

Four Forest Restoration Initiative, Rim Country EIS

Transportation Report

Prepared by:
Mike Larman
Engineering Technician
Enterprise Services

for:
Four Forest Restoration Initiative, Rim Country EIS

Date: March, 2022

We make every effort to create documents that are accessible to individuals of all abilities; however, limitations with our word processing programs may prevent some parts of this document from being readable by computer-assisted reading devices. If you need assistance with any part of this document, please contact the Coconino National Forest at: (928) 527-3600.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (for example, Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

Table of Contents

Introduction/Project Information.....	2
Relevant Law, Regulation, and Policy	2
Land Management Plan Direction.....	3
Coconino National Forest	3
Apache-Sitgreaves National Forest.....	7
Tonto National Forest	8
Affected Environment	9
Current Roads within Rim County by Jurisdiction	10
Issues/Indicators/Analysis Topics	11
Assumptions and Methodology	11
Summary of Alternatives and Resource Protection Measures (Design Features, Best Management Practices, Mitigation and Conservation Measures)	12
Environmental Consequences	15
Alternative 1 – No Action.....	15
Direct and Indirect Effects.....	15
Use of Existing Roads	15
Temporary Roads	15
Cumulative Effects.....	15
Direct and Indirect Effects Common to All Action Alternatives.....	16
Use of Existing System Roads	16
Road Maintenance and Reconstruction	16
Road Decommissioning.....	17
Road Relocation	18
Temporary Roads	19
Rock Pit Use and Expansion	20
Use of In-woods Processing and Storage Sites	20
Land Management Plan Amendment	20
Cumulative Effects Common to Each Action Alternative	20
Effects Unique to Each Action Alternative and Differences Among Them	20
Alternative 2- Modified Proposed Action.....	20
Direct and Indirect Effects.....	20
Alternative 3- Focused Restoration Alternative.....	22
Direct and Indirect Effects.....	22
Irreversible and Irretrievable Commitments of Resources.....	23
Unavoidable Adverse Effects	23
Short-term Uses and Long-term Productivity	23
Other Agencies and Individuals Consulted	23
Glossary.....	23

Introduction/Project Information

This report analyzes the transportation system within the Four Forest Restoration Initiative-Rim Country project area. The report describes the existing transportation system, new temporary roads that are needed to access the area, the relocation of existing roads and improvement of existing roads. It also addresses opportunities for road decommissioning of Forest Service system roads and non-system roads.

Relevant Law, Regulation, and Policy

Laws

National Forest Roads and Trails Act of October 13, 1964, as amended (16 U.S.C. 532-538). Authorizes road and trail systems for the national forests. Authorizes granting of easements across NFS lands, construction and financing of maximum economy roads (FSM 7705), and imposition of requirements on road users for maintaining and reconstructing roads, including cooperative deposits for that work

Highway Safety Act of 1966 (23 U.S.C. 402). Authorizes state and local governments and participating federal agencies to identify and survey accident locations; to design, construct, and maintain roads in accordance with safety standards; to apply sound traffic control principles and standards; and to promote pedestrian safety.

Organic Administration Act of 1897 (16 U.S.C. 551). This act authorizes the regulation of national forests.

Revegetation – Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1601, Pub. L. 93-378) as amended by the national Forest Management Act of 1976 (16 U.S.C. 1608, Pub. L. 94-588). Directs the designing of roads to standards appropriate for intended uses and prescribes the revegetation of roads within 10 years of the termination of temporary and undeveloped roads created under contract, permit, or lease.

Regulations

Title 36, Code of Federal Regulations, Part 212 (36 CFR Part 212). Establishes requirements for the administration of the Forest transportation system, including roads, trails, and airfields, and provisions for acquisition of rights-of-way. Describes a minimum road system and requires a science-based roads analysis to plan the road system and to set funding priorities.

Travel Management (36 CFR Part 212, Subpart A). Administration of the Forest Transportation System.

Prohibitions (36 CFR Part 261, Subpart A). General Prohibitions.

Title 36, Code of Federal Regulations, sections 261.12 and 261.54 (36 CFR 261.12 and 261.54). Establishes prohibitions on Forest transportation system roads that are enforceable by the Forest Service and other Federal law enforcement officials.

