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Travel Management and Infrastructure Specialist Report

For the Travel Management Rule Environmental Impact Statement

USDA Forest Service Southwestern Region
Apache-Sitgreaves National Forests

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Travel Management and Infrastructure_____

This Specialist Report examines the potential impacts of the implementation of the Travel Management Rule (2005) for the Apache-Sitgreaves National Forests (Forests) on travel management and infrastructure. The report is based on the existing conditions, management guidelines from the Forests Land and Resource Management Plan (Forest Plan), Travel Management Rule (TMR), and the Travel Analysis Report (2008). The analysis includes key components of the various proposed alternatives of the Environmental Impact Statement (EIS), such as route designations, dispersed camping corridors, motorized big-game retrieval, and designated Areas.

Background

The Apache-Sitgreaves National Forest's (A-S NF's) completed a Travel Analysis Report January 30, 2008. The Travel Analysis Process (TAP) is summarized in the report. Before the FS adopted the Travel Management Rule, the Roads Analysis Process was used, as described in the Forest Service Manual 7112.1 and publication FS-643, Roads Analysis: Informing Decisions About Managing the Transportation System. As required by Federal regulations 36 CFR §212, the Travel Analysis Process (TAP) revised and updated the Roads Analysis Process, and added motorized trails. The TAP was a broad-scale analysis that encompassed the entire administrative unit and was a comprehensive undertaking to match the transportation system to the desired future condition, as determined through existing direction, public input, and agency resource specialist suggestion. The TAP outcomes are a set of proposals for changes to travel management direction and to the forest transportation system. The TAP was not a decision-making process. These changes are to be evaluated through a subsequent NEPA process. Travel Analysis is an iterative process. Some information in the TAP is now obsolete, some closures in affect at that time have since been lifted and others put in place. Additional public scoping, administrative changes and more detailed studies by resource specialists on the forests have led to a proposed alternative that varies from the TAP report's recommended changes to the transportation system.

The National Forest Transportation system (NFTS) consists of roads, trails and airfields. The NFTS provides for protection, development, management, and utilization of resources on the national forests. There are unauthorized roads and trails existing on the Forest that are not currently part of the NFTS. Changes to NFTS must take into account the need to provide for both adequate public safety and adequate maintenance of any roads and trails that will be designated for wheeled motor vehicle use. The analysis in this report focuses primarily on these two features of the NFTS.

The goal of the NFTS is to provide public and administrative access to the Apache-

Sitgreaves National Forests by providing a safe, economical, and efficient system of roads and trails, while minimizing effects to the local environment. Planning and providing for well-designed access enhances opportunities for public use and enjoyment of the forests.

Key Issues

The draft EIS has identified four key issues to be addressed in alternatives and discussion in the EIS. These are as follows:

Issue #1: Motorized access for dispersed camping

Issue #2: Motorized big game retrieval

Issue #3: Impacts to resources from motorized use

Issue #4: Economics

Analysis Topics

Several issues related to travel management and infrastructure were identified through the scoping process.

Topics in analysis of travel management and infrastructure on the Forests as it relates to travel management are as follows:

- Access
- Motorized Use
- Road maintenance requirements for alternatives/ Budget management to handle maintenance activities
- Safety
- Road Density

Access

The topic of access elicited a very strong response from some commenter's, who stated access to the ASNFs should not be limited in any way. The proposed action was deemed too restrictive for most; however, there were some commenter's who favored limited access in support of protecting and preserving the ASNFs' natural resources. Unrestricted access to the ASNFs' for camping, hunting, firewood (fuel wood) collection, reaching private property, and concerns over elderly and/or disabled people's access to the forest was primarily mentioned.

Commenter's provided specific information to the Forest Service regarding which roads they wanted closed or open. This information was considered when developing alternatives.

This specialist report will quantify the increase or decrease in access to the Forests based on miles open routes to motorized use for each alternative.

Motorized Use

The topic of motorized use includes consideration of All-Terrain Vehicles (ATVs), Off - Highway Vehicles (OHVs), and Off-Road Vehicles (ORVs). Commenter's provided feedback on the current policy vs. the proposed policy, safety, impacts to wildlife and sensitive habitats, and appropriate routes for motorized travel.

Commenter's are generally polarized regarding keeping all the forest roads open to motorized use or closing all forest roads to motorized use. However, there are some commenter's who expressed a middle ground position in which a minimum number of roads should be designated for motorized use in order to protect natural resources.

This specialist report will quantify the increase or decrease of the motorized use opportunities available on the Forests based on miles or motorized routes open to motorized use.

Maintenance

The topic of maintenance was mixed. Comments included encouraging the Forests to maintain existing roads and trails, to decommission roads that no longer are needed or maintained due to budget constraints, and to consider the congestion and increased maintenance that may occur if the quantity of open roads is reduced.

One commenter indicated that maintenance did not appear to have occurred on the Forests for years and that the roads were still in good shape. In contrast, others indicated that road maintenance is a valid issue and noted budget constraints as an issue. Areas where road maintenance was needed were identified.

The Arizona Game and Fish Department (AGFD) provided comments indicating which specific roads they would like access to in order to maintain their properties or improvements.

This specialists report will quantify the increase or decrease of estimated annual maintenance funding needs for each alternative.

