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# Infrastructure Specialist Report

## Forest Plan Revision DEIS

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# Preface

The information in this specialist report reflects analysis that was completed prior to and in conjunction with the completion of the Draft Environmental Impact Statement (DEIS) for the revision of the 1987 Coconino National Forest Land Management Plan (the Plan). The primary purpose of specialist reports associated with the DEIS is to provide detailed information to assist in the preparation of the DEIS. As the DEIS was prepared, review-driven edits to the broader DEIS resulted in modifications to some of the information contained in some of the specialist reports. As a result, some reports no longer contain information and analysis that was updated through an interdisciplinary review process and is included in the DEIS in its entirety. Information on the environmental consequences for this resource is included in its entirety in the DEIS and is not duplicated in this report. Efforts have been made to ensure that the retained information in the specialist reports is consistent with the DEIS. If inconsistencies exist between specialist reports and the DEIS, the DEIS should be regarded as the most current, accurate source of analysis.

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## Glossary of Terms

- **Maintenance Level:** Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (FSH 7709.59, 62.32)
- **Maintenance Level 1-** These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to resources to an acceptable level and to perpetuate the road for future resource management needs. 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” all traffic. 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/motorized traffic but may be available and suitable for nonmotorized uses
- **Maintenance Level 2-** Assigned to roads open for use by high-clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are not provided with the exception that some signing, such as “Warning No Traffic” signs may be posted at intersections. Motorists should have no expectations of being alerted to potential hazards while driving these roads. 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 (a) discourage or prohibit passenger cars or (b) accept or discourage high-clearance 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. The Manual on Uniform Traffic Control Devices (MUTCD) is applicable. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations. Roads in this maintenance level are typically low speed, with single lanes and turnouts. 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 lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. MUTCD is applicable. The most appropriate traffic management strategy is “encourage”, however, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times.
- **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. MUTCD is applicable. The appropriate traffic management strategy is “encourage”.

- **Arterial:** Roadways that form a network that link cities and larger towns (and other traffic generators, such as major resort areas, that are capable of attracting travel over similarly long distances) and provide interstate and intercounty travel corridors.
- **Collector Street:** These roads provide both land access service and traffic circulation within residential neighborhoods, commercial and industrial areas. These streets channel traffic volumes into the arterial system. The collector system may include the street grid which forms a logical entity for traffic circulation.
- **National Forest System Road (NFS road):** A road 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 ( 23 USC 101, 36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2, FSM 7705)
- **Forest Transportation Atlas:** A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).
- **Forest Highway:** A forest road under the jurisdiction of, and maintained by, a public authority and open to public travel (23 USC 101). The Forest Highway Program falls under 23 USC 202, 203 and 204.
- **Temporary Road:** A road necessary for emergency operations or authorized by contract, permit, lease or other written authorization that is not a forest road and that is not included in the transportation atlas (36 CFR 212.1).
- **Unauthorized Road:** A road that is not a forest road or a temporary road and that is not included in a forest transportation atlas (36 CFR 212.1, FSM 2353.05, FSM 7705).
- **Best Management Practices:** Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (40 CFR 130.2(m)).
- **Critical Vehicle:** The vehicle, normally the largest (by weight, size, or unique configuration), whose limited use on the road is necessary to complete the planned activity (FSH 7709.56, Section 4.1)
- **Road Decommissioning:** Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1). For administrative purposes, these roads are not considered as existing and are not available for motorized use.
- **Road Maintenance:** The upkeep of the entire 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). This work includes brushing of roadside vegetation, falling danger trees, road blading, cleaning ditches, cleaning culvert inlets and outlets, etc.

# Specialist Report

## Introduction

This specialist report evaluates and discloses the potential environmental consequences on the forest road system and facilities that may result with the adoption of a revised land management plan. It examines, in detail, four different alternatives for revising the 1987 Coconino NF land management plan (1987 plan).

## Relevant Laws, Regulations, and Policy that Apply

All alternatives are designed to guide the Coconino NF's management activities in meeting all applicable Federal and State laws, regulations, and policies

Forests Highways Act of August 27, 1958

36 CFR 212 Forest Development Transportation System

EO 11644 (amended by EO 11989) Use of Off-Road Vehicles, 1972, 1977

Federal Noxious Weed Act, 1974, as amended

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03), U.S. Department of Transportation, Federal Highway Administration (FHWA)

Forest Service Supplemental Specifications to FP-03, USDA Forest Service

Manual on Uniform Traffic Control Devices (current edition), as approved by the Federal Highway Administrator as the National Standard

Standard Specifications for Transportation Materials and Methods of Sampling and Testing (current edition and interims, if applicable), AASHTO

Arizona Revised Statutes, Article 49, Chapter 2, Article 3.1

Arizona Administrative Code Title 18, Chapter 9, Article 9 and Chapter 11, Article 1

Forest Service Directives:

- FSH 2509.25 Watershed Conservation Practices Handbook (Draft)
- FSM 7300 Buildings and Other Structures
- FSM 7310 Buildings and Related Facilities
  - FSH 7309.11 Buildings and Related Facilities Handbook

- FSM 7700 Transportation System
- FSM 7710 Travel Planning
  - FSH 7709.55 Travel Analysis
  - FSH 7709.56 Preconstruction Handbook
  - FSH 7709.57 Road Construction Handbook
- FSM 7720 Development (Policy on Transportation)
- FSM 7730 Operation and Maintenance
  - FSH 7709.59 Road Operations

## **Methodology and Analysis Process**

### ***Forest Road System***

Information related to the forest road system was obtained from the INFRA Database (I-web), and the Coconino National Forest Geographic Information System (GIS). The INFRA Database is the primary Forest Service Database that stores many different types of tabular data. GIS and INFRA are linked to ensure consistency of both and are updated continually to reflect actual conditions in the field.