Sale and Disposal of National Forest System Timber (36 CFR Part 223 Subpart B). 223.37
Revegetation of temporary roads.

Other Guidance

Forest Service Manual (FSM) 7700- Transportation System, Describes the authority, objectives, policy, responsibility, and definitions for planning, construction, reconstruction, operation and maintenance of the forest transportation system facilities.

Land and Resource Management Plan Coconino National Forest , Land Management Plan for the Apache-Sitgreaves National Forests , Tonto National Land Management Plan. Provides forest level management direction for transportation systems.

Forest Service Manual (FSM) 7709, Chapter 40 (Construction Handbook),_Provides guidance for road construction.

Land Management Plan Direction

The Land Management Plans for the Coconino, Apache-Sitgreaves and Tonto National Forests provides management direction for roads resource as it applies to Rim Country as follows:

Coconino National Forest

General Description and Background for Roads

The Coconino NF transportation system road network consists of thousands of miles of arterial, collector, local, and closed roads ranging from maintenance level 1 (closed to all motorized uses) to maintenance level 4 (smooth surface that provides a moderate degree of user comfort and convenience at moderate travel speeds). The road system provides access to areas on the Coconino NF including private land, recreational opportunities, research sites, facilities, and to support forest and resource management.

Desired Conditions for Roads

The transportation system (roads) provides reasonable motorized access to the public, city, county, state, and other federal entities for permissible uses such as recreation, fire management, wildlife management, and access to infrastructure or neighboring land. The transportation system expands and contracts commensurate with use and needs, and it balances the desire for access with management activities and ecological effects. An economical system of sustainable, well maintained, and marked roads provides diverse opportunities to explore the forest while protecting watershed conditions, recreation opportunities, scenery, heritage resources, rare plants, fisheries, and wildlife habitat and movement. However, the transportation system does not necessarily provide for user comfort or all-weather access on all roads.

Road corridors and associated infrastructure (including those under easement or permit) are designed, constructed, and maintained to provide safe access while maintaining and meeting other desired conditions applicable to the area.

Temporary increases in roads are appropriate for projects associated with watershed protection and restoration. Temporary roads that support ecosystem restoration activities, fuels management, or other short-term projects are rehabilitated promptly after project completion. The minimum road system necessary for public, administrative, and private access within areas that affect water supplies, such as the Inner Basin, C.C. Cragin Reservoir, and Upper and Lower Lake Mary, protects water quality and quantity.

Motor vehicle use occurs at sustainable levels on the Coconino NF to provide opportunities for a variety of motorized use types and levels of challenge for a diversity of users. Travel restrictions are clearly understood by forest visitors.

Objectives for Roads

Decommission 200 to 800 miles of a combination of unauthorized roads and system roads not identified on the motor vehicle use map during the 10 years following plan approval. The motor vehicle use map is developed through a separate process established under the Travel Management Rule. Road decommissioning may be done in coordination with other management activities, such as the Four Forest Restoration Initiative.

Standards for Roads

Motorized vehicle use shall occur as identified on a designated system of roads, trails, and areas (including locations designated for motorized big game retrieval), as defined on motor vehicle use maps, except for those uses authorized by law, permits, and orders in connection with resource management and public safety.

Guidelines for Roads

Roads should be located, designed, and maintained to move toward or maintain desired conditions for other uses and resources.

Roads should have adequate drainage to avoid accelerated soil erosion, loss of vegetation, and long-term effects on soil productivity.

Roads should be signed to facilitate navigation of designated motorized routes and to prevent motorized use outside of designated areas and routes. Boundaries and routes should be clearly and uniformly identified through appropriate tools and management techniques.

Road maintenance and improvements should be consistent with Recreation Opportunity Spectrum, ROS objectives to maintain recreation opportunities and settings.

Soil and water BMPs should be implemented to protect water quality while designing, constructing, reconstructing, or relocating new and existing roads, parking areas and pullouts. For example, permanent and temporary road construction and relocation should:

- Occur outside of stream courses and aquatic management zones, except where crossing is required.
- Avoid wetlands, springs, seasonally wet meadows, and montane meadows.
- Avoid soils that are unstable and highly erodible where connected to stream courses.