Safety

The issue of safety was mentioned in regard to a variety of topics: access; mixed trail use; an individual suing someone due to an accident with a motorized vehicle; the proposed action restriction requiring parking within a vehicle length of a road; which roads are unsafe for ATV use; camping near roads being a possible safety hazard; and the proposed 50-inch ATV trail width being unsafe.

Safety was mentioned with regard to access, requesting that there be no road closures or restrictions to forest access unless there is a safety or environmental concern, stating that

limiting hunting areas or open roads could cause congestion that might involve a hunting accident, and requesting that roads be evaluated for steepness or other conditions that might make them unsafe for use.

To address safety on the Forests, individuals suggested posting warning signs at roads where travel may not be safe, maintaining roads for safety's sake, separating motorized and non-motorized trails with adequate signage, making ATV trails wider, and identifying specific alternate routes that may be safer for travel than existing routes.

This specialist report will address the increase or decrease of safety related to the difference from the current transportation system and the alternatives with regards to motorized travel.

Road Density

The AGFD recommends that road densities in a specific area not exceed any more than what is proposed; a letter from a collaboration of environmental organizations advocates for a road density on the ASNFs of 1 mile per square mile based on general forest lands and not include Wilderness or Inventoried Roadless Areas. A request was also made that the Forest Service use the known user-created routes when calculating road density. The Apache-Sitgreaves national Forests Plan states as a Standard and Guideline that "Total road densities should average 3.5 miles/ square mile or less. Open road densities should average 2.0 miles/square mile or less.

This specialist report will quantify the road density for each alternative and identify if it is with -in the A-S LMP.

Affected Environment

National Perspective

Nationally, the estimated 380,000 miles of Forest Service roads on NFS lands are extensive and diverse. Most of the existing road system was built over the past 50 years for harvesting timber. In the decades after World War II, logging traffic tripled, peaking in 1990. When timber harvests on the national forests declined in the 1990s, logging traffic fell to levels reminiscent of the 1950s. By contrast, forest road use for recreation has grown to 10 times its 1950s rate. Driving for pleasure is the single largest recreational use of Forest Service–managed lands, and more than 1.7 million vehicles use these roads each day to visit national forests (Forest Service 2002).

Almost all National Forest visitors travel at some point on NFS roads. They are an integral part of the transportation system for rural counties. Forest roads provide access for recreation, research, fish and wildlife habitat management, grazing, resource extraction, fire protection, insect and disease control, and private land use, among others.

Although NFS roads (Maintenance Levels 3–5) are generally open and available for public use, that use is at the discretion of the Secretary of Agriculture. Forest Service Manual (FSM) 7731 states that through authorities delegated by the Secretary, the Forest Service may restrict or control traffic to meet specific management direction (Forest Service 2001b).

Roads are located, designed, constructed and/or reconstructed, and managed commensurate with the potential use, the resource served, and the traffic service level. Traffic service levels describe the significant traffic characteristics and operating conditions for a road. These levels are identified as a result of the Forests' Travel Analysis Report. Road Management Objectives are established for each road and may be expressed in terms of the area and resource to be served, environmental concerns, amount and type of traffic, life of facility, and functional classification.

The goal of the public motorized transportation system on the NFS lands is to provide access to Forests users by providing an efficient and economical system of roads and trails while minimizing the effects on the local environment. Reasonable, well-designed access enhances the opportunities of the forest visitor or user.

Road Network

Access to the communities and the travel ways that lead to NFS lands begins with highly developed state highways. Numerous county roads branch off from the state highway system. Many of these routes have existed since the area was first settled. Some lead directly onto the Forests. The county-managed routes are designed to accommodate passenger cars, but they are not always paved or graveled.

Roads that exist on NFS lands may fall under several jurisdictions. Most are under Forest Service jurisdiction. These are called NFS roads. NFS roads are considered necessary for the administration, use, and management of public lands. Counties, states, and private citizens have received rights-of-way or in some cases obtained jurisdiction over some of the roads on NFS lands. To keep track of the jurisdictional responsibilities, the forests maintain an Access Management/INFRA database inventory of all roads that cross the forest and their jurisdiction and maintenance responsibilities. Rights that have been previously established will continue to be recognized under the Travel Management Rule planning. Refer to the Glossary (Section VII) and the Forests' Travel Analysis Report (2008) for road network terms.

Apache-Sitgreaves National Forests System

There are 2,832 miles of open National Forest system roads and 156 miles of National Forest System motorized trails (Table 1). In looking at the existing transportation system, as described by the most current information in the Forest's transportation database, many data errors and outdated information were discovered:

- 100 miles of roads coded as closed (maintenance level 1) in the database are actually being managed as open and public motorized used is being allowed on the ground.
- 375 miles of roads coded as decommissioned in the database are actually being managed as open and public motorized used is being allowed on the ground.

The 2,832 miles of open National Forest System roads includes these 475 miles. This system reflects current ground conditions to the best of our available knowledge, how the forests have been managing the road system, and how the public has been using the road system. The existing system is made up of roads that are open to high-way legal vehicles and roads that are open to all motorized vehicles. Highway legal vehicles refer to National Forest System roads that are open to use by the public for standard passenger cars, maintenance levels 3, 4 & 5. 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). Roads that are open to all motorized vehicles are for use by high clearance vehicles, maintenance level 2, and passenger car traffic is not a consideration in design or maintenance.
An inventory of unauthorized routes has not been completed, but it is estimated that there are hundreds of miles of unauthorized routes on the ASNFs.

