire road segments will not be decommissioned (perhaps just a few hundred feet on either end) under this analysis, fewer roads being left open to public use should result in less soil displacement coming off roads. There should be a beneficial impact to range resources mainly from the protection of the soil and watershed resource. Any benefits may not be seen in the cumulative effects time period of 20 years.

Economics/Social

Economic/Social Effects

Social Information

In the 2003 study of Forest Users by Northern Arizona University (Boussard, et al 2002) information was gathered on the Tusayan and Williams Ranger Districts about visitor demographics, preferences for types and amounts of development, desired recreation opportunities, attitudes and preferences for managing the forest, and desires for ways to provide forest information. Forest visitors, hunters and local residents were surveyed. In a separate study, the National Visitor Use Monitoring project collected demographic information as well; it is collected at the forest-level and applies to all Ranger Districts.

Forest Visitors – NAU Study

The NAU study showed that approximately 92% of forest visitors who recreated in undeveloped settings (versus developed campgrounds or other recreation sites) have been to the Williams and Tusayan Ranger Districts of the Kaibab NF before. About 69% of visitors come with their families, and the average size of the group is 7 people. Most visitors came from urban areas within the State. The top three activities participated in were dispersed camping, watching birds and wildlife and sightseeing. Hunters surveyed in the NAU study were also repeat visitors (89% have been to the KNF before). Most hunters came with family or friends, and the average group size was 4 people. 78% were from urban areas, particularly from the Phoenix area. The top three activities they engaged in

were hunting, dispersed camping, and OHV use. Local residents are frequent forest users, visiting the forest at least once per month. Most came with family or friends. Watching birds and wildlife, sightseeing, and short hikes were the activities local residents participated in.

Forest Visitors – National Visitor Use Monitoring

Of the forest visitors surveyed, the majority were international visitors, next were local, Phoenix area, and Colorado River area visitors. The most popular activities participated in were viewing natural features, hiking/walking, viewing wildlife, driving for pleasure, and relaxing.

Other Activities

As noted earlier, hunting, OHV use, antler collection, and dispersed camping are all popular activities. In addition, many forest visitors engage in sightseeing, both for scenery and wildlife and birds. Some visitors participate in OHV or jeep tours of the area. There are special use operators who offer these services in the town of Tusayan. Other users participate in similar activities exploring the District with family or friends.

Forest product collection is an important use. Many local Tribes gather forest products including pinyon nuts, herbs and other plants as well as other culturally significant materials on the District. Christmas trees are harvested each year as well. Some of these activities involve cross country travel, but almost all involve roads and motorized vehicles.

Economics

The South Rim Visitor Transportation Plan (USDI Park Service, 2008) compiled economic information for Coconino County and the town of Tusayan (an unincorporated town). The economic output of Coconino County was approximately \$6.3 billion in 2004 (Minnesota IMPLAN Group 2006). Tusayan is estimated to contribute about 0.6 percent of the total Coconino County output, or about \$38.6 million. Economic output is typically divided into categories or “sectors” that contribute to the total. Table 12 displays the sectors contributing to the economic output for Tusayan.

Table 12. Estimated annual economic output by sector in Tusayan.

Economic Sector	Dollars Contributed (in 2007 dollars)
Art, entertainment, recreation accommodation and food services	\$26,644,700
Transportation and warehousing, and utilities	\$3,943,400
Agriculture, forestry, fishing, hunting, and mining	\$1,593,700
Educational, health and social services	\$1,593,700
Public administration	\$1,593,700
Retail trade	\$1,365,500
Finance, insurance, real estate, and rental and leasing	\$852,600
Professional, scientific, management, administrative, and waste management services	\$532,900
Information	\$426,300
Total	\$38,581,500

The largest economic sector in Tusayan is the hospitality industry. It produces almost 70 percent of the economic output. It is not possible to determine what amount tourism to Tusayan Ranger District contributes to the overall economic output of the area, but hunters, campers, and other recreationists and forest users do make contributions to it.

Travel and tourism is the third largest retail sales industry in the country, and tourism is one of the largest employers. On National Forest lands, recreation is the second largest producer of direct revenue to the economy. Whereas communities near National Forests used to be dependent upon extractive industries, their economies are shifting to attracting tourists. For the state of Arizona, tourism is an important contributor to the state economy. Table 13 shows contributions of domestic and international visitors to the economy, as well as jobs generated supporting tourism.

Table 13. Tourism contribution to Arizona economy.

Measure	Quantity
Number of Domestic/International Overnight Visitors	31 million (2005)
Visitor Expenditures	\$17.5 billion/year
Local Tax contribution	\$456 million/year
State Tax contribution	\$583 million/year
Jobs generated	313,000 jobs; \$9.3 billion in earnings

Source: 2005 Arizona Office of Tourism Study.

The Arizona Office of Tourism (2007) has developed more detailed information about tourism spending by county. General categories of spending are used, but this helps to illustrate the categories of spending that visitors and forest users may participate in, see Table 14. Tourism is an important economic contributor to the area.

Table 14. Selected categories of spending for Coconino County by year.

Category	Dollars in 2000 (\$Million)	2002	2003	2004	2005
Total Direct Spending	733.9	684.3	734.1	780.5	835.7
Hotel/Motel	515.1	477.8	505.8	537.9	580.3
Campground	45.0	45.9	48.0	50.4	52.2
Day Travel	89.2	82.8	90.7	96.4	103.5
Restaurant	186.8	179.4	194.2	205.7	220.1
Food Store	39.9	39.7	41.2	42.3	43.2
Arts, entertainment, recreation	111.4	108.1	117.3	124.8	128.7

Limited data has been assembled for forest-related recreation activities. Three areas have been quantified including hunting (Arizona State University, 2001), OHV recreation (Arizona State University, 2001), and non-consumptive wildlife related activities (Southwick 2003). The economic contributions of each of these are noted in Table 15. It is important to note that some of the same expenses may be counted in all three studies; duplicates have not been removed from these figures.

Table 15. Recreation related economic contributions.

Category	Trip (\$Million)	Equipment (\$Million)	Vehicle (\$Million)	Total (\$Million)
Hunting (2001)				
Arizona	74.3	52.3		126.6
Coconino County	8.8	51.1	57.8	215.2
Non-consumptive Wildlife Related Recreation (2003)				
Arizona	304.5	515.3		819.8
Coconino County	No data	No data	No data	No data
OHV Recreation				
Arizona	842.3	1,178.0	1,035.0	3,056.0
Coconino County	106.3	51.1	57.8	215.2

In the last 10 years, OHV sales tripled from 1993 to 2003. OHV recreation is important to the State economy contributing about \$4 billion each year (Arizona State Parks 2003). It is anticipated that the demand for OHV recreation opportunities will continue to increase incrementally with increases in the population of Arizona. The price and availability of gasoline may have some impact on motorized recreation activities.

Comparison of Alternatives

With the exception of cross-country travel using OHV for the purpose of antler gathering, all of the above mentioned activities will continue to occur on the Tusayan Ranger District in all alternatives.

Alternative 1 – No Action

There will be little or no impact on social or economic resources under this alternative. Forest product gathering, hunting and other recreation activities will continue as they currently do. There may be some decrease in the quality of the recreation opportunities as effects of motorized cross-country travel become more apparent and cause increasing resource damage.

Alternative 2 - Proposed Action

There may be minor social and economic impacts under this alternative primarily to antler collectors who will need to find non-motorized means to gather antlers. In addition, there may be slight negative impacts to local Tribal members who collect personal use forest products such as pinyon nuts. Many times these are gathered in conjunction with a motorized vehicle. Other means are available and would need to be employed for these activities, and parking along the roadside will be possible in most areas. The economic effects of alternative 2 are expected to be neutral. Factors other than TMR, such as high gas prices, economic slow downs and other issues are more likely to effect the economy of the area.

Alternative 3

The direct and indirect effects of this alternative are similar to the proposed action.

Cumulative Effects

The analysis area for cumulative effects is larger than for most management activities. For this project, the area including Grand Canyon National Park (south rim) south to Valle will be used. Past, ongoing, planned and foreseeable projects and activities in that will have an effect on social and economic conditions include potential incorporation of Tusayan, implementation of the Grand Canyon Transportation Plan, expansion of railroad access to Grand Canyon, mineral exploration and smaller more local projects such as prescribed burning, recreation activities.

The cumulative effects anticipated from these activities would have considerably more impact on the analysis area than TMR will. Incorporation of Tusayan and implementation of the Grand Canyon Transportation plan would probably have a positive impact on the local social and economic conditions. There would be some positive effects such as employment opportunities and more retail sales since more people would be concentrated in the Tusayan town area. Negative effects could include increased traffic, noise, wildlife disturbance, and recreation-related resource damage especially close to Tusayan. Mineral exploration could have negative effects on the aesthetics and visitor experience arriving at entrance to Grand Canyon National

Park. Increased truck traffic and hazardous material transportation would be negative impacts. Local projects such as burning and vegetation management are short term.

A Civil Rights Impact Analysis and a statement of findings is not needed for this analysis. Both the NEPA process scoping and public meetings related to the notice and comment period have been well publicized and held in locations that are easily accessible to community members. A wide spectrum of people attended the meetings and sent comments to the forest regarding both processes. See Chapter 2 and Appendices 2 and 3 for details of public input.

In addition, local Tribal governments have been consulted regularly about this project from 2006 through the present. Meetings were also held with the Cameron Chapter of the Navajo Nation on several occasions in order to identify roads of particular concern to the community, and to provide information about the proposed project and alternatives. Details about tribal consultation can be found in the Heritage section of Chapter 3.

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order was designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of existing laws, including NEPA.

The goal of Environmental Justice Analysis is not to shift risks among populations, but to identify potential disproportionately high and adverse effects, and to identify alternatives that may mitigate these impacts. One way that this is achieved is by providing an opportunity for minority and low-income populations to participate in planning, analysis, and decision making. Individual tribal members may use the project area for the personal collection of traditional or medicinal plants. Low-income groups may use the area for the collection of fuel wood. Neither alternative would have adverse effects on these uses or to low income and minority populations in the area. No concerns or issues related to Environmental Justice were raised during project scoping or the Notice and Comment period. Additionally, the American Indian Tribes listed in Chapter 4 were consulted regarding this proposal and potential effects were analyzed.

Chapter 4 - Consultation and Coordination

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

ID Team:

Charlotte Minor, Team Leader	Landscape Architect
Clare Hydock.	Range Management Specialist
Karlynn Huling	Soils and Watershed Specialist/Plant Ecologist
Jeff Waters	Wildlife Biologist
Neil Weintraub	Archeologist
Dave Mills	Assistant Fire Management Officer
Heather McRae	Forester
Brian Poturalski	Recreation Specialist (no longer at KNF)
Joel McCurry	Forestry Technician
John O'Brien	Assistant Forest Engineer
Jackie Banks	Public Affairs Officer
Rick Stahn	District Ranger (retired)
Linda Wadleigh	Acting District Ranger (2008)
Tom Mutz	Acting District Ranger (2009)

Support:

Robert Richardson	GIS/Database Administrator
Tim McGann	GIS Specialist (retired)
Tom Mutz	Lands/Minerals Specialist
Mike Lyndon	Tribal Liaison
Mae Franklin	Navajo Tribal Liaison
Ariel Leonard	Assistant Forest Planner
Bob Blasi	Forestry Technician
Gretchen Lampi	Law Enforcement Officer (no longer on KNF)

Federal, State, and Local Agencies:

US Fish & Wildlife Service

Arizona Game and Fish Department

Grand Canyon National Park

American Indian Tribes:

Hopi Tribe

Navajo Nation

Hualapai Tribe

Havasupai Tribe

Yavapai-Prescott Indian Tribe

Appendix 1 Proposed Forest Plan Amendment

Kaibab Forest Plan Amendment

Since the 1984 plan permits cross-country travel in most areas of the Tusayan RD, and does not incorporate the MVUM as the enforcement tool for motorized travel designation, the plan would be amended to implement the MVUM provisions of the Travel Management Rule for the Tusayan Ranger District.

Specific uses are allowed on national forests except when identified as not suitable, because of law, national or regional policy, or the revised forest plan. Several activities are described in the proposed suitability use table as being permitted in designated areas only. What this means, for example, is that motorized uses are restricted to designated roads, trails and limited open areas and may be restricted or expanded further in order to achieve the desired condition for the land use zones. Vehicular traffic traveling cross-country or on non-designated routes is not allowed in any zone.