GIS layers containing polygonal shape files delineating new proposed wilderness areas, special interest management areas, and wildlife habitat management areas were used to clip the Travel Management Rule (TMR) Proposed Alternative 3 roads data. This provided mileage data for public roads and roads designated “for administrative use only” as per the recent Travel Management decision.

In addition, analysis was performed in order to determine road mileages by Recreation Opportunity Spectrum (ROS). For the analysis the roads were intersected with the ROS. This analysis allowed for all roads to be associated with their respective ROS class. The mileage was updated to reflect the length segments and the data imported to an excel spreadsheet for further analysis. From here, the data was differentiated by ROS Code and Alt3 Status and the mileages in each category were summed up.

The road mileage by operational maintenance level was obtained from INFRA. This database enables queries to be performed depending on what type of data you need for analysis. For the FPR analysis the most recent Road Core information available was downloaded with an effective date of June 14<sup>th</sup> 2011. The data was filtered and all of the roads that had the following criteria: Jurisdiction as Forest Service, System, as National Forest Service System Road, and Route Status as existing were selected for analysis. Then, MS Access was used to sort based on operational maintenance levels 1 through 5 and the mileage was summed up for each operational maintenance level. The TMR geospatial layer preferred alternative 3 was not used because it included several hundred miles of additional roads such as user created roads or roads crossing non forest service land incorporated into the existing layer. The Forest Service Road system is historically defined as roads that exist in INFRA that have these main three criteria listed above

so therefore the INFRA data base was used exclusively for the breakdown of the Forest Service Road System.

The methodologies and analysis described above contain two separate data sources that were analyzed. Since the TMR was not yet implemented, INFRA was used to analyze the existing conditions and Alternative A (No Action). Further analysis was done using TMR current decision road layers to accurately project the effects of the other alternatives (Alternatives B – D) on the NFS road system since TMR would be implemented prior to the revised proposed plan.

### *Administrative Facilities*

The analysis of administrative facilities was performed using GIS, facility location data (INFRA), and forest service visitor maps. Proposed special areas and management area guidelines were analyzed for all alternatives. The location of the expansion areas were determined using GIS and then compared with known administrative facility locations in order to determine if any facilities would be affected by the proposed alternatives.

## **Assumptions**

In the analysis for this resource, the following assumptions have been made:

- The land management plan provides a programmatic framework for future site-specific actions.
- Land management plans do not have direct effects. They do not authorize or mandate any site-specific projects or activities (including ground-disturbing actions).
- Land management plans may have implications, or environmental consequences, of managing the forests under a programmatic framework.
- The plan decisions (desired conditions, objectives, standards, guidelines, management areas, monitoring) will be followed when planning or implementing site-specific projects and activities.
- Law, policy, and regulations will be followed when planning or implementing site-specific projects and activities.
- Monitoring will occur and the land management plan will be amended, as needed.
- We will be funded similar to past budget levels (past 5 years).
- The planning timeframe is 15 years; other timeframes may be analyzed depending on the resource (usually a discussion of anticipated trends into the future).
- TMR Proposed Alternative 3 (the preferred alternative) expected decision Summer 2011.

## **Issues Addressed in this Analysis**

The following issues are addressed in this analysis with respect to the use and management of the transportation system on the Coconino NF.

**Issue** – The revised plan may not adequately promote habitat connectivity, nor promote the identification/removal of potential barriers to wildlife movement. **Indicator** – Environmental consequences of plan language on habitat connectivity, including road impacts.

**Issue** – Current draft Plan language may not fully address disturbance of wildlife species from motor vehicle noise in areas on the Forest that are noted by the proposals. **Indicator** – Likely motor vehicle disturbance and associated impacts to wildlife species on the Forest that are listed in the proposals.

**Issue** – Recommending additional wilderness areas would unnecessarily prohibit and further geographically constrain management activities and uses that would otherwise be allowed.

**Indicator** – Proportion of the Forest/acres of wilderness and recommended wilderness areas

## Summary of Alternatives

### *Forest Road System*

Four alternatives are analyzed in detail in this Specialist Report: Alternatives A through D. Alternative A is the current 1987 Coconino National Forest Plan, and Alternative B is the Preferred Alternative/Proposed Action, drafted over the past several months and refined with several tranches of internal and informal public feedback. Alternative C considers increases in the amount of wilderness and special areas, as well as increased opportunities for quiet semi-primitive recreation, while Alternative D considers slightly fewer restrictions than Alternatives B and C on human access and use of the Forest and its resources. Alternatives B, C and D have a common objective to decommission/obliterate or naturalize 200 – 800 miles of road. This range encompasses roads that are considered for obliteration or closure in proposed special areas, management areas, proposed projects such as the Four Forest Restoration Initiative, or the Travel Management Rule. Also, possible decommissioning or naturalization of roads within the sensitive areas would be considered on a site specific basis.