Approximately 1,480,000 acres (approximately 70 percent) of the forests are currently open to cross-country motorized travel. This has been in place since the Apache-Sitgreaves Land and Resource Management Plan (forest plan) was approved in 1987. Forest plan amendment 2 states that the forests are open to off-road vehicle (ORV) use with the exception of designated Wilderness and the Blue Range Primitive Area.

Table 1.

Existing Road Mileage on the Apache-Sitgreaves National Forests as of 5/26/2010 GIS data base

Item		Miles
Roads Open only to Highway Legal Vehicles		765
Maintenance Level 5	49	
Maintenance Level 4	88	
Maintenance Level 3	628	
Roads Open to All Motorized Vehicles		
Maintenance Level 2		2067
Roads Closed		
Maintenance Level 1		3,372
Trails Open to Motorized Vehicles		156
Total		6,360

The transportation system is accessed from the south by State Highway 260 from Payson, State Highway 60 from Globe, and U.S. Highway 191 from Clifton. Access is provided from the north by State Highway 377 from Holbrook, State Highway 277 from Snowflake, U.S. Highway 60 from Vernon, and State Route 260 and U.S. 180/191 from Eagar. U.S. Highway 180 also provides access to the Forests from New Mexico.

Historically, the roads on the Forests were created mostly for commodity access, primarily mining, timber, and livestock production. Some were alternate routes that connected small communities. While roads still continue to provide access for, vegetation management, livestock management, and mine extraction, the majority of use today comes from public recreation and forests products extraction.

Road Maintenance

NFS roads are planned, designed and constructed for different modes of travel. These planned modes of travel require an associated maintenance schedule and maintenance intensity which is determined by the planned use, the road management objectives, and road design components, for each specified road. Roads have an Objective ML, which indicates the long-term planned maintenance strategy for that road, and an Operational ML, which is the current physical condition of the road. Operational and objective maintenance levels may or may not be the same for a given road.

The Road Maintenance and Operations System tool provides costs by maintenance level. Annual maintenance needs are calculated per mile by maintenance level.
Annual maintenance involves the regular, cyclical maintenance required to keep a road functioning in accordance with the assigned maintenance level. Annual maintenance needs for ML 2 roads average $220 per mile local unit rates. Maintenance for these low standard roads typically involves addressing resource concerns, including drainage. User-comfort is not a consideration. Annual maintenance needs for ML 3 – ML5 roads average $4,911 to $10,587 per mile local unit rates. Costs are higher because these roads tend to be wider, require a higher standard of maintenance including surface blading for passenger car vehicle use and comfort.

As shown in Table 2, the Forests annual maintenance needs using local average unit costs totaled $4,515,849, compared to a budget of $1.492 million in 2007 (Apache-Sitgreaves Travel Analysis Report 2008), 2.046 million in 2008 and 2.071 million in 2009. Other funds may be provided through commercial road use permits, work associated with cost-share agreements, and allowances associated with timber sales.

Deferred maintenance tasks are the cumulative total of all annual maintenance tasks that are not accomplished as needed or scheduled. Deferred maintenance costs for ML 2 through ML 5 roads currently averages $171 to $40,842 per mile. If annual maintenance funds and accomplishments do not keep up with the required tasks, deferred maintenance backlogs continue to grow. Smaller tasks not accomplished over time may result in

major reconstruction needs. In 2007, deferred maintenance on the Forests had accumulated to $50,095,825 (Apache-Sitgreaves Travel Analysis Report 2008).

Table 2. Annual Road Maintenance Costs (Forest Service TAR 2008)*

Maintenance Level	Number of Miles*	Forest Annual Mtc. Needs Forest Unit Costs (per mile)	Forest Annual Maintenance Needs using Forest Unit Costs	Forest Deferred mtc. Needs (per mile)	Forest Total Annual & Deferred Maintenance Impact to Forest Budget	Forest Annual Mtc. Needs Regional Avg. Unit Costs (per mile)**	Forest Annual Maintenance Needs Using Regional Average Unit Costs
5	42	$10,587	$444,654	$40,842	$2,160,004	$11,273	$473,466
4	84	$4,501	$378,084	$55,972	$5,079,753	$9,851	$827,484
3	600	$4,911	$2,946,600	$71,427	$45,802,722	$6,751	$4,050,600
2	2,041	$223	$455,143	$171	$804,583	$420	$857,220
1	3,388	$86	$291,368	$140	$764,841	$107	$362,516
Total	**6,155**		**4,515,849**		**$54,611,902**		**$6,571,286**

*Number of Miles based on GIS data Sept. 14, 2007 and does not reflect data errors found and reflected in Table 1.

**Regional Avg. Unit Costs are shown for comparison to the local unit costs. Local unit costs are used for comparison of alternatives.

Access

Commodities

Commodities include movement of livestock, mining extraction, timber extraction, and product gathering (e.g., firewood), although on a smaller scale. Roads provide access for private in-holdings and in some cases areas for research and development. Special-use permits can be issued to individuals and companies for road use and maintenance requirements so they may access and execute approved commodities-related projects.