Unneeded roads should be decommissioned to maintain an efficient and sustainable road system that maintains or moves toward other resource desired conditions.

Existing roads should be used or realigned before new roads are constructed to avoid areas where disturbance-sensitive threatened and endangered species are present.

For projects where long-term access is not needed, temporary roads should be used and naturalized in a timely manner. The intention is to have the road footprint, and potential effects from road use, such as possible introduction of invasive species, modification of scenic integrity objectives, or increased sedimentation into connected waters, on the landscape for as short a time as possible.

Bridges, culverts, stream crossings on permanent roads, and diversion structures should be designed to allow safe passage for aquatic organisms. Passage barriers are acceptable when needed to physically separate native and non-native species.

Management Approaches for Roads

Work closely with the State, counties, and other Federal agencies to resolve right-of-way issues and to ensure that public access to the various parts of the Coconino NF on State, county, or permanent National Forest System roads meets management objectives for all ownerships.

Work closely with utilities to ensure access to rights-of-way and infrastructure.

Cooperate with the National Park Service to identify Forest Service roads near boundaries with national monuments that should be closed or decommissioned from the system to prevent trespass onto National Park Service land.

Consider wildlife and plant habitat needs early in the transportation and development planning process.

Work closely with the Arizona Game and Fish Department, Arizona Wildlife Linkages Working Group, Arizona Department of Transportation, and others to identify linkages and potential barriers to wildlife movement and to mitigate such threats during project design.

Take advantage of opportunities to work with the Federal Highway Administration, Arizona Department of Transportation, and other road management agencies to improve safe wildlife movement across interstate highways.

Encourage private landowners who use forest roads to take maintenance responsibility for roads that serve primarily private uses.

Cooperate with local and regional governments, Federal Highway Administration and Arizona Department of Transportation on the planning, design, construction, and maintenance of highway corridors.

The application of seasonal timing restrictions is site-specific and may vary depending on variables such as species; weather; timing of activity relative to species life cycle; or duration, frequency, and type of activities that are occurring in the species' habitat. Other variables to be considered could include the duration, extent, and intensity of the proposed activity, or the type of activity itself, such as emergency or safety-related actions versus non-emergency activities. The best available information and science is utilized to develop seasonal restrictions to reduce effects on disturbance-sensitive species.

Factors in prioritizing the naturalization of decommissioned and unauthorized roads include the following:

- Watershed Condition
 - Soils that are receiving, or are expected to receive, damage to the extent that soil productivity is or will be significantly impaired outside of the road prism.
 - Riparian areas (springs, wetlands, or stream reaches) that are impaired or non-attaining due to sedimentation or alterations to hydrology related to the road.
 - Meadows at the TEUI montane meadows polygon map unit scale that are likely to be or are being damaged.
 - Poorly located, designed, or maintained roads connected to downstream impaired or non-attaining waters, where potential for increased runoff and sedimentation is high.
- Wildlife, Fish, and Plants
 - Habitats for threatened, endangered, or sensitive species that are susceptible to roads as barriers or roads as mortality hazards.
- Social and Cultural Values
 - Areas of high or very high scenic integrity.
 - Roads that provide undesirable access to archaeological sites and areas of traditional cultural use by consulting tribes.
 - Areas where user conflict must be resolved or to ensure public safety.
 - Areas with Semi primitive non-motorized ROS objectives.
 - Roads where use levels or road maintenance causes adverse noise effects on recreational experiences.
 - Redundant roads.
 - Roads that are not identified on the motor vehicle use map, which are not needed for administrative purposes.
 - Roads that continue to be used for public access despite motorized restrictions.

Apache-Sitgreaves National Forest

Desired Conditions for Motorized Opportunities

A maintained road and motorized trail system is in place and provides for safety and access for the use (e.g., recreation, minerals, vegetation treatment, fire protection) of the Apache-Sitgreaves National Forests NFs.

Users have opportunities for motorized access and travel on a system of designated NFS roads, NFS motorized trails, and motorized areas.

The transportation system provides a variety of recreation opportunities including varying degrees of difficulty, from OHV trails to paved scenic byways, while limiting resource and/or user conflicts.

NFS roads, motorized trails, and motorized areas are easily identified on the ground (e.g., well marked).

The road and trail system is accessible from local communities, State, county, and local public roads and trails.