To provide for consistency between the plan and the Travel Management Rule, the following amendment is made:

Add the following (page 34-1)

Off-Highway Vehicle Suitability:

Tusayan Ranger District:

“The Tusayan Ranger District is not suitable for motorized cross-country travel. Exceptions to this will be determined in project specific planning, refer to the Tusayan Travel Management Environmental Assessment, December 2008”.

Activity or Use	<i>General forest areas, developed areas, and wildland urban interface</i>	<i>Other Forest Areas including Special Areas, Wilderness, Inventoried Roadless Areas (Coconino Rim), and Recreation Opportunity Spectrum Semi-Primitive Non-Motorized areas (Red Butte)</i>
<i>Off-highway Use on Forest Roads and Trails*</i>	<i>Designated Roads and Trails</i>	<i>Not Suitable</i>
<i>Public Motorized Use off Forest System Roads and Trails*</i>	<i>Designated Roads and Trails</i>	<i>Not Suitable</i>

*Exceptions determined in project specific planning documents.

The following direction regarding off-highway vehicle use in the forest plan would be corrected in the Forest Plan (including changing terminology from ORV to OHV throughout). **This does not constitute an amendment because the intent of the forest plan direction is not being changed.**

Change the following:

Public Issues and Management Concerns (page 11)
Goals-Outdoor Recreation

Establish off-road highway vehicle (ORVOHV) closures as needed to maintain other resource objectives. Managed ORVOHV use to provide ORVOHV opportunities while protecting resources and minimizing conflicts with others.

Public Issues and Management Concerns – Dispersed Recreation (page 11)

“Additional areas, including all of Tusayan Ranger District (use “Tusayan Travel Management Environmental Assessment” (2008) for specific exceptions), are closed to off-road highway vehicle use to protect sensitive soils, vegetation and important aquatic habitats.

Table 7. Acres Closed to Off-Road Highway vehicle Use. (Page 18)

<i>This Plan (as amended 12/2008)</i>	<i>Previous Plan</i>
<i>Acres Closed 350,351</i>	<i>32,683</i>
<i>These figures do not include acres of designated wilderness also closed to ORVOHV use. This does include the entire Tusayan Ranger District acres plus other forest areas closed in the previous plan. Project specific planning defines any exceptions to the closures.</i>	

Other Forest-wide Standards (SZ page 34-2)

Prohibit competitive off-highway vehicle events in all ROS classes.

Guidelines for Recreation Resource Operations and Improvements (page 41)

- 3. Monitor off-road highway vehicle (ORVOHV) use; prevent resource damage and user conflicts.
- 8. Prohibit competitive ORVOHV events.

Chapter 4 - Management Direction

These additional guidelines apply only to resource operations and improvements in GAs 2, 10, and 13:

Guidelines for Timber Resource Operations and Improvements: (page 43)

12. Salvage stands, or parts thereof, that are moderately or severely damaged by dwarf mistletoe, insects, fire, or windthrow using the uniform shelterwood or clearcutting with planting methods; restrict ORVOHV use during stand re-establishment.

Guidelines for Facility Operations and Improvements: (page 47)

- 1. Transportation Facilities includes roads, motorized trails, and user created wheeltracks. Guidance for other trails is in the Recreation Resource Operations.
- 3. Obliterate all temporary roads and skid trails; restrict ORVOHV use until revegetated.

Guidelines for GA 2, 10, 13 (page 39)

- 1. Identify, describe, and geographically locate existing conditions in the implementation land area, regarding:
 - z. Off-road highway vehicle closure areas.

Guidelines for Recreation Resource Operations and Improvements: (page 41)

- 3. Monitor off-road highway vehicle (ORVOHV) use; prevent resource damage and user conflicts.
- 8. Prohibit competitive ORVOHV events.

Geographic Area 8 – Southern Tusayan Woodland: (page 56)

Management Direction for Recreation Resources:

Provide off-road highway vehicle area closures and manage ORVOHV use that occurs on other areas to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

GA 9 - Management Direction for Recreation Resources: (page 59)

The Coconino Rim escarpment is closed to motorized vehicles. Provide other off-road highway vehicle area closures and manage ORV/OHV use that occurs on other areas to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

Glossary: Off-roadhighway 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.*

Appendix 2

Responder or PR #	Comment	How Comment was Addressed
Backcountry Horsemen of NM	Parking adjacent to roads with trailers and trucks	Parking will be permitted immediately adjacent to roads and within "designated routes" located around the forest
	Who is responsible official	The District Ranger will be the responsible official for the Travel Management decisions on the Kaibab. <i>Note: due to the forest plan amendment, the Forest Supervisor is the responsible official.</i>
	Public Involvement	Scoping, public open houses, web page information dispersal, and mailings will provide the public the opportunity to participate in the process.
Center for Biological Diversity	Need to focus on system routes, not user created routes	While we are focusing on the FS System roads, we have considered the user created roads. These routes have to be considered to determine what should be done with them. While most unauthorized routes will be decommissioned, some will be added to the system and these will be included in the analysis.
	Consultation with Law Enforcement Entities	Discussions are on-going with various law enforcement representatives.
	Consistency of the Rule's application	While every effort to be consistent is being made, it is recognized that there will be some variations across forests and agencies to coordinate local conditions and needs.
	Designation of routes/minimize the designation of areas	Thank you for your suggestions
Rudi Lambrechtse	Suggestions for dispersed camping	Thank you for your suggestion
	Suggestions for Big Game Retrieval	Thank you for your suggestion
	Suggestion for gathering forest products	Thank you for your suggestion
	Supports wet weather system designation	The action alternatives were developed to be responsive to this.
Jerry Harlacher	Conflict between hunters and OHV users	
Debra LaFrance	Lack of law enforcement	
Tom Geiger	Noise of forest users including OHVs and motorcycles	
	Supports licensed use of dual purpose motorcycles on the	Thank you for your suggestion

John Tatham – Grand Canyon Jeep Tours and Safaris	Forest Service road system Coordination of Travel Management system with his Special Use Permit	
John Neff – Coconino Trail Riders	Interested in motorized single track on Kaibab	Jeff's name has been added to the Kaibab mailing list, and will be kept informed about planning on the North Kaibab.
Jeff Ingram	Interested in North Kaibab Travel Management planning	
Anthony Quintile	Interested in travel management planning	Anthony's name has been added to the mailing list.
Scott Helfinstine	Supports additional designated OHV routes – POTA recommendation	
Sanford Cohen – Prescott Open Trails Association	Supports additional designated OHV routes – POTA recommendation	
Mike, Nancy and Veronica Flynn	Supports additional designated OHV routes – POTA recommendation	
Dmitra Smith	Interested in travel management planning	Dmitra's name has been added to the mailing list.
Doug and Jean Focke	Supports additional designated OHV routes – POTA recommendation	
Tom Britt	Supports a modified Alternative 3 to allow for fuel wood collection	Permitted fuel wood and other forest products can allow for off road travel
	Supports use of full sized vehicles for motorized big game retrieval Supports an additional travelway in the south eastern portion of the district for wet weather access	
Diana Hawks – Arizona Strip of the BLM	Dispersed camping should be allowed within 150 feet of open roadways Interested in coordination of the NKRD project with the BLM	This was considered as the alternatives were developed. Roads in the southeastern portion of the district will not currently support wet weather access. The wet weather system was developed cooperatively with the AZ Game and Fish Department. The establishment of camping corridors has been included in the action alternatives. Diana's name and address has been included on the mailing list.
Don Hood – Arizona Off Highway Vehicle Coalition	Supports additional designated OHV routes – POTA recommendation	
Bullhead 4 Wheelers, Walapai 4 Wheelers	Supports additional designated OHV routes – POTA recommendation	
Jim Bricker	Supports additional designated OHV routes – POTA recommendation	
State of New Mexico (note that this letter to the District Ranger on the Jicarilla Ranger District of the Carson National Forest was submitted to the Kaibab National Forest as additional information. Details and	Authorizing the inclusion of many user created and traditional roads, trails and areas into each Forest Motor Vehicle Use Map will not adequately protect the resources of USFS lands.	Thank you for your suggestion.

information specific to the Jicarilla District has not been included).

Concerned that the Rule can be enforced with limited on the ground signage.

While the Motor Vehicle Use Map is the legal document to implement the Rule, we recognize that there will be needed signage on the ground to assist the public to understand where they are. The Wet Weather System will have additional "Green dots" posted, and Road numbers will be posted

Desire to work cooperatively to continue department operations on USFS lands

We agree with this suggestion and are working with the AZ Game and Fish to assure that this happens.

OHV use off designated roads and trails establishes tracks that stimulate additional unintended use and subsequent habitat degradation, thereby compromising effective control. The Department encourages USFS to consider hunting related OHV activities similar to any other recreational OHV activity that occurs on USFS lands and apply appropriate restrictions equally. The Department suggests that USFS consider making any limited allowance available to mobility impaired hunters similar and equitable with allowances that might be provided to any mobility impaired recreationist. Such activity might consider that mobility impaired hunters must be certified by this department, possess a valid hunting license, have proper OHV registration and be engaged in the removal of downed game.

There have not been regulations prohibiting off road travel previously.

We agree with this suggestion.

The Department especially encourages the travel management effort of the USFS to acknowledge that current road closures under the State Habitat Protection Act have resulted in the provision of reasonable and accepted access while at the same time increasing quality hunting areas, enhancing sportsmen experiences and promoting wildlife interest. The Department supports exclusion of Wilderness Study Areas and Inventoried Roadless Areas from motorized use. Coordination with the Habitat

We agree with this suggestion although National policy for the Forest Service is that the mobility impaired should be provided an equal opportunity and access to the National Forest, but additional motorized access beyond that provided to all forest users is discriminatory to other recreationists.

We agree with this suggestion.

We agree with this suggestion.

The Motor Vehicle Use Map is the

	Protection Act requires that off road vehicle travel and roads not signed as open are closed to vehicle use in the Habitat Protection Act area	legal tool to implement the Travel management Rule. See previous comment for this respondent for more information.
Jason Kiely - Natural Trails and Waters Coalition	Interested in the Kaibab process Presenting existing closed roads as part of the starting condition. Outreach efforts to user groups.	Jason's name has been added to the mailing list. Maintenance level 1 roads are still part of Forest Service system and are being considered in the analysis. The Kaibab process has been actively outreaching to anybody and everybody who is interested in this process, including Mr. Kiely.
Fred Pierce	Map and info request	Fred's name was added to the mailing list.
Judy Whelan	Concerned about road closures on the Kaibab and Coconino Forests.	Thank you for your suggestion. Upon completion of the process, there will still be public access to both forests.
Gene Kaiser	Supports additional designated OHV routes – POTA recommendation	
Bryan Wyberg	Approves of reducing the miles of roads open to motorized use. Suggests that the travel plan make strong statements regarding the direction for how to temporarily close the routes thus determined	Thank you for your suggestion. Thank you for your suggestion.
	Supports the 130 miles of wet weather system	Thank you for your suggestion.
	Supports closure of all roads in the Coconino Rim Inventoried Roadless Area	Thank you for your suggestion.
Mike Milewsky	Supports Alternative 3 as it provides the most access to view nature and trees while riding a motorcycle.	Thank you for your suggestion
Kali Kaliche	Supports alternative 3 but the addition of narrow trails for OHVs allows for increased off road abuse. Need for increased law enforcement and increased trail maintenance Noise abatement issues to separate motorized camps from more rustic camping areas.	Thank you for your suggestion. Thank you for your suggestion, we agree with your suggestion.
	I fear that the policy of downsizing and out-sourcing in the Forest Service dooms good planning. This travel management plan needs people out in the field.	Thank you for your suggestion.
Bruce Johnson	Interested in being involved with the Kaibab travel management project.	Bruce's name has been added to the mailing list.
Rudi Lambrechtse	Supports alternative 4 in the	Thank you for your suggestion.