Recreation

The Forests attract a large number of visitors every year. Most are in the area to recreate. Access to the forest is critical for accommodating many recreation uses. There are two types of recreation a transportation system serves. One is for destination recreation. For example, the road serves as access to a trail, trailhead, fishing site, picnic site, camping site, scenic view, etc. In this type of recreation, the road serves as the means to get to a drop-off point to engage in the recreation activity. The other is where the road and trail itself serves as the focus of the recreation activity. Examples include use of the road for pleasure driving, four-wheel driving, motorcycling, riding ATVs, biking, horseback riding, hiking, snowmobiling, and cross-county skiing.

While NFS roads still continue to service commodity and private in-holding access, these roads have evolved primarily for recreation use and access. Tourism has become the primary industry for the area, and the Forests are a key component of most visitors' vacation experience.

Seasons

Seasonal limitations are placed on roads to protect resources. Some of these restrictions are to protect the road itself. Most roads are native surface and vulnerable to accelerated erosion during spring runoff and early fall snows. Other restrictions are in place to limit disturbance to wildlife and other sensitive areas during critical times. The travel management planning process may dictate summer and winter use periods along with other seasonal restrictions necessary for resource protection. It should be noted too that at any time a decisionmaker can issue an order to restrict access to protect users and/or the resource as necessary.

Mixed Use

Motorized mixed use is defined as designation of an NFS road, Maintenance Level 3–5, for use by both highway-legal and non-highway-legal motor vehicles (Forest Service 2005a). NFS policy is to conduct a motorized mixed-use analysis on any road where mixed use is proposed. The baseline for analysis is the Forest Service regulations, directives, and applicable state and local laws. Risks are identified and recommendations prepared that may include mitigation measures that would reduce the risk associated with designating the road for motorized mixed use.

While most of the Forests' Maintenance Level 3–5 roads are designed primarily for use by highway-legal vehicles, two roads, NFSR 504 – Heber Mormon Crossing and NFSR 169 – Deer Lake Road provide recreational access for all-terrain vehicles and other non-highway-legal OHVs. Designating NFS roads for motorized mixed use involves special safety and engineering considerations. A mixed use study was completed on these two roads. The report provided a summary of findings as follows:

Implementing the universal mitigation measures, especially improved signing and better communication will reduce crash probability.

Road mitigation should be prioritized regardless of mixed use, along with implement8ing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

In general, these roads receive less traffic than other facilities within the ranger district. These roads are maintained to a standard allowing efficient passenger car through traffic at speeds up to 35 mpg for prudent drivers on straight-aways. Based on speeds and their associated high risk for crash severity, designating the roads as open only to highway legal vehicles would provide the lowest crash probability.

Risk without mitigation: NFSR 504, Crash probability-Low, Crash severity – High

Risk without mitigation: NFSR 169, Crash probability – Low; Crash severity – High

Alternatives and mitigation Measures: For all situations, the following mitigation measures apply:

- *Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.)*
- *Reduce "sign pollution". Separate cluttered signing and avoid unnecessary items.*
- *Clear brush and shape cut-slopes along NFSR 504 to improve sight.*
- *Upgrade all signing on NFSR 504 and NFSR 169 MUTCD standard, including recreation signing placed along the roadways.* (An Engineered sign study was performed on both NFSR 504 and 169. NFSR 504 has been resigned per the sign study in FY 2008. NFSR 169 will be resigned per the sign study in FY 2010. The sign study was done for compliance with MUTCD and does not include recreation signing or additional signing requirements for OHV's)
- *Cleanup and eliminate vandalism stickers that can confuse forest visitors using the area.*
- *Combine the appropriate enforcement measures with the allowed uses for the road.*
- *Educate law enforcement personnel on state laws; coordinate with other agencies to improve enforcement consistency.*
- *Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands and resource protection measures.*

The study in full text can be found in Appendix A of the Travel analysis Report. The district has chosen to continue the mixed use on these two roads. There are no additional roads proposed for mixed use under the alternatives.

NFS Trails

There are both NFS motorized trails and NFS non-motorized trails in the current transportation system. Most of the non-motorized trails are in established Wilderness and Primitive Areas and are open to travel on foot and horseback only.

Statute, Regulation, Forest Plan and Other Direction

Within the context of annual funding (affordability), resource management activity, and

priorities established by Congress and the Administration, the Forest Service endeavors to provide a a safe experience for users traveling on NFS roads and trails. It is always the ultimate responsibility of users to drive safely and follow all applicable laws. The following publications specifically address the design of NFS roads and trails:

AASHTO: Geometric Design of Very Low-Volume Local Roads (AASHTO 2001)

USDA Forest Service EM-7100-15: Sign and Poster Guidelines (USDA FS 2005d)

USDA Forest Service Manual (FSM) 7700: Transportation System (FSM 2009b)

USDA Forest Service Handbook (FSH) 7709.55: Road Preconstruction Handbook (FSH 2003)

USDA Forest Service FSH 2309.18: Trails Management Handbook (FSH 1991b)

Travel Management Rule

On November 9, 2005, the Forest Service published a new regulation entitled, *Travel Management; Designated Routes and areas for Motor Vehicle Use; Final Rule* (Travel Management Rule), which modified motor vehicle use direction for NFS lands under 36 CFR §212, 251, 261 and eliminated 36 CFR §295. The rule provides guidance to the Forest Service on designation and management of motor vehicle use on NFS lands, and requires formal designation of roads; trails and areas open to motor vehicle use on each national forest and grassland (USDA FS 2005h)

Forest Service Manuals and Handbooks

Forest Service Manual Sections 2350 and 7700 contains agency policy for management of the National Forest Transportation System. Agency policy requires the development of the trail management objectives (TMO's) and road management objectives (RMO's). The TMO's and RMO's document the purpose for each trail or road.