Loop trails exist for motorized trail users. Tread Lightly!® principles are commonly practiced.

The location and design of roads and trails does not impede wildlife and fish movement.

Objectives for Motorized Opportunities

Annually, maintain at least 20 percent of the passenger vehicle and 10 percent of the high-clearance vehicle NFS roads.

Annually, maintain at least 20 percent of NFS motorized trails.

Standards for Motorized Opportunities

Motorized vehicle travel shall be managed to occur only on the designated system of NFS roads and motorized trails and designated motorized areas.

Unless specifically authorized, motorized cross-country travel shall be managed to occur only in designated motorized areas.

Temporary road construction shall minimize the effects on resource values and facilitate road rehabilitation. Temporary roads shall be rehabilitated following completion of the activities for which they were constructed.

Road maintenance and construction activities shall be designed to reduce sediment (e.g., water bars, sediment traps, grade dips) while first providing for user safety.

Guidelines for Motorized Opportunities

New motorized trails or additions to designated trails should include destinations and loops to provide for a variety of opportunities.

New roads or motorized trails should be located to avoid Mexican spotted owl protected activity centers, northern goshawk post-fledging family areas, and other wildlife areas as identified; seasonal restrictions may be an option.

New roads, motorized trails, or designated motorized areas should be located to avoid meadows, wetlands, seeps, springs, riparian areas, stream bottoms, sacred sites, and areas with high concentrations of significant archaeological sites. The number of stream crossings should be minimized or mitigated to reduce effects on aquatic species.

As projects occur in riparian or wet meadow areas, unneeded roads or motorized trails should be closed or relocated, drainage restored, and native vegetation reestablished to move these areas toward their desired condition.

As projects occur, roads or motorized trails that contribute to negative effects on cultural resources should be closed or relocated.

As projects occur, redundant roads or motorized trails should be removed to reduce degradation of natural resources.

Roads and motorized trails removed from the transportation network should be treated in order to avoid future risk to hydrologic function and aquatic habitat.

Trail markings (e.g., signs) should be designed to complement the character of the surrounding lands.

Roads and motorized trails should be designed and located so as to not impede terrestrial and aquatic species movement and connectivity.

As projects occur, existing meadow crossings should be relocated or redesigned, as needed, to maintain or restore hydrologic function using appropriate tools such as French drains and elevated culverts.

After management activities occur in areas with high potential for cross-country motorized vehicle use, methods (e.g., barriers, signing) should be used to control unauthorized motorized use.

Tonto National Forest

Standards and Guidelines

Where possible, locate roads on natural benches, ridges, flat slopes near ridges or valley bottoms, and away from stream channels.

Roads should be located on well-drained and stable ground, avoiding seeps and other unstable areas.

Stream crossing approaches should avoid steep pitches and grades in order to prevent sedimentation.

Where channel crossings are necessary, select an area where the channel is straight and cross the channel at right angles.

In streams inhabited by fish, structures need to provide for fish passage. In addition, structures containing natural stream bottoms are preferred over culverts.

Reduce road dimensions to that which will adequately fulfill anticipated needs and avoid large road cuts and fills.

An interdisciplinary (I.D.) team will evaluate the need for buffer strips between proposed roads and adjacent water bodies. Where a buffer strip is deemed necessary, the I.D. team will recommend the width of strip needed to achieve adequate protection of aquatic and riparian resources.

Avoid channel changes or disturbance of stream channels and minimize effects on riparian vegetation.

Provide necessary water drainage structures as road construction proceeds.

Road runoff should not be discharged directly into streams, but should be diverted over stable vegetated areas or riprap.

Minimize excavation with a balanced earthwork design; the area of cut slopes should be minimized in order to reduce erosion and slope instability.

Construction should take place only when soil conditions are not too wet. Large cut and fill slopes should be stabilized.

Bridges and culverts should be installed in a way that prevents stream sedimentation and channel changes and provides for fish migration.