Larry and Sandy Anderson	<p>interest of wildlife A greater reduction in secondary roads would lead to larger habitat units. Eliminating user created routes</p> <p>While Alternative 1 leaves too many roads open, they support this alternative with its motorized big game retrieval and dispersed camping proposals Hunters should be able to retrieve big game animals with any type of vehicle without additional permits, some hunters don't have ATVs, Some ATVs are wider than 50 inches, Allow camping adjacent to existing roads and routes is as it should be</p>	<p>We agree and are reducing secondary roads in all alternatives except Alternative 1 All action alternatives eliminate both user created routes and redundant roads. Thank you for your suggestion.</p>
Az Game and Fish Department	<p>Supports off road travel to gather fuel wood</p> <p>Supports motorized big game retrieval exemption Recommends the addition of roads 2733, 305D, and 2730. Recommends a complete and contiguous OHV trail system throughout the district. Supports additional designated dispersed camps or designation of 100 feet dispersed camping zone open roads.</p>	<p>Thank you for your suggestion.</p> <p>We agree with your suggestion and camping corridors as well as designating 6 miles of unauthorized routes (mostly to dispersed campsites) will provide many camping opportunities. It is also possible to pull off of a designated road within a safe distance to camp. Thank you for your suggestion. While fuel wood collection will be permitted, it will not be district wide as it currently is, that would undermine the intent of the Rule. Thank you for your suggestion</p> <p>These roads will be considered for addition to the FS system.</p>
James Hiller	<p>The alternatives provide inadequate access for an older hunter. Supports Alternative 1. No roads should be designated "Administrative use only".</p>	<p>Approximately 17 miles of camping corridors are proposed in the action alternatives.</p> <p>Thank you for your suggestion.</p> <p>Thank you for your suggestion</p>
Bruce Johnson	<p>Would like to see a "true" collaborative process with the plan. Prefers the "no Action alternative as alternatives 2 and 3 are too restrictive. The rationale for extensive closures is limited road maintenance funding. Respondent prefers roads that are not maintained. Respondent is 60 years of age</p>	<p>The level of public involvement will be dependant upon the public's interest in the project. Thank you for your suggestion</p> <p>Thank you for your suggestion. Lack of maintenance of some roads causes resource damage.</p>

	and can't walk long distances to enjoy to forest.	
	Supports off-road travel for big game retrieval and fuel wood cutting.	Thank you for your suggestion.
	Does not have an ATV (uses Scout/Jeep), also concerned that the <than 50" restriction on ATVs would not accommodate the newer ATVs.	Thank you for your suggestion.
	Believes that it is the amount of traffic, not the number of roads that is bad for wildlife. The same amount of traffic on more roads spreads the use out.	
	Recommends establishing an adequate road system for management activities, Don't designate a shadow system of roads for administrative use.	Thank you for your suggestion.
	An overly restrictive outcome will not serve the Forest Service or the public well. It will likely lead to increased violations and the level of enforcement will likely not be there to address such violations.	Thank you for your suggestion.
Spencer Lyman	Has bad back and can not walk long distances or afford to hire an outfitter.	
	Recommends allowing hunters to retrieve big game with motorized vehicles	Thank you for your suggestion.
	Poorly or non-maintained roads allow physically challenged individuals to access the back country.	Thank you for your suggestion.
Barry Krayer	Prefers alternative 3, it provides resource protection and leaves open enough trails and roads for the public to access this area and enjoy OHV fun.	Thank you for your suggestion
	The best way to manage OHV travel is to have a well marked-mapped and signed OHV system that is challenging and also goes to scenic and interesting places.	Thank you for your suggestion.
	Prefers different trails for OHV, motorcycles, some of these could be used by mountain bikes and horses.	Thank you for your suggestion
Charles Bassett	Alternatives 2 and 3 place an additional burden and fee on hunters	Thank you for your suggestion
	Concerned that not all hunters have ATVs <50 inches in width.	Thank you for your suggestion
	Maintenance Level 3 roads should receive all the road maintenance funding.	
	The respondent has been driving the roads since the 1960s and	Thank you for your suggestion.

Fred Pierce	<p>they do not look any different than they did 40+ years ago. The roads get rutted in a wet fall get wiped out by summer use. Prefers alternative 1 and management by education, road signage, literature, kiosks, and the like.</p>	Thank you for your suggestion.
Randy Schaal	<p>Prefers alternative 3 Road damage is from hard rains, not vehicle use of those roads Concerned about dispersed camping</p>	<p>Thank you for your suggestion. Thank you for your suggestion</p>
Kim Crumbo – Grand Canyon Wildlands Council	<p>Wet weather should not close the roads once they have been opened in the spring Prefers alternative 4 as it would contribute to an upward trend in vegetation, improve soil conditions, and help restore the health of riparian areas and that would benefit wildlife. Alternative 4 would largely limit the opportunity for off-road vehicle abuse.</p>	<p>Additional info alleviated his concerns about dispersed camping Thank you for your suggestion.</p>
	<p>Alternative 4 fulfills the purpose of the new Travel Management Rule in terms of minimizing and mitigating continued environmental degradation due to cross-country travel</p>	<p>Thank you for your suggestion. Alternative 4 was ultimately dropped from further consideration because it did not meet the intent of the TMR and specialist concerns. We do not agree with this statement, if the open system provides for the needs of the public, then abuse of the rules will be minimized. In the event that the open system does not meet the needs of the public, then abuse of the rules will occur. Upon publishing of the motor vehicle use map, cross country travel will be eliminated. It does not matter whether alternative 1, 2, 3, or 4 is selected. There is some difference between the alternatives but they address motorized big game retrieval. Alternative 4 was ultimately dropped from further consideration because it did not meet the intent of the TMR and specialist concerns.</p>
	<p>This alternative would also ensure complete compliance with existing laws and management standards of the Kaibab National Forest. The GCWC supports Alternative 2 with the following modifications: Close 16 additional routes (roads 303DA, 304,305A, 305AB, 317, 339, 343, 902, 2615, 2719, 2722, 2732, 2736, 9121 (814), 9121E (814)), no motorized big game retrieval, an option for dispersed camping the will meet the rule requirements to minimize cross country travel. There is no need for motorized</p>	<p>All of the alternatives are incompliance with existing laws and management standards of the Kaibab National Forest. These roads will be considered for closure or decommission from the FS system. Thank you for your suggestion.</p>
		To allow disabled users to use

big game retrieval, except in the case of disabled users
As is evident from the number of illegal, user created routes currently found on forests, getting compliance from users will not be easy or even possible. Enforcing the requirements for permits of any kind will be an enormous, expensive challenge that will consume enormous time and resources.

We do not support the practice of allowing excessive cross-country travel to maintain dispersed camping, we support designating existing terminal routes or spurs that provide access to dispersed camping opportunities and/or allowing camping adjacent to designated routes.

Consideration of "designating fixed distances from open routes for dispersed camping
Consideration of "designating an area for cross-country use".

Creating open areas or issuing permits for cross-country travel for dispersed camping is not consistent with the primary purposes and intent of the Travel Management Rule
Using permits or creating open areas would not protect natural and cultural resources

Using permits or creating open areas would not promote the safety of all users
Using permits or creating open areas would not minimize conflicts among the various users of National Forest system lands.

Using permits or creating open areas would not minimize damage to soil, watershed, vegetation, and other forest resources.

Using permits or creating open areas would not minimize harassment to wildlife and

motorized big game retrieval and no other group is discriminatory. We disagree with parts of this statement; the current direction for motorized use of the Tusayan is that the public could drive anywhere that they wanted. There are only a few places on the Tusayan where motorized travel has been restricted; the regulations covering these areas have generally been followed by the public.

Thank you for your suggestion. Dispersed camping will continue to be allowed on the Tusayan Ranger District. Motorized dispersed camping will be permitted adjacent to open roads, in designated camping corridors and along designated routes for the purpose of getting larger recreational vehicles off the road. Thank you for your suggestion.

Thank you for your suggestion. At this time there are no alternatives that designate areas for cross-country motorized use.

Thanks you for your suggestion, we disagree with your assessment. The creation of "areas" is consistent with the Travel Management Rule.

We disagree with your assessment, permitted areas would still have to protect natural and cultural resources.

It is virtually impossible to guarantee the public's safety from themselves.

There will always be conflicts between users on the forests. The development of a motorized system and its designation on a motor vehicle use map can reduce the conflicts between motorized and non-motorized users.

If open areas are designated, their location will minimize impacts to these resources. Permits would direct forest visitors towards areas that would minimize resource damage too.

If open areas are designated, their locations will not be in areas where there are wildlife concerns.

significant disruption of wildlife habitats.

There will be less harassment and disruption of wildlife and their habitat by having these established areas for dispersed camping and directing forest users to these thereby reducing camping in every available opening where wildlife habitat could more easily be compromised.

The practices of designating open areas and issuing permits will create trails that are routinely and repeatedly used by motorized users, leading to the creation of more routes and trails. There is a glaring difficulty of enforcement associated with a permit system or an open area designated for dispersed camping.

We disagree with this statement, if open areas are designated, they will generally be small and adequate for dispersed camping

Enforcement of the new Travel Management Rule will depend on forest visitors to comply with the new rules and regulations. Since the rules are “new” and “different”, it is logical to assume that there will be honest mistakes made and some flagrant violations of those rules. Over time, it is hoped that most of the forest visitors will comply with them. The fact that enforcement will be difficult does not reduce the need to implement the new rule. If we compare the rule to speed limits on the nation’s highways, we can see that there are limited law enforcement officers, and that some drivers still choose to exceed the speed limit. Fortunately, most drivers comply with the regulation.

We ask you to designate specific routes that provide access to dispersed camping opportunities and/or allowing camping adjacent to designated routes.

The areas that are being considered in the alternatives for dispersed camping are along the routes that are being considered as the open system. Non-motorized dispersed camping will still be available across the district. There are 6 miles of specific routes that provide access to isolated dispersed camp sites on the Tusayan Ranger District, some of these may be ruled out due to resource concerns with either the access routes or the camp sites.

We ask you to adopt a “no motorized cross-country access for retrieval of big game (except for disabled individuals).

Thank you for your suggestion. If motorized big game retrieval is authorized, it will be authorized for all individuals, not one group or another. To authorize motorized big game retrieval for just persons with disabilities is discriminatory towards other forest users.

Rick Foster BRC/Shared Trails	Provided interested persons and their addresses.	The names and addresses were added to the mailing list.
John Tatham	Additional comments about his Special Use permit	
Connie Nicholson	Interested in the process	Connie's name has been added to the mailing list.
John W. Smith	Against closing most of the roads in the forest	Thank you for your suggestion.
	Would not object to the closure of short spur roads.	Thank you for your suggestion.
	Quads have little impact on the environment, 4 X 4 trucks rut and damage roads and the forest	Thank you for your observation.

Appendix 3 Notice and Comment Responses

Topic	Name	Date	Comment	Response
Support Game Retrieval	Perry K. Schaal	1/15/2009	Hunters should always be able to retrieve their big game. All types of game. Elderly will have trouble retrieving their game if they can't drive to it.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	T.Warren Peterson	1/16/2009	Use of motorized vehicles to retrieve game during all hunting seasons.	"
	Paul Rehman Jr	1/17/2009	Use of motorized vehicles to retrieve game during all hunting seasons. I oppose unregulated vehicle traffic.	"
	Ronald P Cate	1/11/2009	Support PA, except game retrieval for all downed "big game".	"
	Linda Shine	1/14/2009	It is important for hunters to have motorized access to public lands.	"

Support Game Retrieval	Gregg Spieler	1/8/2009	I support game retrieval for all big game and for vehicles to be restricted to roads at other times.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	BobWright	1/8/2009	I would like to see continuation of big game retrieval with motorized access.	“
	Howard Utter	1/7/2009	Continue motorized big game retrieval.	“
	Bill & Anita Willis	1/7/2009	Senior citizen would like to be able to use my OHV to retrieve all game animals.	“
	Steve Harris	1/10/2009	There are already penalties for individuals who drive cross-country. Let us continue legitimate collection of game with a motorized vehicle.	
	Rex Brown	1/10/2009	Continue motorized big game retrieval.	“
	T D Varnado	1/10/2009	I am disabled and hunt from my Rhino which means I have to go off roads. Is there any provision for me? What about ADA?	“

Support Game Retrieval	Michael H. Payne	1/10/2009	I am 64 and cannot pack or drag a deer any distance, I shouldn't have to give up hunting. Allow ATV with only 3 psi ground pressure.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Mike Flood	1/10/2009	Use of motorized vehicles to hunt, travel and retrieve game is a must.	"
	Ron Barber	1/11/2009	The current laws are adequate and use of vehicles to retrieve game should stand.	"
	Eric Bushey	1/11/2009	Please allow hunters access and do not restrict access to public lands for motorized game retrieval.	"
	Ron Clark	1/12/2009	Some deer, elk and bears can be large I think prohibiting use of motorized vehicles will hamper the quality of the hunts. I am also concerned that elderly people could not pack out their animals. Let people have the right to retrieve their animals with the help of their vehicles. I am infavor of helmets for the young, speed limits, and limiting cross country travel for no reason, harassment of people and animals by ATV.	