The purpose for the trail or road sets the parameters for maintenance standards, needed to meet user needs, resource protection and public safety. Forest Service Handbook 7709.59 describes the maintenance management system the Forest Service uses and the maintenance standards needed to meet road management objectives (RMO's) for the road system, with emphasis on public safety (FSH 2009b, 2009a).

In a 2009 memorandum of Understanding (MOU) with the FHWA, the Forest Service agreed to manage a subset of National Forest System Roads defined as "public roads" (maintained for passenger car vehicles) as directed in FSM 7730.5 with a definition of "safety requirements: as directed in FSM 7733. These roads have maintenance levels (ML) of 3, 4, and 5. The Forest Service and FHWA agree that while these roads are not "public roads" per se, as for example a deeded interstate highway is, most are "open to public travel". "Open to public travel" defines a National Forest System Road as

available for use by the public, except during scheduled periods, extreme weather, or emergency conditions, and passable by highway legal standard passenger cars.

Arizona State Laws

The Apache-Si*tgreave*s National Forests refer to state law for legal motor vehicle classifications. All-terrain and off-road recreational vehicles that operate only on dirt roads located in unincorporated areas of Arizona must be titled and have a plate, but are exempt from registration and insurance requirements. Both all-terrain and off-road recreational vehicles can be ridden, as allowed, cross country. Registered and insured all-terrain vehicles can be used on public highways when operated by a licensed driver.

"Generally, roads marked with a horizontal sign on national forestlands require motor vehicle registration. Roads marked with vertical signs generally do not mandate registration." (*A Guide to Off-Highway Vehicle Laws, Rules, and Regulations*; Arizona Game and Fish Department; Oct2005; see link below)

Enclosed is a link to a brochure on the AZ Game & Fish Department website that lists the vehicle laws, rules & regulations of Off-Highway Vehicles in Arizona. It has links to the Forest Service & BLM in Arizona. ATV's can be licensed to operate on State Highways in Arizona if they meet the requirements in the link below.
http://www.azgfd.gov/pdfs/outdoor_recreation/ohv/atv_brochure.pdf
Arizona Revised Statutes can be accessed here:
http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp
Off-highway legislation is included in Title 17 (Game and Fish) and Title 28 (Transportation).

The following are excerpts from the Arizona Revised Statutes:

ARS 28-101: Definitions
"All-terrain vehicle" means a motor vehicle that satisfies all of the following:
(a) Is designed primarily for recreational non-highway all-terrain travel.
(b) Is fifty or fewer inches in width.
(c) Has an unladen weight of eight hundred pounds or less.
(d) Travels on three or more low pressure tires.
(e) Has a seat to be straddled by the operator and handlebars for steering control.
(f) Is operated on a public highway.

"Off-road recreational motor vehicle" means a motor vehicle that is designed primarily for recreational non-highway all-terrain travel and that is not operated on a public highway. Off-road recreational motor vehicle does not mean a motor vehicle used for construction, building trade, mining or agricultural purposes.

ARS 28-1171: Definitions
"Off-highway vehicle":
(a) Means a motorized vehicle when operated off of highways on land, water, snow, ice or other natural terrain or on a combination of land, water, snow, ice or other natural terrain.
(b) Includes a two-wheel, three-wheel or four-wheel vehicle, motorcycle, four-wheel drive vehicle, dune buggy, amphibious vehicle, ground effects or air cushion vehicle and any other means of land transportation deriving motive power from a source other than muscle or wind.
(c) Does not include a vehicle that is either:
(i) Designed primarily for travel on, over or in the water.
(ii) Used in installation, inspection, maintenance, repair or related activities involving facilities for the provision of utility or railroad service.

ARS 28-1172: Applicability; private and Indian lands
This article applies to all lands in this state except private land and Indian land.

Note: This applies to federal lands.

ARS 28-1174: Operation restrictions; violation; classification
A. It is unlawful for a person to drive an off-highway vehicle with reckless disregard for the safety of persons or property.
B. A person who violates this section is guilty of a class 2 misdemeanor.
C. In addition to or in lieu of the fine prescribed by this section, a judge may order the person to perform at least eight but not more than twenty-four hours of community restitution or to complete an approved safety course, or both.

ARS 17-454: Prohibition against vehicle travel
No person shall drive a motor operated vehicle cross-country on public or private lands where such cross-country driving is prohibited by rule or regulation or, in the case of private lands, by proper posting.

Methodology and Analysis Process

A Geographic Information System (GIS) analysis calculated road maintenance level mileage by Ranger District for all alternatives using information provided in the Forests' road database and proposed alternatives. Maintenance costs for all roads and motorized routes were calculated using costs per mile for maintenance requirements as outlined in the Apache – Sitgreaves Travel Analysis Report (2008). Maintenance costs were compared for all alternatives.

A GIS analysis was used to calculate the road density for both open motorized routes and all motorized routes for each alternative.

Road Density

Forest Plan direction for road density is specific to management of the transportation system. Total road densities should average 3.5 miles/square mile or less. Open road densities should average 2.0 miles/square mile or less (USDA Forest Service, 1987, as amended). There are no road density standards or guidelines for other resources such as terrestrial and aquatic wildlife. The existing motorized route density is 0.9 miles of open motorized routes per square mile of Forest area and 1.98 miles of all motorized routes per square mile of Forest area. The area includes Primitive, Wilderness and Inventoried Roadless Areas (IRA's).