Under Alternative B (the Modified Proposed Plan) road mileages could be altered due to the recommendation of three new wilderness areas, an update of the Recreation Opportunity Spectrum, guidelines to reduce road impacts to wildlife and watershed condition, and the encouragement of collaboration with partners to improve habitat connectivity across the landscape. The proposed revised plan provides guidelines that roads should minimize disturbance to wildlife, minimize negative impacts on water/aquatic resources, improve affected environment, avoid or reduce the spread of invasive species and to facilitate appropriate use of the roads. Other mitigation measures for roads include decommissioning and naturalization of roads or realignment to avoid sensitive areas.

Under Alternative C road mileages could be altered due to the recommendation of thirteen new wilderness areas, an update of the Recreation Opportunity Spectrum, guidelines to reduce road impacts to wildlife and watershed condition, and the encouragement of collaboration with partners to improve habitat connectivity across the landscape, eight additional management areas for wildlife habitat, and road density threshold on Anderson Mesa.

Under Alternative D road mileages could be altered due to an update of the Recreation Opportunity Spectrum, guidelines to reduce road impacts to wildlife and watershed condition, and the encouragement of collaboration with partners to improve habitat connectivity across the landscape. Similar to Alternative B, this could limit motorized travel for both the public and administrative use.

### *Administrative Facilities*

Throughout the four alternatives the management approaches for facilities would not change. The facility Master Plan lists all facilities and the corresponding historical status, condition as well as management recommendations. This master plan is updated periodically to guide management of existing facilities and provide the basis for sound decisions regarding the subsequent acquisition, management, or decommissioning activities.

## **Description of Affected Environment (Existing Condition)**

### *Forest Road System*

The forest road system within the planning area provides access to public lands and to private in-holdings. The majority of the access is provided for administration of the forest, public recreation, and forests products extraction. The motorized forest road system consists of 773 miles of roads open only to highway legal vehicles (maintenance level 3-5), 4,602 miles of roads open to all motorized vehicles (maintenance level 2), and 588 miles of roads closed to all motorized vehicles (maintenance level 1). Many of these roads may be closed on a seasonal basis due to the structural stability of these roads being compromised during wet weather conditions. There are also additional quiet area closure areas that provide non-motorized hunting opportunities, such as the Woods, Pine Grove and Rattlesnake areas and motorized vehicle closures to protect sensitive resources. The NFS roads are closed in the winter months for public safety and to maintain structural support of the roadway that may be weakened due to sustained moisture from snowfall. Roads may also be closed during extreme weather conditions for public safety and to minimize resource damage. There are four NFS roads designated as Forest Highways in Coconino NF.

The Travel Management Rule (TMR)(November 9, 2005, 36 CFR 212, 251,261, and 295) requires that each national forest designate roads, trails, and areas open to motor vehicle use by class of vehicle and, if appropriate, time of year. The rule addresses any future proliferation of unauthorized routes by prohibiting cross-country motorized travel, except in designated areas and for designated uses. The Coconino NF TMR is expected to be implemented in December 2011. Under the TMR preferred alternative #3, the mileage of roads open to public motor vehicle use would be reduced from 8,406 to 3,885. This leaves 4,521 miles of road open for administrative use only or subject to obliteration.

The recent decision for the Coconino National Forest Motorized Travel Management Plan changed the size of the NFS road system and categorized NFS roads as administrative use only or public roads. Public NFS roads are those open for the general public to use. Administrative roads are for Forest Service personnel, contractors, and permittees, and therefore, would likely have much less use and not be maintained as well as public system roads. Annual Motor Vehicle Use Maps (MVUMs) produced by the Forest show which roads are open public travel, and all other roads will be used for administrative use only or unauthorized and under consideration for obliteration. Private roads are roads that provide access to private property. Private roads are administered as easements or special use permits, and are considered in the lands special use analysis.

### ***Administrative Facilities***

The Coconino NF owned administrative facilities within the planning area consist of 5 ranger stations, 2 work centers, 12 lookout facilities, 7 communication facilities, 4 guard stations, a Hotshot headquarters, and associated barns, warehouses, sheds, storage facilities, quarters for seasonal employees and crews, residential housing, and water and wastewater facilities. A review of administrative sites indicates there are currently 167 structures on the Forest totaling 158,713 square feet (not including the leased Supervisor's Office located in the City of Flagstaff).

A revised facility master plan was completed in September 2003. The facility master plan guides the acquisition, continued use, maintenance, improvements, and disposal of Forest Service facilities on the Coconino National Forest. The plan proposes an overall reduction in the number and square footage of administrative facilities through consolidation and decommissioning.