Support Game Retrieval	Perry T Hopkins	1/9/2009	Please do not make rules that prevent use of a vehicle for recovering game.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Dennis J. Neese	1/12/2009	I would like to see hunters be allowed to retrieve their game with motorized vehicles.	"
	Art Dixon	1/12/2009	Motorized access when hunting – I am a below the knee amputee and need help getting around on uneven ground.	"
		1/12/2009	Hunters need to use motorized vehicles to retrieve game, especially old hunters like me.	"
	Russell Kimbrough	1/12/2009	Please continue use of motorized vehicles to retrieve game. It provides a significant convenience to pick up big game that is too heavy to pack out.	"
	National Rifle Association	1/7/2009	FS has released a TMP that includes use of motorized vehicles to retrieve game. NRA is involved in ensuring that motorized use restrictions do not restrict hunters' access to federal	"

public lands.

Support Game
Retrieval

J C Dillard

1/6/2009

I think legal use of motorized vehicles of any type to retrieve game in the Kaibab Forest is long over due. One mile limit is □idiculous, unenforceable and lacks common sense.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.

Peter Meis

1/5/2009

Please allow hunters to retrieve their game at any distance from wherever they are parked. It would be impossible to carry out large game over a long distance.

“

Bill Drake

1/6/2009

I have been using vehicles to retrieve game for over 50 years and am not about to change now or in the future.

”

Kriss Bombardieri

1/7/2009

Due to the extreme distances a hunter has to go on the KNF to hunt big game and weight of the game, retrieving them with a vehicle is within reason. I know how hard it is to get an animal out of the forest without a vehicle (and a few good men).

”

Support Game Retrieval	S R Sinosky	1/6/2009	I would like to see hunters have the ability to use motorized vehicles to retrieve big game from the forests. Many of us are not as young as we used to be and still enjoy hunting. My buddy is a vet and two of us had difficulty dragging a decent sized buck very far at all.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Steve Ruff	1/6/2009	Please take into consideration that many hunters are getting on in years. Backpacking a quartered elk is a hardship to many of us. Will you be able to enforce a change in the law?	"
	Kerry & Linda Kreutz	1/5/2009	Just keep access available so we can retrieve downed game please.	"
	Dave Kendall	1/5/2009	I support the continuation of the current no action alternative rule to retrieve legally harvested big game.	"
	William Griffin	1/5/2009	As a hunter, voter, disabled person and taxpayer, I fully support use of any type of vehicle to retrieve game.	"
	Dan Horton	1/5/2009	I have used an ATV to hunt and retrieve game for years. The ATV has enabled me to continue to be in	"

the outdoors.

Support Game
Retrieval

Brendan Berthold

1/5/2009

I support use of motorized vehicles to retrieve game in the KNF. People value resources more if they are able to use and see them.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management."

Gerald McNutt

1/5/2009

Hunters need a way to retrieve big game when hunting that is not a physical difficulty. Motorized vehicles is now the only way to do this unless the FS wants to perform this service for hunters.

"

Randy Hansen

1/5/2009

I have been hunting for over 25 years and have never observed any poor behavior of hunters when retrieving game. I request we keep the current regulation in place and allow people to make their best decision on a case by case basis. I don't go off of roads to retrieve game, but am aware that situations may make it necessary.

Robert Bright

1/5/2009

There should be no restrictions except fire safety in using vehicles to retrieve game.

"

Support Game Retrieval	Henry Whitt	1/5/2009	Please allow hunters to use motorized vehicles to retrieve their game. Other motor vehicle restrictions should be in place.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Tony Ballatore	1/5/2009	Things are restricted too much now.	"
	Dorothy Vincent	1/5/2009	I think it would be great to be able to use a motorized vehicle for retrieving game.	"
	Randy Gray	1/5/2009	Please allow a hunter to retrieve downed game in any practical way.	
	Gerald Backhaus	1/5/2009	I do not want you to limit in any way the retrieval of any wildlife via any motorized vehicle in the TRD.	"
	Cara Bliss-Shover	1/5/2009	Have you ever tried to get a 300-500# elk down a mountain by pulling it. Please don't ban use of motorized vehicles for retrieving game.	"
	Gary Sheldon	1/5/2009	Vehicles ought to be permitted everywhere to retrieve game.	

Support Game Retrieval	Bart Kemp	1/5/2009	I have lived and hunted in this area for most of my life, I have seen people disrespect the forest-- fine them. Don't take our privilege for game retrieval.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Jonathan Roundy	1/5/2009	I believe it is important to allow the average person who does not have access to horses or mules, to retrieve legally harvested game with a vehicle.	
	Max Delgado	1/5/2009	Use of motors to retrieve big game -- good idea, we need help.	"
	Thomas Symonds	1/5/2009	I oppose any restrictions to common sense off road use that restricts a senior citizen ability to retrieve big game with an off road vehicle. That does not mean seniors should joy ride off road, but seniors don't typically joy ride.	"
	Kent Carpenter	1/5/2009	The proposed use of motorized vehicles to retrieve game on the Kaibab Plateau is a necessity. Elk and deer. The Kaibab is not a heavily traveled area.	"

Support Game Retrieval	Randall Welker	1/6/2009	Thank you for the potential of using motorized vehicles to harvest big game from the KNF. I feel this should be strongly considered and put into place.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Dan LaFon	1/6/2009	I am a hunter in AZ and believe it should be ok for hunterst to travel off roads to retrieve big game taken.	"
	Kyle Huebsch	1/6/2009	I have hunted the KNF and dragged a deer over 2 miles. I am in favor of allowing motorized cross country travel to retrieve any form of big game.	"
	Guy Thomas	1/17/2009	I am a severely disabled vet and it is increasingly difficult for me to get out of doors. An outright ban on ATV travel restricts my access to a resource that should be available to me. Pleas make some provision for us to get into the more remote regions to hunt, fish, and enjoy nature like we used to.	"
	Randy Schaal	1/13/2009	Game retrieval needs to be allowed for deer, elk, buffalo and antelope. Older hunters need to retrieve the game safely, avoid meat	

spoilage.

Support Game
Retrieval

Ronald Rider

1/26/2009

Many of us are over 50, and the retrieval of game should be allowed.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management

Perry Hopkins

1/9/2009

Please do not make rules that prevent a vehicle from being used to recover game.

"

Alison Don

1/26/2009

We request that you allow motorized travel to retrieve elk and other big game. We wait for our turn for a permit and as we get older we are less able to pack animals out ourselves. Being able to take our vehicle to the game is something we count on. We do not drive off road at other times, as we respect the need to preserve the terrain.

"

Mark Kleppin

1/26/2009

Please leave the rule as it exists. This would help those of use with back related injuries. I do harvest during hunting season fairly close to the road, but if the animal runs off, I would have to go find assistance to retrieve the animal and hope that the meat would

not turn.

Support Game Retrieval	Richard Anthony	1/27/2009	I am in favor of opening KNF to hunters as a herd mgt tool. It puts the harvested animals to good use feeding families, is economically responsible, and works for the animals.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management
	Walt Blackburn	1/26/2009	I support cross country big game retrieval with ATV. I do not support full size vehicles due to resource damage.	"
	Eric Scionti	1/25/2009	I fully support authorizing motorized big game retrieval.	"
	Blaine Abbott	1/25/2009	I am an avid hunter and feel it is important to be able to retrieve big game with a motorized vehicle--all game. We can't all afford horses.	
	Dan Moyes	1/25/2009	I am in favor of allowing motorized vehicles to pick up game in the NF. We all hunt and it should be legal ot pick up their game. Keep the Gov nose out of publically dedicated lands.	"
	Merlene Hudson	1/25/2009	Do not limit the use of vehicles to retrieve legally harvested big game animals--all big	"

game.

Support Game Retrieval	Mareen Waterman	1/25/2009	The ability to retrieve legally harvested game is important to senior hunters. I'm 75 and still can get around, but can't pack out an animal.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management
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	Jeffrey Owens	1/24/2009	If it ain't broke, don't fix it. Going off road to retrieve meat makes the most sense. There would not be that many animals killed and recovered if you restrict motorized big game retrieval.	"
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Oppose Game Retrieval	Opaswoodshed.wmc onnect.com	1/17/2009	No motorized game retrieval for any species; it causes too much damage and scares away animals.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management
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	Andrew Guilford	1/13/2009	No motorized game retrieval, allow retrieval by foot or horseback only.	"
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	John Mumma	1/13/2009	Disabled hunter - request retrieval by foot or horseback only.	"
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Topic	Name	Date	Comment	Response
Oppose Game Retrieval	Randy Marlatt	1/12/2009	Do not support any motorized game retrieval, AZ is only state considering.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management
	John Bentley	1/11/2009	No motorized game retrieval it disrupts hunting.	
	Jacque Blalock	1/18/2009	Motorized vehicles should stay on roads and preserve what little wilderness we still own.	"
	Bret Wingert	1/19/2009	No more motorized vehicles. Limit their use to the maximum extent possible. I am a hunter, but enjoy the quiet of the outdoors that is being spoiled.	"
	David Spies	1/21/2009	I am against allowing hunters to collect game and for any unofficial use. I am also concerned that commercial entities should be paying fees to both NPS and USFS for commercial permitting using the road systems.	"

Topic	Name	Date	Comment	Response
Oppose Game Retrieval	Hunter Bachrach	1/6/2009	I oppose any proposal to allow motorized vehicles for any purpose in areas of the KNF not currently allowed. Hunting game is a huge responsibility and privildge. If a hunter can't pack it out, they sure better not kill it.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management
	Vince	1/5/2009	We should be allowed to use motorized vehicles to recover downed game as long as the land isn't torn up by these machines. Safe useage is a must here.	"
	Ole Hunter	1/5/2009	No vehicles off road to recover game, none, no, never. Most hunters never get more than 1/4 mi from their vehicle, if they cannot clean, skin and quarter their kill to pack out by foot or horse or mule, they don't need to be hunting to start with.	"
	Rob Scheer	1/28/2009	Please do not allow motorized game retrieval. The effort of the hunt should dictate the retrieval. May places you can shoot within 50 feet of the road.	"
	Dan Greenley	1/6/2009	I am infavor of use of motorized retrieval but only limited to natural or man-made	"

trails, not cross-country on virgin soil causing erosion.

Oppose Game Retrieval

Layne Batty

1/27/2009

The Uinta NF allowed big game retrieval at first, then found that it was abused. They no longer do. Gives examples of violations. Do not make the mistake of allowing ATV to retrieve game when it has been proven not to work.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and views game retrieval as a tool to assist Game and Fish with elk harvest and management

Bethi Carver

1/20/2009

Wildlife management (game retrieval) can be done with mules and good horses.

"



Game Retrieval – Support Proposed Action

Jeff Kulovitz

1/17/2009

Support PA, motorized game retrieval for elk only.

Thank you for your comment.

Ken Meadors

1/9/2009

Support motorized retrieval for elk , it would also be acceptable to include deer.

"

Robert Sauter

1/6/2009

Finally some common sense game retrieval.

"

Rich Doyle

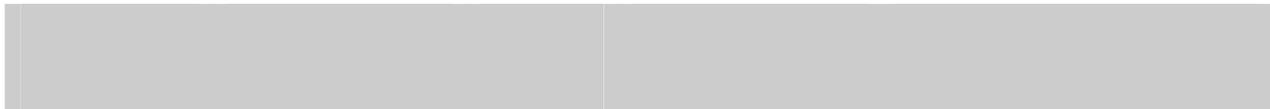
1/6/2009

I support the plan to allow motorized game retrieval in the KNF. This will prevent game spoilage and loss of game to predators.