Environmental Consequences

Alternative A – No Action

No changes to the current road and trail system would occur. This includes no road closures or decommissioning, no user-created road incorporation into the NFS of roads, no opening of roads currently closed to public access, and no motorized trail additions or decommissioning. Motorized access would not be affected.

By not adding routes to the system, nor making any changes to the existing NFS roads and motorized trails, no additional costs would be incurred associated with implementation and increasing maintenance responsibilities. The costs associated with repairing resource damage associated with unmanaged motorized use can be anticipated but not quantified.

Annual maintenance costs for maintaining the current road system would remain the same. Costs of annual road maintenance for all operational maintenance levels would total approximately $4,515,849**.** With no changes to the current road and trail system, deterioration of unmaintained roads would continue. Road maintenance budgets would remain insufficient, and the inventory of deferred road maintenance would continue to grow.

The current Forest transportation system was designed to provide for administrative and public access to NFS lands. It was not specifically designed to provide non-highway-legal vehicle opportunities. In this alternative, 2,067 miles of NFS roads would remain available for non-highway-legal vehicles. These are objective maintenance level 2 roads. The user-created routes would not be managed or addressed and any existing safety concerns with these routes and impacts to the adjacent managed system would continue to exist. Users created routes are just that, user created and therefore no design criteria to meet the requirements of a wheeled vehicle exist. These routes by their very nature of not being designed have safety deficiencies and cause a risk to those using them. Continued use of user-created routes would likely have resource impacts requiring future rehabilitation efforts. Existing road densities would remain unchanged and are within forest plan standards and guidelines.

Environmental Consequences Common to all action alternatives

All action alternatives (B-E) have restricted cross-country travel restrictions to be compliant with the TMR:

- Restricting cross country travel will reduce motorized access to the areas of the forests that are not currently closed to cross country travel.
- Motorized vehicle use would only be allowed on routes and areas signed as open to motorized use. This would make it less complicated for the forest user to understand where they can travel on motorized vehicles. Cross country travel restrictions would make current funding going towards route closure signs and closure devices available for route maintenance on the NFS roads and trails. With the cross-country travel restrictions user-created routes would be reduced freeing up funding going towards obliteration of these user-created routes for route maintenance on the NFS roads and trails. There would be a period of educating the forest user's on the new rule to achieve compliance.
- Safety issues would be reduced by not having wheeled vehicle traffic on user created routes and cross country travel where there are no design criteria in place and have unknown levels of risk.
- Each of the action alternatives (B through E) cost more to implement than the Forests' current travel management budget. The current budget does not provide enough funding for maintenance of existing roads and trails.

Alternative B

There would be a net decrease in total miles of open roads by 5.6%. Compared to the baseline (Alternative A), cost for annual maintenance of NFS roads under Alternative B changes by -$167,963 (-3.5%). This would help decrease the growing deferred maintenance backlog.

Changes to the Forest Transportation Road System would have an associated implementation costs as well as a long-term maintenance responsibility. Accounting for route identification signing, and Forests transportation atlas updates, an estimated implementation cost of $500 per mile would be associated with the addition of unauthorized routes. For this alternative, that would result in an implementation cost of approximately $44,000. All other proposed changes would have an implementation cost of $25 per mile to account for the forests transportation atlas updates. For this alternative that would result in an implementation costs of approximately $25,300. The total approximated implementation costs for this alternative is $69,300.

This alternative proposes the addition of unauthorized routes as either ML 2 roads or motorized trails. The proposed unauthorized routes to be added have been reviewed and meet the needs for an ML 2 road and motorized trails. The net decrease in total miles of open roads by 5.6% does not pose a safety concern due to an increase in traffic on the other roads. The traffic counting program would be continued to monitor ML 3- 5 to ensure the current design is adequate.

Motorized route density of open motorized routes per square mile of Forest Area increases by .01mile/sq. mile and motorized route density of all routes per square mile of Forest Area decreases by .02 mile/sq. mile from Alternative A. This illustrates that the motorized route mileage on the Forests given the proposed opening and closing different routes is nearly equal to existing conditions.

Alternative C

There is a net increase in total miles of open roads by 1.01%, mainly short spurs to provide motorized access to identified camping dispersed sites.

Compared to the baseline (Alternative A), cost for annual maintenance of NFS roads under Alternative C changes by +$3,836 (0.1%). Although this increases the annual maintenance cost it is insignificant to a 1.4 million dollar budget.

Changes to the transportation system would have an associated implementation costs as well as a long-term maintenance responsibility. Accounting for route identification signing, and Forests transportation atlas updates, an estimated implementation cost of $500 per mile would be associated with the addition of unauthorized routes. For this alternative, that would result in an implementation cost of approximately $14,000.

This alternative proposes the addition of unauthorized routes as ML 2 roads. The proposed unauthorized routes to be added have been reviewed and meet the needs for an ML 2 road and therefore, public safety would not be diminished.

Motorized route density of open motorized routes per square mile of Forest Area increases by .01 and motorized route density of all routes per square mile of Forest Area increases by .01 from Alternative A. This illustrates that the motorized route mileage on the Forests, given the proposed opening and closing different routes is nearly equal to existing conditions and is consistent with forest plan direction.