## **Environmental Consequences**

### ***Forest Road System***

Among the alternatives, Alternative C provides the greatest amount of proposed wilderness and management areas, which decreases future opportunities for motorized access for both the public and administrative use. Alternative D provides the least amount of proposed wilderness and management areas which increases future opportunities for public access as well as motorized travel on the National Forest System (NFS) roads. Alternative B provides a mix between public access and proposed wilderness which decreases the motorized travel on the forest but not to the extent of Alternative C. Alternative A provides the greatest number of miles of NFS roads open to motorized travel but does not consider any new wilderness or management areas, this is similar to Alternative D, however, Alternative D contains a slightly higher mileage of roads within special management areas that may be considered for future decommissioning. The objectives over the life of Alternatives B, C and D are to decommission/obliterate or naturalize 200 – 800 miles of road. This could possibly be accomplished through closures resulting from changing ROS designations, desired conditions in wildlife habitat management areas, watersheds, proposed wilderness areas and other special interest management areas as well as the implementation of projects such as 4FRI, or the TMR. Other site specific projects could be analyzed to further move towards the objectives.

### **Alternative A.**

This alternative would have no change on the affected environment by the current transportation system on the Coconino NF. The current levels of maintenance would stay the same and roads would be decommissioned or closed in compliance with the 1987 plan. The 1987 plan states that roads not needed for industry, public, and/or administrative use should be closed or returned to resource production by obliteration. This alternative presents the public the most motorized access to the forest because there are no additional special areas that would reduce motorized access. Alternative A has about 590,000 acres of forest within one mile of a NFS road. The 1987 plan provides direction to provide and maintain a transportation system that fulfills the needs of the public. By continuing to implement this guidance there could be potential ecological impacts due to sensitive species and areas being disrupted by human activity from motorized travel.

## **Alternative B.**

Among the alternatives, Alternative B provides a mix of road closures, new proposed wilderness areas, more SPNM settings and areas not suitable for temporary and permanent road construction. NFS roads and motorized access would be restricted due to changes in particular locations throughout the forest and as a result the road system would become smaller over time.

Alternative B contains 564.4 total miles of roads that would possibly be closed to motorized travel by future site specific decisions according to desired conditions and guidelines. This would positively impact the surrounding vegetation, wildlife species and watersheds that might otherwise be disturbed due to vehicle presence. In addition, this would provide the public with more semi primitive recreation opportunities without limiting forest motorized access unreasonably. Alternative B has about 21,000 acres of forest fewer that are within one mile of a road in Alternative B than when compared with Alternative A (see Recreation Report for more information). The proposed revised plan has a desired condition to provide wildlife with habitat patches that support viable populations for each species. Mitigation of habitat fragmentation for barriers such as roads would be considered on a site specific basis throughout the life of the proposed revised plan. The proposed revised plan provides guidelines that roads should minimize disturbance to wildlife, minimize negative impacts on water/aquatic resources, improve affected environment, avoid or reduce the spread of invasive species and to facilitate appropriate use of the roads (See Wildlife Report for more information).

## **Alternative C.**

This alternative would likely result in the smallest road system due to multiple recommended wilderness areas, wildlife habitat management areas, as well as other special management areas and provides direction to obliterate and close routes in these areas. There may be up to 846.9 total miles of road that would be closed or decommissioned under this plan alternative, 111.1 miles are currently open for public use.

The wildlife habitat management areas included in this alternative encompass 69.8 miles of the 111.1 total miles of NFS roads currently open to the public that would be closed under this alternative. Table 1 shows the breakdown of potential road closure mileages by each specific WHMA, however some of these mileages may be higher than the mileages actually considered due to the nature of some of the roads and the type of access they provide. For example, roads that provide access to developed recreation sites, trailheads, private land or administrative facilities that are actively used would remain open to maintain access to these areas. The roads contained within the WHMA's vary in ROS classifications from SPNM to Roded Natural. However, over the life of the proposed revised plan the non-critical roads would be considered for closure or obliteration. All road obliteration or closure would be handled on a site specific basis with NEPA analyzed for each project.

Alternative C contains guidelines to reduce the public road density for the Anderson Mesa WHMA to an average of 1 mile of road per square mile. Currently the area has 1.01 miles of road per square mile; over the life of the revised plan public roads would be decommissioned and closed to lower the average to 1.0 miles per square mile. Road closures would result in a minimal reduction of roads within Anderson Mesa WHMA (approximately 4 miles). This guideline would also retain a public road density similar to current conditions, which would minimize the likelihood of increasing road density over time. Alternatives A, B and D, by contrast, could have higher road densities within this management area. Therefore, alternative C would have a net

disturbance from human activities equal to or lower than other alternatives, assuming comparable levels of traffic. For wide-ranging wildlife species, such as pronghorn, this would maintain a stable amount of motor vehicle disturbance at this management area scale but may not result in stable disturbance to species whose habitat is at smaller scales. For example, a rare plant within this management area may currently have no road disturbance but if roads are relocated without increasing the road density, the plant could be negatively impacted.

This alternative would provide the wildlife species and vegetation within the various management areas and wilderness areas less disturbance from vehicle and human presence than other alternatives. In addition, it would decrease motorized access to more remote recreational opportunities. Alternative C would have about 77,000 fewer acres of forest that are within 1 mile of a NFS road and outside of designated and recommended than Alternative A.