"

Game Retrieval – Support Proposed Action	Gary Tuerschmann	1/5/2009	I think that allowing 1 vehicle is sufficient to retrieve game, however it could be determined more by weight.	Thank you for your comment.
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	Sharrell Burcham	1/5/2009	Hunters should be allowed to use vehicles to retrieve elk. I used to pack them out, but that was when I was younger.	“
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Oppose Camping Corridors	Randy Marlatt	1/12/2009	No to camping corridors.	Parking along roadsides can be used for dispersed camping. The District is also considering use of both camping corridors and designation of short road segments for recreation access (including dispersed camping). Camping patterns on the District are driving use of both of these techniques. Grand Canyon visitors are currently using the camping corridor locations. Designation of short road segments would accommodate hunting use and recreation users who have traditionally used the District for recreation activities.
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Need Camping Corridors	Randy Schaal	1/13/2009	FR 301 needs to be a camping corridor due to all the fishing use at Russell Tank and for hunter use. Also FR 307 from Hull Tank down to Wagoner Rank needs to be a camping corridor for hunting season.	Parking along roadsides can be used for dispersed camping. The District is also considering use of both camping corridors and designation of short road segments for recreation access (including dispersed camping). Camping patterns on the District are driving use of both of these techniques. Grand Canyon visitors are currently using the camping corridor locations. Designation of short road segments would accommodate hunting use and recreation users who have traditionally used the
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District for recreation activities.

Need Camping
Corridors

1/29/2009 Add camping
corridors to the Upper
Basin, one at mile
post 270 and FR 682.
There are existing
campsites there.

"

1/24/2009 What about permits
for camping available
at the Tusayan
office? Also you could
set up a minimal fee
per pass to apply to
maintenance.

"



Additional Route
Designation

Randy Schaal

1/13/2009

There are 3-4
dispersed camping
sites along FR 307
between Trash Dam
and Wagoner Tank.

The District is proposing
designation of short road
segments for recreation access,
these are subject to resource
surveys.

Jean & Doug Focke

1/6/2009

We like to camp on
FR 688 it is about 1
mile in where there is
a gravel storage yard.
Please keep this
open for camping.

"

Oppose Route
Designation

Havasupai Tribe

1/15/2009

Opposed to camps
around Red Butte or
camps near boundary
with the reservation.

The District is proposing
designation of short road
segments for recreation access,
these are subject to resource
surveys.



Inadequate
Analysis

Randy Marlatt

1/12/2009

Affect of roads on
wildlife and habitat.

The wildlife section of the EA
details affects of the alternatives
on wildlife and habitat.

Inadequate
Analysis

Tom Britt

1/20/2009

Provide AZ GF vehicle access to water developments for maintenance and replenishment. Allow for new construction of water developments and roads to access these. Lower the amount of roads retained for administrative use only (14% is adequate).

The District and AZ Game and Fish will work out an agreement for limited vehicle use to water developments. New construction of water developments and access would involve separate project level analysis and is beyond the scope of this project. It is anticipated additional analysis will be conducted to evaluate retention of each road designated for administrative use.

Tom Britt

1/14/2009

Select Alt 1 with prohibition of motorized cross-country travel except for retrieving deer or elk. If not this then select Alt 3. I support elimination of off road traffic. Remove the time constraint from big game retrieval. Increase the number of miles in the camping corridors from 17 to 22 miles, more are needed in the SE and S central portions and in the Upper Basin. Limit off-road travel for camping and parking to 150 feet it is adequate and would reduce the impacted area by 50%. Include the group campsite on FR 313 east of Harbison in either section 21 or 22 on the north side of the road under the powerline.

The FS decision maker can include parts or all of a particular alternative in the decision notice. This includes the exceptions for dispersed camping, designation of short routes and motorized game retrieval. The time constraint and distance have both been eliminated from the motorized big game retrieval exception after further consultation with AZ Game and Fish Dept. The camping corridors were identified by the IDT with consideration for resource protection. Following resource survey some adjustments may be required in both camping corridors and designation of short routes for recreation access.

Barb Shields

Jan-09

I would like to see all existing roads remain open. Close all user-made roads.

Thank you for your comment.

Inadequate Analysis	Randy Schaal	Jan-09	The road from Michigan Tank north to Old Hibben Tank needs to be open for hunting access.	Road redundancy and density has been reduced based on resource analysis in this area.
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Support Proposed Action	Rudi Lambrechtse	1/12/2009	Hikers find it difficult to recreate without interference of man and his machines.	The TMR addresses unmanaged recreation, particularly off-road travel by creating a designated system of roads for motorized use.
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	Jerry Self	1/11/2009	Makes sense and should be approved.	Thank you for your comment.
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	Gerald L Perry	1/10/2009	Select option 2. I like keeping quads to existing roads.	Thank you for your comment.
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	Center for Biological Diversity - form letter from 337 people	1/21/2009	Support PA, but with these changes: no game retrieval, no camping corridors, no user created routes added for rec access. The info used to show economic impacts of hunting and OHV use are incorrect. There is inadequate analysis of OHV impacts on wildlife and their habitat.	Camping and hunting are important uses of the District. TMR may include designation of limited use of motorized vehicles solely for dispersed camping and big game retrieval (36 CFR 212.51 b).
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	Robert M Lauzon	1/16/2009	Like alt 2 but consider the following: FR 2511 from Seven Mile to Lauzon homestead should be closed with barriers. FR 2510 from Bass tank needs to remain open. Two tricktanks are not shown on the map & need to be open to hunters, AZGF and Rocky Mtn Elk since	It is anticipated additional analysis will be conducted to evaluate the need to retention of each road designated for administrative use. The FS will work with private land owners regarding administrative use roads adjacent to their parcels. The district expects to work on an agreement with the AZGF Dept
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		they haul water. The road next to the Havasupai boundary needs to be closed.	for water hauling.
Support Proposed Action	1/10/2009	Alt 2 but allow for all game retrieval.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.
James B. Pickens	1/13/2009	Adopt Alt 2 and allow hunters to retrieve all big game with motorized vehicles.	"
Carl Taylor	12/30/2008	Sounds like a good plan.	Thank you for your comment.
Paul Raczkowski	1/5/2009	I support alt 2.	Thank you for your comment.
	1/5/2009	Alt 2 would be fair.	Thank you for your comment.
Kim Kokesh	1/26/2009	I support alt 2 on the Tusayan Travel Mgt Project.	Thank you for your comment.
George Lea	1/30/2009	Public Lands Foundation supports alt 2 and 3 that provides for motorized cross-country retrieval of elk. It is consistent with EO 13443: Facilitation of Hunting Heritage and Wildlife Conservation.	Thank you for your comment.

Support No Action	Bill Gildersleeve	1/10/2009	Disabled, only way I can get around is by motorized vehicles. Leave 160 miles of unauthorized roads open. Leave things as they are.	The No-Action alternative would not implement the Travel Management Rule.
	Ed O'Sullivan	1/17/2009	Support alt 1 allowing motorized big game retrieval.	“
		1/18/2009	Use of motor vehicles should be permitted for game retrieval and recreation. People have a right to use vehicles in a respectful manner.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.
	Duane Westbery	1/18/2009	I am in favor of alt 1. The percent of hunters that leave roads to retrieve game is so small that no ill effects happen.	Thank you for your comment.
	I.A. Myers-Stevenson	1/19/2009	Adopt alt 1. I favor use of any type of motorized vehicle to retrieve big game.	The District is currently considering game retrieval for elk only during all elk seasons. There is no stipulation about type of vehicle used for game retrieval. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Support No
Action

Marc Cooley	1/9/2009	I support alt 1 and motorized big game retrieval.	The District is currently considering game retrieval for elk only during all elk seasons.
George Osler	1/8/2009	I support alt 1 and use of any type of motorized vehicle to retrieve big game.	The District is currently considering game retrieval for elk only during all elk seasons. There is no stipulation about type of vehicle used for game retrieval.
Merl Nielsen	1/8/2009	I urge you to use alt 1.	Thank you for your comment.
Kevin Walters	1/7/2009	I would like to see alt 1 remain in place. Game retrieval is a viable alternative without causing permanent damage to the forest.	The District is currently considering game retrieval for elk only during all elk seasons. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.
Rick Wilkinson	1/7/2009	Alt 1 is correct decision. I want to continue to retrieve game with mechanized access.	"
Mike Hogan	1/10/2009	My preference is for alt 1. Unless you allow people a way to pick up their game you will insure that most hunting is from or near the established roads.	"
W. S. Childers	1/11/2009	Punish the bad person, but leave the good alone, I vote for #1.	Thank you for your comment.
John Adams	1/12/2009	I feel strongly that you must not restrict motorized vehiclular acess in retrieving legally harvested	"

game on federal lands. I urge a no-action decision on this issue.

Support No
Action

Andrew Ramirez Jr

1/13/2009

I am a hunter and by choosing alt 2 or 3 you will be restricting my ability and making it harder to hunt. Keep alt 1 in place.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Michael Buttram

1/20/2009

I support the efforts to restrict motor vehicles in the forests esp. off roads. I wish that the restriction for game retrieval could be 1/2 mi instead of 1 mi.

"

Nancy Carter

1/6/2009

I am in favor of the noaction decision as it would discriminate against me to have to drag an elk out. Not often the animal will be within a mile of a main road.

"

William Kaul

1/6/2009

I am for alt 1, I am a responsible citizen who does not abuse the land on which I hunt. I have hunted the KNF and successfully retrieved my game using an OHV. Restricting use of OHV would increase the amt of time and work to get such a large animal back to camp. It increases the possibility of the animal spoiling. More restrictions are not going to help, they'll

"

just make it worse.

Support No
Action

George Daniels

1/7/2009

I prefer alt 1 remain in effect. Elk, mule deer and antelope are difficult to handle and properly care for. The ability to use a motorized vehicle to retrieve such game is of great benefit to the hunter.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Timothy Pender

1/6/2009

Retired AZ G&F wildlife mgr. I recommend alt 1 the current policy that has worked for years with few if any problems. I don't think use of motor vehicles to retrieve big game has been a significant issue relating to resource damage. I think enforcement would be difficult and that more game meat will be lost due to spoilage.

"

Bill

1/5/2009

I support the proposed rules to allow for OHV to retrieve big game in Tusayan. I'm all for relaxing archaic rules than ban OHV from public lands.

Robert Rooke

1/5/2009

I would like to see #1.

Thank you for your comment.

Frank Tucker

1/5/2009

Please keep the current travel mgt plan alt 1. To impose further restrictions may place undue hardships on the current and future

Thank you for your comment.

hunters.

Support No
Action

John Mattei

1/5/2009

I would like to see alt 1 allowing the same process for us as is currently allowed.

Thank you for your comment.

James Hays

1/5/2009

I support alt 1.

Thank you for your comment.

Charles Albrecht

1/5/2009

I am in favor of alt 1. It would allow any type of vehicle to retrieve legally harvested big game. I hunt the KNF and it is very helpful to have the option to retrieve game with a vehicle since I generally hunt alone.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Leonard Shanks

1/5/2009

I encourage you to consider alt 1 to allow motorized vehicles for game retrieval. I don't believe there is a lot of damage from hunters retrieving game they have killed.

The District is currently considering game retrieval for elk only during all elk seasons.

Roger Conroy

1/5/2009

It is important for hunters to be allowed to use motorized vehicles to retrieve game, I urge you to implement alt 1 no change in the current plan.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

James Briscoe

1/5/2009

Please pass alt 1; use of any motorized vehicles to retrieve

"

game.

Support No
Action

Gary Liscombe

1/5/2009

I believe alt 1 should be adopted. As a disabled hunter I believe that use of motor vehicles used in a reasonable manner is appropriate.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Bill Mason

1/5/2009

I would like to see alt a stay in place. I think stronger enforcement is needed for those who abuse the rules. Game retrieval is okay, but no other cross country uses.

"

Ron Hanse

1/5/2009

The current alt 1 is what I feel should remain in place. I feel the rangers assigned to the area did a good job of monitoring the situation while I hunted there in the past.

Thank you for your comment.

Pat Maneely

1/5/2009

Please continue to allow any kind of vehicle to retrieve game from the KNF. Alt 1.

The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.

Glenn Plain

1/5/2009

I would like you to stay with alt 1. I have hunted in Az all my life--57 years. I used to be able to pack out an animal, but as I

"

have aged it is harder and I would like the ability to drive to my game if possible.

Support No Action	Everett & Karen Carpenter	1/5/2009	We support alt 1.	Thank you for your comment.
	Tom Voltz	1/6/2009	Alt 1 is the way to go on this. Why make it harder for hunters to retrieve game. If a hunter is willing to hike in and hunt a remote area, at least give them a little help to get the animal back.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and mgt.
	Gene Harris	1/6/2009	Keep alt 1 in effect. I have bilateral knee replacements and have an imposed weight limit of 50#. I cannot carry out an animal. To change the plan would effectively put many areas out of reach to many hunters who have disabilities.	The District is currently considering game retrieval for elk only during all elk seasons.
	Lloyd Liebetrau	1/27/2009	Consider alt 1. Hunters are growing older, restricting motor vehicles to retrieve game will restrict the area a hunter can hunt.	"
	Gary Metivier	1/25/2009	I request that alt 1 be adopted. Many hunters are senior citizens and have physical limitations. We should be able to retrieve game animals which we	"

legally harvested.