Alternative D

In term of access, there would be a net decrease in total miles of open roads by 3.5%. Compared to the baseline (Alternative A), cost for annual maintenance of NFS roads under Alternative D changes by -$155,603 (-3.3%). This would help decrease the growing deferred maintenance backlog. Changes to the transportation system would have an associated implementation costs as well as a long-term maintenance responsibility. Accounting for route identification signing, and Forests transportation atlas updates, an estimated implementation cost of $500 per mile would be associated with the addition of unauthorized routes. For this alternative, that would result in an implementation cost of approximately $24,000. All other proposed changes would have an implementation cost of $25 per mile to account for the forests transportation atlas updates. For this alternative that would result in an implementation costs of approximately $26,025. The total approximated implementation costs for this alternative is $50,025.

The proposed unauthorized routes to be added have been reviewed and meet the needs for an ML 2 road and motorized trails. The net decrease in total miles of open roads by 3.5% does not pose a safety concern due to an increase in traffic on the other roads. The traffic counting program would be continued to monitor ML 3- 5 to ensure the current design is adequate.

Motorized route density of open motorized routes per square mile of Forest Area increases by .03 mile/sq. mile and motorized route density of all routes per square mile of Forest Area decreases by .02 mile/sq. mile from Alternative A. This illustrates that the motorized route mileage on the Forests given the proposed opening and closing different routes is nearly equal to existing conditions and does not exceed the forest plan standards and guidelines.

Alternative E

In terms of motorized access, this alternative results in a net decrease in total miles of open roads by 13.19%.Compared to the baseline (Alternative A), cost for annual maintenance of NFS roads under Alternative D changes by -$223,049 (-4.9%). This would help decrease the growing deferred maintenance backlog. Changes to the transportation system would have an associated implementation costs as well as a long-term maintenance responsibility. Accounting for route identification signing, and Forests transportation atlas updates, an estimated implementation cost of $500 per mile would be associated with the addition of unauthorized routes. For this alternative, that would result in an implementation cost of approximately $42,500. All other proposed changes would have an implementation cost of $25 per mile to account for the forests transportation atlas updates. For this alternative that would result in an implementation costs of approximately $16,800. The total approximated implementation costs for this alternative is $59,300.

This alternative proposes the addition of unauthorized routes as either ML 2 roads or motorized trails. The proposed unauthorized routes to be added have been reviewed and meet the needs for an ML 2 road and motorized trails. The net decrease in total miles of open roads by 13.19% could pose a safety concern due to an increase in traffic on the ML 2 roads but is unknown to what extent. The traffic counting program would be continued to monitor ML 3- 5 to ensure the current design is adequate and add the greater used ML 2 roads to monitor that increase in motorized use .

Motorized route density of open motorized routes per square mile of Forest Area decreases by .07 and motorized route density of all routes per square mile of Forest Area decreases by .03 from Alternative A. This illustrates that the motorized route mileage on the Forests given the proposed opening and closing of different routes has a net result of reducing the overall road density and does not exceed the forest plan standards and guidelines.

Comparison of Alternatives – Transportation Costs for Roads and Motorized Trails

Table 3. Annual Road Maintenance Costs by Operational Maintenance Level for All Alternatives

	Operational Maintenance Levels (ML)										
Annual maintenance cost by Maintenance Level (ML)	ML 1		ML 2		ML 3		ML 4		ML 5		Total Annual Maintenance Costs per Alternative
	$86/mile		$223/mile		$4,911/mile		$4,501/mile		$10,587/mile		
Alternative	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	
A	3,372	$289,992	2,066	$460,718	628	$3,084.108	88	$396,088	49	$518,763	$4,749,669
B	3,529	$303,494	1,941	$432,843	575	$2,823,825	107	$481,607	51	$539,937	$4,581,706
C	3,344	$287,584	2,094	$466,962	628	$3,084,108	88	$396,088	49	$518,763	$4,753,505
D	3,473	$2998,678	1,996	$445,108	576	$2,828,736	107	$481,607	51	$539,937	$4,594,066
E	3,731	$320,866	1,744	$388,912	590	$2,897,490	89	$400,589	49	$518,763	$4,526,620

Table 4. Annual Motorized Trail Maintenance Costs by Alternative

Motorized Trails (Miles by Alternative)	Alpine	Black Mesa	Clifton	Springerville	Lakeside	Forests Total	Change From Alt. A	Yearly Maintenance Costs*
Alternative A	0	38	0	21	97	156	0	$70,200
Alternative B	27	97	1	28	115	268	112	$120,600
Alternative C	0	38	0	21	97	156	0	$70,200
Alternative D	32	98	1	42	129	302	146	$135,900
Alternative E	0	75	1	21	109	206	50	$92,700

Cumulative Effects

The cumulative effects analysis for the transportation system and Infrastructure considers Cumulative Effects

The cumulative effects analysis for the transportation system and Infrastructure considers impacts of the alternatives when combined with past, present, and foreseeable future actions and events that include road construction and trail construction.

Except for the following past, present and foreseeable future actions there is no difference in terms of cumulative effects because the actions will not increase or decrease miles of motorized routes, any additional access necessary beyond the transportation system for the projects would be temporary and at the completion of the project would be obliterated.