**Table 1: Potential public use road miles suitable for closures within wildlife habitat management areas (alternative C)<sup>1</sup>**

Wildlife habitat management area	Public use road miles
Anderson Mesa	Approximately 4 <sup>2</sup>
East Clear Creek	34.2
Hospital Ridge	1.1
Jack’s Canyon	24.3
Knoll Lake	2.5
Limestone Pasture	1.4
Pine Grove	2.3
Second Chance	0
Total	69.8

<sup>1</sup> Table and closures are based on a combination between ROS and wildlife habitat management areas plan direction.

<sup>2</sup> This number is an estimate of the number of miles needed to meet the road density guideline for Anderson Mesa WHMA. Road locations would be determined at the project-specific level.

### Alternative D.

Alternative D would be similar to the proposed revised plan, except that no new wilderness areas would be recommended. In addition, mechanized recreation would be allowed on designated trails in botanical and geological areas. This alternative has the same amount of forest within one mile of a NFS road as Alternative A since there are no new wilderness areas proposed in this alternative. The ROS classifications (seen in Table 2) show Alternative D contains equal mileage of roads open to motorized travel as Alternative B. Walker Mountain would still be unavailable to motorized travel because it is SPNM. In Davey’s, there is likely to be more motorized travel access than Alternative B because there is no recommended wilderness area proposed for Alternative D. Similarly, in Strawberry Crater, the main activity that would continue is the occasional firewood gathering and low-intensity motorized recreation. It is uncertain if these activities would increase overtime or not. While an increase in motorized travel may affect the wildlife and vegetation in the areas by these roads, there would still be a low concentration of human activity

**Administrative Facilities**

The management of the administrative facilities on the Coconino NF would not change under any alternative. The facility master plan would be reviewed and updated annually as necessary to reflect management needs. The proposed revised plan provides guidance to balance management recommendations found within the Facilities Master Plan and the desired conditions of the proposed revised plan to determine how facilities would be managed over the life of the plan.

**Recreation Opportunity Spectrum: Alternatives B. – D.**

The Recreation Opportunity Spectrum (ROS) provides a framework which allows administrators to manage and users to enjoy a variety of recreation environments, including roaded access, and range from Primitive to Urban classifications. The classifications open to motorized travel range from Semi-Primitive Motorized (SPM) to Urban. These roads provide recreational opportunities that become increasingly less concerned with the remoteness of the activity, more human activities are present and successively higher road maintenance levels. Roads that are located in areas with Primitive or Semi- Primitive Non- Motorized (SPNM) classifications would likely be considered in the future for conversion to trails or closed and naturalized to move the area towards the desired ROS setting. Table 2 shows the breakdown of the ROS classifications by alternative. Ranges of road mileage that could be considered for removal from the NFS road system over time in areas with an ROS classification of Primitive and Semi-Primitive Non-Motorized range between 218 miles under Alternative A and up to 847 miles in Alternative C. Such actions would decrease motorized access to these areas, but increase more primitive recreational experiences as well as habitat connectivity.

**Table 2: Road Mileage by ROS Breakdown**

Public and Admin Use Road Mileages By ROS classifications							
	Primitive	Semi-Primitive Non-motorized	Semi-Primitive Motorized	Roaded Natural & Modified	Rural	Urban	Non_FS
<b>ALT A</b>							
Public Use	0	34	1,103	2,306	84	0	341
Admin Use	0	184	1,485	2,623	75	0	116
<b>ALT B</b>							
Public Use	0	83	1,208	2,374	178	56	-
Admin Use	4	477	1,641	2,272	98	17	-
<b>ALT C</b>							
Public Use	12	99	1,160	2,388	177	56	-
Admin Use	48	687	1,426	2,234	97	17	-
<b>ALT D</b>							
Public Use	0	83	1,208	2,374	178	56	-
Admin Use	1	479	1,642	2,273	98	17	-

\*Alternative B - D include 456.97 miles of Non-FS managed Roads. Alternative B - D does not use “Non-FS” as an ROS classification. The 457 miles of non-FS managed roads, however, are included in the mileage totals within the ROS classifications use.

\*\*User created roads (TMR = 8406.1) are included in this analysis and therefore create higher overall mileages compared to the Operational Maintenance Level Road Mileage (= 5963.6)

\*\*\* Due to spatial accuracies and inconsistencies within GIS data there were roads that crossed Wilderness Boundaries. These mileages were not included to represent actual road conditions within Alternative A.

### Recommended Wilderness Areas: Alternatives B. – D.

Only Alternatives B and C have recommended wilderness areas. Alternative D does not introduce any new wilderness areas. Forest wide, Alternative C recommended wilderness areas would encompass 60.3 miles of NFS roads within 11 new recommended wilderness areas, while Alternative B would encompass only 3.8 miles between 3 new recommended wilderness areas. This would reduce both public and administrative motorized access to these portions of the forest. Table 3 tabulates the road mileages by alternative as well as broken down by individual recommended wilderness area. Also shown in the table is the breakdown of mileages of public use roads and administrative use roads.