Support No Action	Martin Glassbury	1/30/2009	I support alt 1 and enjoy the freedom to travel in the forest as is currently allowed. My family always try to "tread lightly". I don't think restricting travel will solve the problems, instead concentrate on those causing the problems.	Thank you for your comment.
	Frank Caylor	1/25/2009	I strongly recommend alt 1. Game retrieval does not create a problem or cause long term damage to the forest.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management.
Support Alternative 3	Larry & Sandy Anderson	1/18/2009	Recommend alt 3 but add motorized game retrieval for deer. Game and Fish Dept is recommending this as well.	The District is currently considering game retrieval for elk only during all elk seasons.
	Steven Matson	1/5/2009	Alt 3 is workable, but don't restrict the distance a vehicle can be driven to retrieve game. Sometimes the environment is tore up more when you limit the distance.	"
	Derek Glenn	1/24/2009	Alt 3 appears to be an appropriate plan. Allow visitors to get	Thank you for your comment.

out and see the KNF.

General Comments	Guy M Thomas	1/17/2009	Severely disabled vet - please make provision for us to get to more remote regions to hunt, fish and enjoy nature like we used to. An outright ban on ATV travel restricts access to a resource that should be available to me.	The District is currently considering game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk harvest and management. OHV can continue to be operated on roads designated in the system of open roads.
	Mike Miller	1/13/2009	All roads except those needed for fire management and access to regulated recreation should be permanently closed. No motorized game retrieval. No camping corridors. It is possible to pull of the road 30 feet to camp and shoot, no more.	The FS is proposing to close roads at this time. Future projects may consider decommissioning. The District is currently proposing game retrieval for elk only during all elk seasons. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk population management. Dispersed camping corridors must be surveyed for resource concerns.
	Nick Hudson	1/10/2009	Forest roads and trails should remain open to public use for motorized vehicles, off road vehicles and mountain bikes except in wilderness study areas, wildlife protection areas and during extreme fire danger.	The FS is required to designate the system of roads, trails and areas open to motor vehicle use (36 CFR 212.51). The alternatives evaluate designation of approximately 550 to 700 miles of forest roads that are open to motorized use. There are currently no trails open for motorized use. Wilderness, Inventoried Roadless Areas and other existing area closures that prohibit motorized travel will be retained as currently

managed.

General
Comments

Bob Eck	1/10/2009	Please limit off-road vehicles as much as possible.	The TMR prohibits motorized cross-country use. The FS is required to designate the system of roads, trails and areas open to motor vehicle use (36 CFR 212.51). The alternatives evaluate designation of 550 to 700 miles of forest roads that are open to motorized use.
Matthew Dellaro	1/5/2009	See that one of the three alternatives is selected that allows motor vehicle use in the KNF. Any alternative is better than a ban.	While alternative 1 would retain the existing condition, it would not comply with the intent of the Travel Management Rule that prohibits motorized cross-country use.
Don Scheer	1/5/2009	I am not in favor of allowing any cross-country motorized vehicle travel. Motorized traffic should be restricted to existing roads.	The TMR prohibits motorized cross-country use. The FS is required to designate the system of roads, trails and areas open to motor vehicle use (36 CFR 212.51). TMR may include designation of limited use of motorized vehicles solely for dispersed camping and big game retrieval (36 CFR 212.5 b)
Dwayne Colletti	1/5/2009	As a hunter for over 30 years I feel the laws are fine as they are. This sounds to me like another gun ban.	Thank you for your comment.
Steve Spear	1/6/2009	I see these policies as not being in the public interest, I want to keep our forests open for public use.	Thank you for your comment.
Kurt Donohoe	1/6/2009	I think restrictions to the current laws will have a serious impact on enjoyment of the forest for everyone	Thank you for your comment.

that uses. Don't change the laws.

General Comments

Randy Schaal	1/13/2009	I prefer alt 3; it allows a little better in this unit for hunting.	Thank you for your comment.
Jean & Doug Focke	1/6/2009	Concerned about ATV riders damaging cultural sites near Michigan Tank, Peterson Tank and on FR 334.	Thank you for your comment.
Monty Parsons	1/29/2009	Install a swing gate to close off the forest from Hwy 64 at FR 682.	FR 682 has been evaluated and is proposed to be included in the designated system of roads open to motorized travel.
Earl Frey	1/27/2009	OHV riders who deface the land should be jailed and required to do labor on public lands, fined and forfeit their vehicle. I lug my stand a mile into the woods and I'll drag my deer out.	Thank you for your comment.
Sidney Caylor	1/28/2009	FS has changed the policy of service to the citizens to keep all people out of the public lands.	Thank you for your comment.
Roger Kissam	1/26/2009	I believe motorized vehicles in any area like this should not be allowed. They destroy the plants, do not stay on trails, noise pollution, ugly rutting in wet weather to name a few. I am totally against it.	The TMR prohibits motorized cross-country use. The FS is required to designate the system of roads, trails and areas open to motor vehicle use (36 CFR 212.51). TMR may include designation of limited use of motorized vehicles solely for dispersed camping and big game retrieval (36 CFR 212.5 b)

General
Comments

A J Masalic

1/25/2009

Definitely open up
access. Great idea.

Thank you for your comment.

Machelle Pickens

1/30/2009

Use common sense
when adopting a plan.
Allow for use and
enjoyment of the
forest without
destruction. Don't
lock us out of our own
backyard, make the
forest accessible so
people don't feel they
have to make their
own roads.

Thank you for your comment.

Michael Willand

1/30/2009

I am an avid hunter
and have hunted in
this area. I feel there
are too many roads
for the necessary
access to the forest.
Less disturbance of
motor vehicle travel to
wildlife is a benefit,
not to mention the
damage it causes to
the landscape.

The FS evaluated the existing
road system in an inter-
disciplinary team environment
looking at each resource area.
This was followed with public
input. The proposed action is the
result of that analysis.
Alternatives 2 and 3 would reduce
the designated road system by
about 25%.

Agency
Comments

US Fish & Wildlife
Service

1/28/2009

Recreation access
points are not clearly
defined.

TMR may include designation of
limited use of motorized vehicles
solely for dispersed camping and
big game retrieval (36 CFR 212.5
b). The recreation access points
are proposed locations where a
short segment of an unauthorized
route would be added to the
designated road system in order
to engage in recreation activities.
Tusayan District proposes the
segment be up to 300 feet long,
and at the terminus a recreation
user could park their vehicle and
recreate. Existing use at the
locations is primarily for dispersed
camping. Each recreation access
point must still undergo resource
survey to determine if it will be
added to the designated road

system.

Concerns about whether Pediocactus are present and need to avoid camping or other use near populations of Gunnison's prairie dogs

The proposed dispersed camping corridors and access routes must all have resource surveys completed before they would be placed on the Motor Use Vehicle Map. If either the pediocactus or prairie dogs were found in these areas, the area would fall out of consideration. In addition floristic surveys are proposed for the likely locations of the pediocactus.

Will the proposal affect California condors

The wildlife biologist is adding a section to the wildlife portion of Chapter 3 that discusses condors. In addition, we propose to add information to the Motor Use Vehicle Map that would discuss human-condor interactions, as well as providing this information on portal signs and brochures that include travel management information.

Invasive weed introduction in dispersed camping areas and on access routes

The district botanist has added to mitigation measures to directly address invasive weed treatment in dispersed camping areas.

Permitted activities - what is the extent of activities that may occur

Motorized activities authorized under a written authorization (permit) may continue motorized use where appropriate (CFR 212.51 a 8, CFR 261.11 h, CFR 212.81 b 5, CFR 261.14 e). Operating plans will restrict motorized cross-country use unless it is critical to resource management. It is beyond the scope of this analysis to detail every instance where motorized use is appropriate for administrative use or permits.

Are there sensitive species that will be affected by Travel

The Tusayan District has worked with AZ Game and Fish extensively, and has documented consultation about travel

Management

management with local Tribes, and continues to work with Tribes to accommodate traditional activities.



Agency
Comments

Grand Canyon
National Park

Institute a one-mile boundary from the Park for motorized uses and game retrieval.

Instituting a 1-mile buffer for any purpose is not reasonable as many management activities would necessarily include these areas.

Do not designate dispersed camping or recreation access routes near the boundary of the forest and Park.

No camping corridors are located near the National Park boundary. There are a few isolated access routes that may be designated near the boundary (primarily on the west side of Highway 64). In all locations these access points will extend a maximum of 300 feet from the designated motorized routes. The access routes would be designated only after resource surveys are concluded. The FS will avoid locating these right on the forest-park boundary line. Site monitoring is included in the analysis.

Include a special section in the EA about adjacent lands.

Coordination with Federal, State, county, local and tribal governments is required when designating national forest system roads, trails and areas (CFR 212.54). A specific section for adjacent lands is not required.

Offer of partnerships for rehabilitation of closed roads.

This is beyond the scope of this analysis. We welcome partnership opportunities and will work closely with private land owners and other agencies as future projects are evaluated for retention or decommissioning of the administrative use roads.

There is a floating road segment near the Park boundary.

This has been identified and appears to be an error in the proposed action road system that will be removed.

Will the visitor use map remove all roads except those in the designated road system?

The Motor Vehicle Use Map (MVUM) is the legal instrument showing the designated road system, locations of camping corridors, and providing visitor information. It will include only the system of roads designated for motorized use. The forest visitor map will continue to show all roads on the District. It is recommended the forest visitor map be used in conjunction with the MVUM since it has much more detailed information to help visitors orient themselves.

References are made to both Ecosystem Management Areas and Geographic Areas

These have been corrected in the environmental assessment.



Agency
Comments

AZ Game & Fish
Dept.

Support for
prohibition against
cross-country travel

Thank you for your comment.

Propose motorized game retrieval for deer and elk during open seasons for these animals, and for 24 hours following each season. CHAMP hunters have permission to recover all legally taken big game during their permitted seasons provided it doesn't cause resource damage.

The District is currently considering game retrieval for elk only during all elk seasons. We have amended the wording to include 24 hours following the end of each season providing it can be accomplished without causing resource damage.

In order to meet big game harvest and mgt objectives recommend the 1-mile vehicle access limit be removed.

TMR requires that an exception for big game retrieval include a restriction on the distance. The majority of the district can be accessed within one-mile of the proposed road system.

Emphasize no big game retrieval if resource damage is caused.

The Wet Weather Roads policy may be implemented as needed to help prevent resource damage. Emphasis has been placed on prevention of resource damage and use of the minimum number of trips for game retrieval.

Provision of State programs related to disabled hunters.

Federal law requires that opportunities for hunting be provided for all people who desire to participate in the sport.

Enforcement of lawful big game retrieval

AZ Game and Fish will continue aerial hunt patrols looking for violations. The FS expects to partner with AZ Game and Fish and other agencies to enforce the Travel Management Rule.

AZ Game and Fish recommends open roads be signed and roads for administrative use not be signed. Reclassify administrative use roads.

The Motor Vehicle Use Map (MVUM) is the legal instrument showing the designated road system, locations of camping corridors, and providing visitor information. It will include only the system of roads designated for motorized use. The forest visitor map will continue to show all roads on the District. It is recommended the forest visitor map be used in conjunction with the MVUM since it has much more detailed information to help visitors orient themselves. Roads for administrative use will continue to need to be signed just as the designated road system is signed. The district expects to make travel management information available to forest users, and to provide field contacts to help forest users comply with the rule. Forests are required to review the MVUM annually, and make corrections

and adjustments as needed.

Prefer Alternative 3 since it allows additional vehicular access to the forest.

The deciding official will use the analysis, public comments, and biological evaluations provided to determine what the designated road system will be.

Support for control of dispersed camping, but make sure there are enough opportunities for dispersed camping especially during hunting season.

Some additional language has been added to the roadside parking description. The district proposes to designate many of the existing recreation access routes as well as a limited number of dispersed camping corridors to accommodate the demand for dispersed camp sites. Since the district will review the MVUM annually, there will be opportunities to monitor use, and analyze the need for additional camping along open roads.