Unauthorized motorized use, and road maintenance, continued travel on user created unauthorized roads and roads not maintained to standard for the maintenance level objective may cause soil erosion and degradation to water quality. All action alternatives will theoretically eliminate any additional user created unauthorized roads by eliminating cross country travel. Initially funding will be required to obliterate these existing user created unauthorized roads but long term there will not be any additional road maintenance funding required for this purpose and therefore those dollars used to install closure devices and maintaining closure devices can be used for road maintenance on system roads resulting in more miles of road maintained to standard. All alternatives require more funding to maintain the roads than the forests currently receives. Without additional funding it may become necessary to close roads for public safety and resource protection.

The following past, present and foreseeable future actions although will decrease the deferred maintenance backlog will not have a measurable impact on the forests because they are a few miles in the context of the entire forest;

- Alpine RD Blue River Gravel Pits Development and Pueblo Park Mineral Materials Pit Development would provide a closer materials source for road maintenance and reduce the cost of maintaining roads in the area.
- Road Easements put the burden of road maintenance on the easement holder.
- Legacy funded road projects result in minimizing sediment into adjacent watersheds.
- ARRA awarded road projects consists of resurfacing aggregate Maintenance Level 3-5 roads.

Warning and Regulatory Road Signing;

The forests have been receiving funding in the past three years and will continue to in the future from the regional office for performing engineered sign studies on Highway Legal

Roads (Maintenance level 3 through 5). Once the studies are completed and submitted to the forests the roads are resigned to meet the requirements of the study based on the Manual of Uniform Traffic Devices (MUTCD) improving safety for the user of the road. To date 293 miles NFS roads have had studies (38% of Maintenance Level 3 thru 5) and 226 miles of NFS roads been signed according to the engineered sign study (30% of Maintenance Level 3 thru 5). This work reduces the deferred maintenance back log for maintenance level 3 through 5, increases public safety by having roads signed according to MUTCD and is required by our memorandum of understanding with FHWA to meet the Highway Safety Act.

Table 5 Comparison of Changes by Alternative

	Alternative A	Alternative B	Alternative C	Alt D	Alternative E
National Forest System Roads (NFSRs)					
Add unauthorized roads as NFSR (miles)	0	53	28	37	64
Open closed roads (miles)	0	358	0	415	220
Close roads (miles)	0	493	0	479	559
Convert open road to administrative and permitted use only (miles)	0	78	0	59	79
Convert closed road to administrative and permitted use only	0	7	0	5	5
Add unauthorized roads for administrative and permitted use only	0	1	0	11	1
Total Miles of Open and Closed NFSRs					
Total miles of open road	2,832	2,673	2,860	2,730	2,473
Total miles of open road for administrative use only	0	86	0	75	85
Total miles of closed road	3,373	3,866	3,373	3,852	3,932

	Alternative A	Alternative B	Alternative C	Alt D	Alternative E
Motorized Trails (NFSTs)					
Convert closed road to motorized trail (miles)	0	60	0	64	14
Convert open road to motorized trail	0	16	0	19	14
Add unauthorized road as motorized trail (miles)	0	34	0	62	20
Construct motorized trails (miles)	0	2	0	1	1
Total Miles of Motorized Trails for Motor Vehicles 50" and less in width					
Total miles of motorized trail	156	268	156	302	206

Glossary

The following are various road and trail definitions and route descriptions for NFS roads and NFS trails (Travel Analysis Report 2008).

Public Road: Any road or street under the jurisdiction of, and maintained by, a public authority and that are open to motorized travel (23 USC 101[a]).

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 (36 CFR 212.1).

Uninventoried Road: Short-term road that is associated with fire suppression; oil, gas, or mineral exploration or development; or timber harvest, that are not intended to be a part of the forest development transportation system and that are not necessary for resource management. Regulations (36 CFR 223.37) require revegetation within 10 years.

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).

Closed NFS Roads

Maintenance Level 1 — Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate."

NFS Roads Open to All Motor Vehicles

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.

Maintenance Level 2 roads are excluded from the Highway Safety Act according to Forest Service policy. They should be managed with limited traffic control devices.

NFS Roads Open Only to Highway Legal Vehicles

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 land 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.

Maintenance Level 4 — Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double land 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.

Roads managed under Maintenance Levels 3 through 5 are required to meet the standards of the Highway Safety Act, according to Forest Service policy. These roads should be managed for safe passage by prudent drivers in standard passenger card. These roads must meet state traffic codes, including traffic control in accordance with the Manual on Uniform Traffic Control Devices.

Decommissioned Road

Decommissioned roads have been permanently removed from the NFS. They continue to be tracked in the transportation atlas for future reference. These roads should have received a level of physical maintenance, ranging from a Maintenance Level 1 type

closure to a complete obliteration. For administrative purposes, these roads are not considered as existing and are not available for motorized use.

NFS Trail Open to Motorized Vehicles

NFS trails that are managed and signed as open to motor vehicles. These can be either routes managed with width restrictions for specific vehicle types or forest roads also managed as trails due to an identified recreational destination value.

NFS Trail Not Open to Motorized Vehicles

NFS trails that are managed and signed for non-motorized uses, such as hiking, equestrian, and/or bicycling activities.

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.

Literature Relevant to the Analysis Topics and Cited

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Sign and Date Report for the Record

Digitally signed by Deborah MacIvor
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Revised Report in Response to Public Comments on Draft