**Table 3: Road Mileage within New Recommended Wilderness Areas**

RWA	B	C	D
<b>Davey's RWA</b>			
Public Use	-	-	-
Admin Use	1.3	2.3	-
<b>Total:</b>	<b>1.3</b>	<b>2.3</b>	-
<b>Strawberry Crater RWA</b>			
Public Use	-	-	-
Admin Use	0.7	1.7	-
<b>Total:</b>	<b>0.7</b>	<b>1.7</b>	-
<b>Walker Mountain RWA</b>			
Public Use	-	-	-
Admin Use	1.8	1.8	-
<b>Total:</b>	<b>1.8</b>	<b>1.8</b>	-
<b>Abineau</b>			
Public Use	-	-	-
Admin Use	-	0.5	-
<b>Total:</b>	-	<b>0.0</b>	-
<b>Black Mountain*</b>			
Public Use	-	6.8	-
Admin Use	-	6.0	-

<b>RWA</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Total:</b>	-	<b>12.8</b>	-
<b>Cedar Bench*</b>			
Public Use	-	2.2	-
Admin Use	-	3.3	-
<b>Total:</b>	-	<b>5.5</b>	-
<b>Cimmaron-Boulder</b>			
Public Use	-	0.0	-
Admin Use	-	4.8	-
<b>Total:</b>	-	<b>4.9</b>	-
<b>Deadwood Draw*</b>			
Public Use	-	1.0	-
Admin Use	-	7.0	-
<b>Total:</b>	-	<b>8.0</b>	-
<b>Hackberry*</b>			
Public Use	-	0.3	-
Admin Use	-	12.2	-
<b>Total:</b>	-	<b>12.5</b>	-
<b>Railroad Draw</b>			
Public Use	-	-	-
Admin Use	-	0.1	-
<b>Total:</b>	-	<b>0.1</b>	-
<b>Tin Can*</b>			
Public Use	-	1.0	-
Admin Use	-	9.8	-
<b>Total:</b>	-	<b>10.8</b>	-
<b>Grand Total:</b>	<b>3.8</b>	<b>60.2</b>	<b>0.0</b>
*Some of the roads designated for public access in travel management were not in INFRA at the time of the Potential Wilderness Inventory. There were also some system roads that were not properly entered into INFRA that have been found through the work conducted to complete Travel Management. This is the reason for the public and administrative roads in the Potential Wilderness Areas.			

### Designated Special Areas: Alternatives B – D

Among the alternatives, the miles of NFS roads within proposed and existing Research Natural Areas, Botanical and Geological Areas, and Environmental Study Areas vary by approximately eleven miles, with Alternative C containing the greatest number of miles within special areas (approximately 32 miles) and Alternative A containing the least (approximately 21 miles). New designations of these types would not preclude current motorized access under any alternative, but would for new motorized access. Table 3 shows the breakdown of the road mileage contained

within each specific special area by alternative. This table also goes further to analyze whether the roads affected by special areas are for public use or administrative use.

**Table 4: Road Mileage by Special Interest Management Area**

Alternative	A	B	C	D
<b>Cottonwood Basin Fumeroles GSA</b>				
Public Use	-	1.8	1.8	1.8
Admin Use	-	0.3	0.3	0.3
<b>Total:</b>	<b>0.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>
<b>Cottonwood Basin Fumeroles BSA</b>				
Public Use	-	-	6.1	-
Admin Use	-	-	1.9	-
<b>Total:</b>	<b>0.0</b>	<b>0.0</b>	<b>8.0</b>	<b>0.0</b>
<b>Rocky Gulch RNA</b>				
Public Use	-	-	-	-
Admin Use	-	1.3	1.3	-
<b>Total:</b>	<b>0.0</b>	<b>1.3</b>	<b>1.3</b>	<b>0.0</b>
<b>West Clear Creek RNA</b>				
Public Use	-	-	-	-
Admin Use	-	-	-	-
<b>Total:</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Camp Navajo</b>				
Public Use	0.0	0.0	0.0	0.0
Admin Use	-	-	-	-
<b>Total:</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Casner Canyon Research Natural Area</b>				
Public Use	0.3	0.3	0.3	0.3
Admin Use	-	-	-	-
<b>Total:</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
<b>Elden Environmental Study Area</b>				
Public Use	0.3	0.3	0.3	0.3
Admin Use	2.5	2.5	2.5	2.5
<b>Total:</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>
<b>Fern Mountain Botanical Area</b>				
Public Use	0.6	0.6	0.6	0.6
Admin Use	0.9	0.9	0.9	0.9
<b>Total:</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>
<b>Fort Valley Experimental Forest</b>				
Public Use	15.4	15.4	15.4	15.4
Admin Use	22.3	22.3	22.3	22.3