Need for AZ Game & Fish Dept access to wildlife waters

The district will pursue an agreement with the State regarding access to wildlife water developments.

Request that Forest and AZ Game and Fish work together to develop OHV and motorcycle trails.

The district will monitor OHV use, and may consider analysis of OHV trails in the future.

Roads indicated open that are decommissioned (FR 2722, 64A)

Thank you, adjustments have been made to the open road system database to reflect these changes.

Combined Environmental Group Letter	Center for Biological Diversity, et.al.	1/30/2009	Tusayan RD should prepare and Environmental Impact Statement	The Tusayan RD Travel Management project does not include any of the classes normally requiring the preparation of an environmental impact statement. Based on the
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Combined
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Cumulative Impacts
should include all AZ
forests

environmental assessment the
agency makes a determination of
whether to prepare an EIS, or not
and to make a finding of no
significant impact.

The agency assesses the
cumulative effects of the actions
(including past, present and
reasonable foreseeable future
actions) on the affected
environment. The agency must
determine what information is
useful and relevant because they
have a significant cause-and-
effect relationship with the direct
and indirect effect of the proposal
and its alternatives.

Air, Soils, Watershed
analyses are not
adequate and did not
consider fugitive dust
or climate change.

Since there are no live streams in
the analysis area, the primary
concern is one of soil erosion.
The soils and watershed analysis
identifies ephemeral streams as
being the main points of concern
for soil erosion. Mitigation
measures have been developed
to target these places and
prioritize road work where roads
cross or follow drainages. In
addition, dispersed camping
corridors and access routes will
be eliminated where there are
specific erosion hazard concerns.

Fugitive Dust needs
to be addressed.

Fugitive dust is particulate matter
that is introduced into the air from
human and/or natural activities,
such as movement of soil,
vehicles, equipment, blasting and
wind. The Arizona Department of
Environmental Quality regulates
emissions of fugitive dust in air
quality attainment areas in the
state. Tusayan RD is not located
in an air quality attainment area.

Climate change
needs to be
addressed.

Large scale climate models
predict continuation of the drought
that the area is experiencing as
well as increases in temperatures.
Resources will be affected by the
predicted changes and the EA

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The Wildlife analysis is inadequate and does not consider a baseline unroaded condition for comparison of alternatives.

has evaluated these effects to the extent that it is possible at this time.

The wildlife report analyzes direct and indirect impacts of each alternative, and the exceptions relating to motorized cross-country travel that are proposed. NEPA requires that the proposed changes be compared to the existing condition. There is no requirement to attempt to compare to the turn of the century "un-roaded" landscape prior to vehicular travel for wildlife. The existing condition is the current roaded landscape. The agency assesses the cumulative effects of the actions proposed (including past, present and reasonably foreseeable future actions) on the affected environment. The agency must determine what information is useful and relevant because they have a significant cause-and-effect relationship with the direct and indirect effect of the proposal and its alternatives.

Invasive Weeds will be increased as a result of Travel Management.

The invasive weed report indicates that the action alternatives would reduce the road density and in turn reduce the spread of invasive weeds. The FS annually monitors and treats invasive weeds. Prohibition of motorized cross-country travel as compared to unregulated travel is an improvement. The direct and indirect of the proposed exceptions to motorized cross-country travel are included in the analysis in Chapter 3.

All Heritage sites would be threatened as a result of the alternatives analyzed.

The Heritage analysis compares the existing condition impacts to cultural resources to the proposed action and alternatives. The primary objective of TMR, the prohibition of motorized cross-country travel, reduces the potential impacts to cultural sites throughout the district. The Heritage section analyzes the

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	direct and indirect effects of the proposed exceptions.
Impacts of motorized big game retrieval have not been adequately analyzed.	<p>At this time it is difficult to distinguish the effects of motorized big game retrieval from those of general motorized cross-country use. The implementation of TMR would prohibit the general motorized cross-country use, thus enabling the District to better determine the effects of big - game retrieval. Monitoring is proposed to evaluate the effects of motorized big game retrieval. Additional measures include use of Wet Weather Travel policy that prohibits any travel off the wet weather road system and AZGFD as the FS enforce State hunting regulations regarding natural resource damage.</p> <p>The District is currently considering game retrieval for elk only during all elk seasons. The FS and AZ Game and Fish Dept (AZGFD) maintain a cooperater relationship in order to carry out each agency's mandates. The FS manages the habitat for wildlife, AZ Game and Fish manages the wildlife. The FS has concerns about impacts to habitat from elk and view game retrieval as a tool to assist Game and Fish with elk population management.</p>
The Williams TMR planning effort galvanized members of the community and caused additional controversy.	<p>This is outside the scope of the Tusayan RD Travel Management project. Tusayan TMR public meetings have provided opportunities for concerns to be voiced, and have provided information about various aspects of travel management.</p>
Motorized recreation use has been favored over non-motorized use in the analysis.	<p>This is a travel management project and necessarily analyzes the effects of motorized use. Non-motorized uses have been considered in the recreation and social/economic sections of Chapter 3. Several sources have been used to characterize recreation use at the District. The</p>

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Purpose and Need

most recent study completed is the Arizona State-wide Comprehensive Recreation Plan which looked in detail at OHV use and users. Unfortunately previous studies such as the National Visitor Use Monitoring report and the Northern Arizona University Recreation Use Study do not reflect the growth of OHV use in Arizona in the past 5 years.

Thank you for your comment. It is critical that the purpose and need address the requirements of the TMR.

No Action/Baseline

The no action alternative must identify the existing conditions and management, and this is used for comparison for the proposed action and alternatives.

Failure to set
sideboards and
identify
methodologies

Each resource specialist analyzes the direct and indirect effects of the proposed action and alternatives.

TAP not available in a
timely manner

There are no timelines specified in the TMR or Roads Analysis process. The District prepared a revised TAP in 2008 and released this in conjunction with the Environmental Assessment. The 2006 TAP was released for public input. Additional guidance was provided to national forests and the 2006 TAP was revised when first developed so that public input could be collected and incorporated. The 2008 TAP provided additional details and information that was not originally included in the 2006 TAP. The Roads Analysis Process specifies analysis of the existing forest road system. The inclusion of short segments of unauthorized routes is included in the environmental analysis because these would be included as exceptions to the TMR, otherwise unauthorized routes are not managed a part of

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the designated forest road system.

Range of alternatives The FS identified a range of alternatives to analyze based on issues identified during the scoping period. Four alternatives were originally identified. During preliminary effects analysis it was found that the fourth alternative, provided by conservation organizations, failed to meet the intent of the TMR and there were several specialist concerns with the proposal. It was subsequently dropped from detailed analysis for this reason.

Proposed Action does not reflect the minimum road system The minimum road system is defined as: the road system needed for safe and efficient travel and for administration, utilization and protection of National Forest system lands (36 CFR 212.5b). This system was identified during the TAP with interdisciplinary analysis and public input.

The Proposed Action fails to close unnecessary routes and doesn't follow the TAP matrix. The TAP matrix is one step of the Roads Analysis process. It places roads into 4 categories: high value-high risk, high value-low risk, low value-high risk, low value-low risk. Subsequent steps of interdisciplinary analysis and public input are used to further define the minimum road system. The TAP matrix does help to identify priorities for road maintenance and provides a for subsequent environmental analysis for road decommissioning.

The Proposed Action does not reflect FS budget capabilities The alternatives propose reducing the total miles of forest roads by 22-25%. This will make progress toward better and more cost effective maintenance of the road system. Not all designated roads are maintained each year; the District prioritizes maintenance

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Dispersed camping
corridors will cause
resource affects and
spread noxious
weeds.

needs based on the road
maintenance level, distribution of
use, and need. The FS budget
will never provide adequate
funding for all management
activities, this is why the District
prioritizes its work.

The District identified areas where
dispersed camping is occurring,
and determined that camping is a
continuing and desirable use.
District recreation managers have
distinguished two patterns of
camping: the Grand Canyon
National Park visitor, and the
District recreation user. Camping
corridors in response to the
GCNP visitor use pattern of short
term, roadside use. Of the 17
miles proposed, resource surveys
completed during the spring and
summer of 2009 would determine
where corridors would be located.
The corridors will be monitored for
over-use and spread of noxious
weeds. Weeds will be treated
when found in these areas.

Develop a Travel
Management Plan

The Tusayan Travel Management
EA proposes to implement the
Travel Management Rule. A
comprehensive travel
management plan is beyond the
scope of this project.

Interface with Forest
Planning

The Tusayan Travel Management
EA must follow the current
guidance in the Forest
Management Plan, or amend it,
as this project would, to prohibit
motorized cross-country travel on
Tusayan RD. Delaying this project
or speculative proposals
anticipating what the results of the
forest plan revision effort will be
are beyond the scope of this
project.

Glossary

- **Abbreviations:**
 - **AASHTO.** American Association of State Highway and Transportation Officials.
 - **CFR.** Code of Federal Regulations.
 - **EM.** Forest Service Engineering Manual.
 - **EO.** Executive Order.
 - **FSH.** Forest Service Handbook.
 - **FSM.** Forest Service Manual.
 - **USC.** United States Code

- **Access Right (1).** The right of ingress to and egress from a property that abuts a street or highway. (23 CFR 710.105)
- **Access Right (2).** The authority to pass over a property for purposes of ingress to or egress from a piece of property. (FSM 5460.5)
- **Administrative unit.** A National Forest, a National Grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System. (36 CFR 212.1, 36 CFR 261.2)
- **All-Terrain Vehicle.** A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator. (FSH 2309.18.05)
- **Annual Maintenance.** Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Construction (1).** The supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a highway, including bond costs and other costs relating to the issuance in accordance with section 122 of bonds or other debt financing instruments and costs incurred by the State in performing Federal-aid project related audits that directly benefit the Federal-aid highway program. Such term includes--
 - (A) locating, surveying, and mapping (including the establishment of temporary and permanent geodetic markers in accordance with specifications of the National Oceanic and Atmospheric Administration of the Department of Commerce);
 - (B) resurfacing, restoration, and rehabilitation;
 - (C) acquisition of rights-of-way;
 - (D) relocation assistance, acquisition of replacement housing sites, and acquisition and rehabilitation, relocation, and construction of replacement housing;
 - (E) elimination of hazards of railway grade crossings;
 - (F) elimination of roadside obstacles;
 - (G) improvements that directly facilitate and control traffic flow, such as grade separation of intersections, widening of lanes, channelization of traffic, traffic control systems, and passenger loading and unloading areas; and
 - (H) capital improvements that directly facilitate an effective vehicle weight enforcement program, such as scales (fixed and portable), scale pits, scale installation, and scale houses. (23 USC 101)

- **Construction (2).** The erection, construction, installation, or assembly of a new fixed asset. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Culvert.** A conduit or passageway under a road, trail, or other obstruction. A culvert differs from a bridge in that the top of a culvert does not serve as the road surface and is constructed entirely below the elevation of the traveled way. (Handbook of Steel Drainage & Highway Construction Products).
- **Cyclic Maintenance.** Preventive maintenance activities that recur on a periodic and scheduled cycle. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Decommission.** Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems nor require maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Deferred Maintenance.** Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or non-critical at any point in time. Continued deferral of non-critical maintenance will normally result in an increase in critical deferred maintenance. Code compliance (e.g. life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Design Speed.** A selected speed used to determine the various geometric design features of the roadway with respect to topography, anticipated operating speed, the adjacent land use, and the functional classification of the road. The selected design speed should be consistent with the speeds that drivers are likely to expect on a given highway facility. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Design Vehicle.** A selected vehicle, with representative weight, dimensions, and operating characteristics, used to establish the design controls for the road. There are four general classes of design vehicles: (1) passenger cars, (2) buses, (3) trucks, and (4) recreational vehicles. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **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. (36 CFR 212.1)
- **Easement (1).** A type of special use authorization (usually granted for linear rights-of-way) that is utilized in those situations where a conveyance of a limited and transferable interest in National Forest System land is necessary or desirable to serve or facilitate authorized long-term uses, and that may be compensable according to its terms. (36 CFR 251.51)
- **Easement (2).** An interest in real property that conveys a right to use a portion of an owner's property or a portion of an owner's rights in the property. (23 CFR 710.105)
- **Easement (3).** An interest in land owned by another party that entitles the holder to a specific limited use or enjoyment. (FSM 5460.5)
- **Forest Road.** A road wholly or partly within, or adjacent to, and serving the National Forest System that is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (23 USC 101)
- **Forest Road and Trail Act Easement.** An easement issued by the Forest Service to a Public Road Authority for a non-Federal-Aid road or non-Forest Highway crossing National Forest System lands. (FSH 2709.12, 30)