<b>Alternative</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Total:</b>	<b>37.8</b>	<b>37.8</b>	<b>37.8</b>	<b>37.8</b>
<b>Fossil Springs Botanical Area</b>				
Public Use	0.9	0.9	0.9	0.9
Admin Use	1.9	1.9	1.9	1.9
<b>Total:</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>
<b>G A Pearson Research Natural Area</b>				
Public Use	-	-	-	-
Admin Use	0.0	0.0	0.0	0.0
<b>Total:</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Griffith Springs Environmental Study Area</b>				
Public Use	1.0	1.0	1.0	1.0
Admin Use	-	-	-	-
<b>Total:</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>
<b>Long Valley Experimental Forest</b>				
Public Use	3.1	3.1	3.1	3.1
Admin Use	4.2	4.2	4.2	4.2
<b>Total:</b>	<b>7.4</b>	<b>7.4</b>	<b>7.4</b>	<b>7.4</b>
<b>Mogollon Rim Botanical Area</b>				
Public Use	0.5	0.5	0.5	0.5
Admin Use	2.7	2.7	2.7	2.7
<b>Total:</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>
<b>Naval Observatory</b>				
Public Use	0.5	0.5	0.5	0.5
Admin Use	-	-	-	-
<b>Total:</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
<b>Old Caves Crater Environmental Study Area</b>				
Public Use	-	-	-	-
Admin Use	8.8	8.8	8.8	8.8
<b>Total:</b>	<b>8.8</b>	<b>8.8</b>	<b>8.8</b>	<b>8.8</b>
<b>Red Mountain Geological Area</b>				
Public Use	-	-	-	-
Admin Use	0.8	0.8	0.8	0.8
<b>Total:</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
<b>Grand Total:</b>	<b>66.8</b>	<b>70.1</b>	<b>78.1</b>	<b>68.8</b>

## Transportation Suitability: Alternatives B, C and D

The following table summarizes the acres suitable for the future consideration of new motorized areas, NFS roads, and temporary roads. This table is based on the acres within the Coconino NF for each management area under each alternative and the management areas suitable for these activities. This does not imply or propose these activities or level of development would occur but is a quantitative method to represent the differences between alternatives.

**Table 5: Acres Suitable for Future Consideration of New Motorized Areas, NFS Roads and Temporary Roads**

Category	Alternative B		Alternative C		Alternative D	
	Suitable	Non-Suitable	Suitable	Non-Suitable	Suitable	Non-Suitable
New Motorized Areas	879,685.95	1,128,118.28	784,776.00	1,223,028.24	880,701.08	1,127,103.16
NFS Road Construction	1,607,555.40	400,248.84	1,476,673.68	531,130.56	1,615,715.99	392,088.25
Temporary Road Construction	1,818,203.49	189,600.74	1,725,539.15	282,265.08	1,845,936.99	161,867.25
<u>[1] New roads or motorized trails are not suitable in sections classified as wild.</u>						
<u>[2] Whether a permanent road is suitable or not for a Wildlife Habitat Management Area is determined by whether or not administrative motorized travel is permitted. Where it is not permitted, permanent roads are not suitable.</u>						

## Wildlife Habitat Connectivity

Throughout the Coconino NF, the Arizona Game and Fish Department (AZGFD) offices of both Coconino and Yavapai counties identified corridors of concentrated wildlife habitat critical to the migratory patterns of multiple species in a Wildlife Connectivity Assessment. Among these critical corridors, NFS roads have been deemed barriers to some of the prior mentioned migratory patterns. Any mitigation of habitat fragmentation or modifications to NFS roads would be developed through a cooperative effort of AZGFD and Forest Service on a site specific basis.

## Cumulative Environmental Effects

The land management plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carryout any project or activity. Because the land management plan does not authorize or mandate any site-specific projects or activities (including ground-disturbing actions), there can be no direct effects. However, there may be implications, or long-term environmental consequences, of managing the forests under this programmatic framework.

The bounds of cumulative environmental consequence analysis for Coconino NF are the adjacent national forests, state and county highways that access and traverse the national forest, cities encompassed by the national forest, easements to access in-holdings, Coconino, Yavapai and Gila counties encompassing the national forest, and designated Forest Highways on Coconino NF.

As part of the landscape-scale forest restoration effort known as the Four Forest Restoration Initiative (4FRI), the Forest Service is proposing to work with industry partners to accomplish a large, landscape-scale, multi-year forest restoration project in northern and central Arizona. The objective of the project is to treat 300,000 acres of ponderosa pine forest by thinning and harvesting mainly small-diameter trees over a 10-year contract period. Many of the areas proposed for treatment are within Coconino NF. It is expected that new road construction may

occur in order to achieve access to some of these areas. The majority of these roads are expected to be temporarily used and then obliterated. In general, new road construction may also occur when access to a particular resource or private in-holding is needed.

Areas proposed for treatment as part of the Four Forest Restoration Initiative (4FRI) are scattered across four national forests – Tonto, Kaibab, Coconino, and Apache-Sitgreaves. Use of Coconino NF roads for access to treatment areas on the west side of the Sitgreaves NF, north side of the Tonto NF, and east side of the Kaibab NF would result in increased traffic and greater variety of vehicles to include heavy equipment. This would result in a need for more frequent road maintenance and possibly road improvements in order to accommodate this increased activity safely.