- **Forest Road or Trail.** A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration and utilization of the National Forest System and the use and development of its resources. (36CFR 212.1, 36 CFR 251.5, 36 CFR 261.2)
- **Forest Trail.** A trail wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (23 USC 101)
- **Forest Transportation Atlas.** A display of the system of roads, trails and airfields of an administrative unit. (36 CFR 212.1)
- **Forest Transportation Facility.** A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system. (36 CFR 212.1)
- **Forest Transportation System.** The system of National Forest System roads, National Forest System Trails, and airfields on National Forest System lands. (36 CFR 212.1)
- **Forest Transportation System Management.** The planning, inventory, analysis, classification, record keeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, cost-effective, access for use, protection, administration, and management of National Forest System lands. (FSM 7705)
- **Heavy maintenance.** Work usually done by highway agencies in repairing damage normally expected from seasonal and occasionally unusual natural conditions or occurrences. It includes work at a site required as a direct result of a disaster which can reasonably be accommodated by a State or local road authority's maintenance, emergency or contingency program. (23 CFR 668)
- **Highway.** The term "highway" includes-- (A) a road, street, and parkway, (B) a right-of-way, bridge, railroad-highway crossing, tunnel, drainage structure, sign, guardrail, and protective structure, in connection with a highway; and (C) a portion of any interstate or international bridge or tunnel and the approaches thereto, the cost of which is assumed by a State transportation department, including such facilities as may be required by the United States Customs and Immigration Services in connection with the operation of an international bridge or tunnel. (23 USC 101)
- **Jurisdiction (1).** The legal right or power to interpret and apply the law. Authority or control. (Webster)
- **Jurisdiction (2).** The legal right to control and regulate the use of a transportation facility. Roads on National Forest lands are under the control of the Forest Service, except for public roads established under the Act of July 26, 1866, private roads, roads for which the Forest Service has granted rights-of-way to private landowners or public road agencies, and roads whose use and rights pre-date the National Forest. Other factors may affect jurisdiction on acquired lands or easements. Review the granting document and obtain appropriate legal opinion for these cases, when necessary. There are roads on the transportation system where the Forest Service has limited rights of use and no jurisdiction over the traffic, such as private road systems and State, county, or township roads. (FSH 7709.59.21)
- **Jurisdiction (3).** The legal right or authority to control, operate, regulate use of, maintain, or cause to be maintained, a transportation facility, through ownership or delegated authority. The authority to construction or maintain such a facility may be derived from fee title, easement, written authorization, or permit from a Federal agency, or some similar method. (23 CFR 660.103)
- **Local Road (1).** A road that primarily provides access to land adjacent to collector roads over relatively short distances at low speeds. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Local Road (2).** A forest road that connects terminal facilities with forest collector, forest arterial or public highways. Usually forest local roads are single purpose transportation facilities. (FSH 7709.54, no longer in print)
- **Low-Volume Road.** A road that has an average daily traffic of 400 or less. (AASHTO, 2001, Guidelines for Geometric Design of Very Low-Volume Local Roads)

- **Maintenance (1).** The preservation of the entire highway, including surface, shoulders, roadsides, structures and such traffic-control devices as are necessary for its safe and efficient utilization. (23 USC 101)
- **Maintenance (2).** The upkeep of the entire forest transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization. (36 CFR 212.1)
- **Maintenance (3).** The act of keeping fixed assets in acceptable condition. It includes preventive maintenance normal repairs; replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. Maintenance includes work needed to meet laws, regulations, codes, and other legal direction as long as the original intent or purpose of the fixed asset is not changed. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Maintenance Levels.** Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. (FSH 7709.58, 12.3)
 - **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 resource 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. Appropriate traffic management strategies are "prohibit" and "eliminate". 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 closed to vehicular traffic, but may be open and suitable for non-motorized uses. (FSH 7709.58, 12.3)
 - **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. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles. (FSH 7709.58, 12.3)
 - **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. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users. (FSH 7709.58, 12.3)
 - **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. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times. (FSH 7709.58, 12.3)
 - **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. The appropriate traffic management strategy is "encourage." (FSH 7709.58, 12.3)
- **Motor Vehicle.** Any vehicle which is self-propelled, other than:
 - A vehicle operated on rails; and
 - 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. (36 CFR 212.1, 36 CFR 261.2)

- **Motor Vehicle Use Map.** A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System. (36 CFR 212.1)
- **Motorized Equipment (1).** Any machine activated by a nonliving power source except small battery-powered hand-carried devices such as flashlights, shavers, Geiger counters, and cameras. (36 CFR 261.2)
- **Motorized Equipment (2).** Machines that use a motor, engine, or other nonliving power sources. This includes, but is not limited to, such machines as chain saws, aircraft, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas powered hand-carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment. (FSM 2320.5)
- **National Forest System.** As defined in the Forest Rangeland Renewable Resources Planning Act, the ``National Forest System" includes all National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012), and other lands, waters or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. (36 CFR 212.1)
- **National Forest System Land.** All lands, waters, or interests therein administered by the Forest Service. (36 CFR 251.51)
- **National Forest System 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 local public road authority. (36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2)
- **National Forest System 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 local public road authority. (36 CFR 212.1)
- **Obliteration (1).** To eliminate completely so as to leave no trace. (Webster)
- **Obliteration (2).** The reclamation and or restoration of land to resource production from that of a transportation facility. (FSH 7709.54, no longer in print)
- **Off-Highway Vehicle (1).** Any motorized vehicle designed for or capable of cross county travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. (36 CFR 212.1)
- **Off-Highway Vehicle (2).** Any motorized vehicle designed for or capable of cross county travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain; except that term excludes (A) any registered motorboat, (B) any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and (C) any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license, or contract. (EO 116-44 as amended by EO 11989). See also FSM 2355. 01 - Exhibit 01.
- **Off-Road Vehicle.** Synonymous with off-highway vehicle. (FSM 7709.55 34)
- **Open to Public Travel (1).** The road section is available, except during scheduled periods, extreme weather or emergency conditions, passable by four-wheel standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. Toll plazas of public toll roads are not considered restrictive gates. (23 CFR 460.2)
- **Open to Public Travel (2).** Except during scheduled periods, extreme weather conditions, or emergencies, open to the general public for use with a standard passenger auto, without restrictive gates or prohibitive signs or regulations, other than for general traffic control or restrictions based on size, weight, or class of registration. (23 CFR 660.103)
- **Operating Costs for Traffic Monitoring, Management, and Control.** Includes labor costs, administrative costs, costs of utilities and rent, and others costs associated with the continuous operation of traffic control, such as integrated traffic control systems, incident management programs, and traffic control centers. (23 USC 101)

- **Operating Speed.** The speed at which drivers are observed operating their vehicles during free-flow conditions. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Passenger Cars.** These include passenger cars of all sizes, sport/utility vehicles, minivans, vans and pickup trucks. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Permit.** A special use authorization which provides permission, without conveying an interest in land, to occupy and use National Forest System land or facilities for specified purposes, and which is both revocable and terminable. (36 CFR 251.51)
- **Private Road.** A road under private ownership authorized by easement to a private party, or a road which provides access pursuant to a reserved or private right. (FS-643, Roads Analysis; Informing Decisions About Managing the National Forest Transportation System, August 1999.)
- **Public Agency.** Any organization with administrative or functional responsibilities which are directly or indirectly affiliated with a governmental body of any nation, State, or local jurisdiction. (23 CFR 635.102)
- **Public Authority.** A Federal, State, county, town or township, Indian tribe, municipal or other local government or instrumentality thereof, with authority to finance, build, operate or maintain toll or toll-free highway facilities. (23 CFR 460.2)
- **Public Lands Highway.** A forest road under the jurisdiction of and maintained by a public authority and open to public travel or any highway through unappropriated or unreserved public lands, nontaxable Indian lands, or other Federal reservations under the jurisdiction of and maintained by a public authority and open to public travel. (23 USC 101)
- **Public Road.** Any road or street under the jurisdiction of and maintained by a public authority and open to public travel. (23 USC 101)
- **Reconstruction.** To construct again. (Webster)
- **Recreational Vehicle.** These include motor homes, cars with camper trailers, cars with boat trailers, motor homes with boat trailers and motor homes pulling cars. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Rehabilitation (1).** Minor reconstruction. Non-standard highway-related operation and maintenance activities to provide minor upgrades to a highway. (23 CFR 625)
- **Rehabilitation (2).** Renovation or restoration of an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Because there is no significant expansion or change of purpose for the fixed asset, the work primarily addresses deferred maintenance. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Repair.** Work to restore a damaged, broken, or worn-out fixed asset, component, or item of equipment to normal operating condition. Repairs may be done as annual maintenance or deferred maintenance activities. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Replacement.** Substitution or exchange of an existing fixed asset or component with one having essentially the same capacity and purpose. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Restoration.** To bring back to an original state. (Webster)
- **Right-of-Way (1).** Land authorized to be used or occupied for the construction, operation, maintenance and termination of a project or facility passing over, upon, under or through such land. (36 CFR 251.51)
- **Right-of-Way (2).** A privilege or right to cross over or use the land of another party for egress and ingress such as roads, pipelines, irrigation canals, or ditches. The right-of-way may be conveyed by an easement, permit, license, or other instrument. (FSM 5460.5)
- **Road (1).** A motor vehicle route over 50 inches wide, unless identified and managed as a trail. (36 CFR 212.1)
- **Road (2).** A general term denoting a facility for purposes of travel by vehicles greater than 50 inches width. Includes only the area occupied by the road surface and cut and fill slopes. (FSM 2355.05)

- **Road Construction or Reconstruction.** Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road. (36 CFR 212.1)
- **Road Decommissioning.** Activities that result in the stabilization and restoration of unneeded roads to a more natural state. (36 CFR 212.1)
- **Road Maintenance.** The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective. (FSM 7705)
- **Road Management Objectives.** Defines the intended purpose of an individual road based on management area direction and access management objectives. Road management objectives contain design criteria, operation criteria, and maintenance criteria. (FSH 7709.55, 33)
- **Roadway.** The portion of a highway, including shoulders and auxiliary lanes, for vehicular use. (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets)
- **Routine Maintenance.** Work that is planned to be accomplished on a continuing basis, generally annually or more frequently. (FSH 7709.58, 13.41)
- **Other than Routine Maintenance.** Work that can be deferred without loss of road serviceability, until such time that the work can be economically or efficiently performed. The frequency of such work is generally longer than a year. (FSH 7709.58, 13.41)
- **Service Life.** The length of time that a facility is expected to provide a specified service. (FSH 7709.56b, 05)
- **Special Use Authorization.** A permit, term permit, lease, or easement which allows occupancy, use, rights, or privileges of National Forest System land. (36 CFR 251.51)
- **Subject to the Highway Safety Act (HSA).** National Forest System roads that are open to use by the public for standard passenger cars. This includes roads with access restricted on a seasonal basis and roads closed during extreme weather conditions or for emergencies, but which are otherwise open for general public use. (FSM 7705)
- **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)
- **Trailhead.** The transfer point between a trail and a road, lake, or airfield. The area may have developments that facilitate the transfer from one transportation mode to another. (FSM 2353.05)
- **Trail Vehicle.** Vehicle designed for trail use, such as bicycles, snowmobiles, trail bikes, trail scooters, and all terrain vehicles. (FSM 2353.05)
- **Travel Management atlas.** An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps. (36 CFR 212.1)
- **Travel Route.** A road, river or trail, that is open for use by members of the general public. (36 CFR 292.21)
- **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)
Unauthorized roads are categorized into two types and recorded in the SYSTEM linear event in the Infra Travel Routes database. The two types are:
 - **Undetermined.** Roads where long term purpose and need has yet to be determined, and
 - **Not Needed.** Roads not needed for long-term management of national forest resources as determined through an appropriate planning document. (Travel Routes National Data Dictionary for Roads)
- **Vehicle.** Any device in, upon, or by which any person or property is or may be transported, including any frame, chassis, or body of any motor vehicle, except devices used exclusively upon stationary rails or tracks. (36 CFR 261.2)
- **Wheelchair.** A device designated solely for use by a mobility impaired person for locomotion, that is suitable for use in an indoor pedestrian area. (36 CFR 212.1, FSM 2352.05)

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