Completed, proposed, and planned road projects on and in close proximity of Coconino NF are included in the following regional road and transportation improvement plans:

- ADOT State Transportation Improvement Program FY 2011-2014
- ADOT Tentative 5-Year Transportation Facilities Construction Program 2012-2016
- Yavapai County Regional Road Program Planning Projects
- Flagstaff Area Regional Land Use and Transportation Plan
- Beaver Creek Regional Council *Draft Beaver Creek Vision 2020*
- Verde Valley Regional Land Use Plan Proposed Roadway Improvements

Road improvement and widening projects on and off the forest could have an impact on the forest. Projects on and in close proximity to the forest could result in increased easements and could facilitate ease of access onto the forest. Projects outside the forest could decrease driving times to access the forest. In general, it is expected that these projects could result in more visitors to the forest and increased road maintenance needs.

The Coconino NF road system could be impacted by the projects surrounding the forest, however, the effects would be minimal. The major effects of Alternatives B – D on the road system stem from changing ROS classifications, proposed special areas and management areas. These areas would be located in the more remote sections of the forest and would not be impacted by projects on primary travel arterials through the state. The increase in ease of access to the forest provided by some projects could increase traffic volumes on roads in close proximity to major arterials that travel through the forest. This possible increase would not change the maintenance level of the roads, but could possibly increase the maintenance needed to keep the road in the proper condition. Despite the possible increase in traffic volume, the sizes of the roads would not be altered due to the desired conditions stating that the need for public access must be balanced with the mitigation of ecological impacts.

Alternative A would not affect any State, County, or City transportation systems. Any alterations in the size of the NFS road system in Alternative A would be provided in the guidelines of the 1987 plan. In addition, the possible changes to the NFS road system brought about by Alternatives B – D would not affect the overall municipal transportation system throughout the region. With few exceptions, such as Forest Highway 3 (Lake Mary Road) and other forest highways, forest roads are not used as primary travel routes between cities and towns. The loss of road mileage due to the changing ROS classifications, proposed special areas and management

areas would neither increase or decrease traffic volumes on primary arterials such as Interstate 17 or Interstate 40.

The NFS road system is a part of the overall transportation system throughout the state of Arizona. Forest roads connect to collector roads as well as arterials throughout the state. The jurisdiction and maintenance responsibilities are divided between State, County and Forest Service through the use of easements, permits and cooperative maintenance agreements. For further information on this topic refer to the Land Use Specialist Report.

### **Relationship of Short-Term Uses and Long-Term Productivity:**

Each alternative has roads contained within areas that change Recreation Opportunity Spectrum (ROS) classifications from motorized to non-motorized. These roads would become inaccessible to all motor vehicles due to the changing ROS designation of roads within wilderness, wildlife habitat or other special interest management areas. In the short term this would affect public access to portions of the forest where these designations have changed from motorized to non-motorized. The long term implications of these changes would mean less maintenance for roads in these non-motorized areas and more focus on the remaining roads for user comfort and safety.

Table 5 shows the changes of Primitive and SPNM road mileage in reference to the road ROS classification between alternatives. There is no change in total road mileage; however the road mileage contained within non-motorized areas (Primitive and Semi-Primitive Non-Motorized) alter significantly between alternatives. These road mileages would potentially be considered for decommissioning or closure over the life of the plan to move towards the desired ROS for the area.

**Table 6: Road Mileage within Non-Motorized Area by Alternative**

	<b>Primitive</b>	<b>Semi-Primitive Non-motorized</b>	<b>Total</b>
<b>ALT A</b>			
Public Use	0.0	33.8	33.8
Admin Use	0.0	184.3	184.3
	<b>Total</b>		<b>218.1</b>
<b>ALT B</b>			
Public Use		82.5	82.5
Admin Use	4.5	477.4	481.9
	<b>Total</b>		<b>564.4</b>
<b>ALT C</b>			
Public Use	11.7	99.4	111.1
Admin Use	48.5	687.3	735.8
	<b>Total</b>		<b>846.9</b>
<b>ALT D</b>			
Public Use	-	82.5	82.5
Admin Use	0.7	479.2	479.8
	<b>Total</b>		<b>562.3</b>

## **Unavoidable Adverse Impacts**

The land management plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carryout any project or activity. Before any ground-disturbing actions take place, they must be authorized in a subsequent environmental analysis. Therefore, none of the alternatives cause unavoidable adverse impacts. Mechanisms are in place to monitor and use adaptive management principles in order to help alleviate any unanticipated impacts that need to be addressed singularly or cumulatively.

## **Irreversible and Irrecoverable Commitment of Resources**

The land management plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carryout any project or activity. Because the land management plan does not authorize or mandate any ground disturbing actions, none of the alternatives cause an irreversible or irretrievable commitment of resources.

## **Adaptive Management**

All alternatives assume the use of adaptive management principles. Forest Service decisions are made as part of an ongoing process. The land management plan identifies a monitoring program. Monitoring the results of actions will provide a flow of information that may indicate the needs to

change a course of action or the land management plan. Scientific findings and the needs of society may also indicate the need to adapt resource management to new information.

Construction and reconstruction designs and specifications will continue to be updated and revised as needed to meet the needs of the users. Road maintenance plans will be augmented to ensure changes in maintenance needs are accommodated for. These updates and revisions will provide the ability to adapt our activities to changing conditions.

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- TMR – FEIS – need final draft reference

## Specialist Information

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