Affected Environment

Forest system roads within the analysis area are managed in accordance with current management objectives that are based on a variety of needs for access and use of forest resources. The system of roads range from primitive, unsurfaced roads (maintained for resource protection and not user comfort), aggregate surfaced roads (maintained for varying degrees of user comfort) and double lane asphalt surfaced forest service and state highways. These roads form a transportation system that provides access to the area for a variety of uses, including vegetation treatments, fuel treatments, fire suppression and recreation. The majority of these system roads were planned and constructed during past commercial harvest activities and are not accessible year round by all types of vehicles. Majority of arterial roads were designed for lowboy use and local spurs were designed for a standard log truck. In addition to passenger vehicles and high clearance vehicles, many of these roads are used by off highway vehicles, hikers, mountain bikers and horseback riders.

Some roads within the project area are poorly located. They may be overly steep and difficult to drain, located in drainages, too close to streams or a number of other situations. Many of these roads are difficult to maintain and are causing soil and water resource damage.

The number of miles of county, state and federal highways outside of the project area that provide access to the project area and link it with potential wood processing facilities is not estimated. Since the location of potential future processing facilities is unknown it is not possible to identify all public roads which may or may not be used for accessing the area.

Current National Forest System Roads within Rim Country

Currently there are approximately 5,983 miles of NFS roads within the project area on Forest Service lands. Table 1 displays the miles of road by operational maintenance level.

Table 1. Rim Country Project Area Existing Road Mileage Summary

Maintenance Level	A-S	Coconino	Tonto	Total
1- Basic Custodial Care (closed)	1,697	192	295	2,184
2 - High Clearance	998	1,438	619	3,055
3 - Suitable for Passenger Vehicles	352	244	77	673
4 - Moderate Degree of User Comfort	27	11	30	68
5 - High Degree of User Comfort	0	0	3	3
Total System Roads	3,075	1,886	1,022	5,983

Current Roads within Rim County by Jurisdiction

Currently there are approximately 351 miles of road within the project area that is not primarily maintained by Forest Service. These roads range from local, county, or state highways to roads privately owned. Table 2 displays the mileage of road by jurisdiction.

Table 2. Rim Country Project Area by Jurisdiction Mileage Summary

Jurisdiction	A-S	Coconino	Tonto	Total
Forest Service	3,075	1,886	1,022	5,983
State	42	46	63	151
County, Parish, Borough	83	34	44	161
Local	0	1	0	1
Private	2	11	19	33
Other	0	0	5	5
Grand Total:	3,202	1,997	1,154	6,334

Issues/Indicators/Analysis Topics

The following significant issue was identified for the Rim Country Project:

Roads

The miles of temporary roads needed in the proposed action may negatively affect watershed and stream conditions, and wildlife habitat and connectivity. Commenters asked that the Forest Service to limit road networks to those roads needed for access and management. Commenters requested an alternative that dramatically reduces temporary road mileage.

How Issue is addressed:

Alternative 3 was partially developed to respond to this issue. It includes the least number of miles of temporary roads. Design features and/or mitigation measures will be developed to reduce effects on watersheds, streams, and wildlife habitat. This issue will be addressed in the effects analysis for all alternatives.

Indicators/Measures:

Indicators will include the range of temporary roads that may be needed in each of the alternatives, measured by the approximate number of miles of temporary roads proposed in each alternative.

Assumptions and Methodology

The Rim Country project area consists of 1.24 million acres on the Apache-Sitgreaves, Coconino, and Tonto National Forests. However within this area, several other environmental analyses have been conducted in recent years. These previous analyses affect the type of transportation analysis conducted in this document.

Two environmental assessments totaling 61,101 acres, recently analyzed for transportation needs for mechanical thinning and also for road decommissioning. No additional transportation analysis was conducted in these areas within the Rim Country EIS project area. These projects are:

- Larson- 29,921 acres- Apache-Sitgreaves National Forests
- Upper Rocky Arroyo- 31,180 acres- Apache-Sitgreaves National Forests

Six other environmental assessments totaling 192,187 acres, analyzed only for transportation needs for mechanical thinning and did not analyze for any road decommissioning. These projects are:

- Upper Beaver Creek- 48,245 acres- Coconino National Forest
- Clints Well- 16,825 acres- Coconino National Forest
- CC Cragin- 63,867 acres- Coconino National Forest
- Rim Lakes- 33,746 acres- Apache-Sitgreaves National Forests
- Show Low South- 4,624 acres- Apache-Sitgreaves National Forests
- Timber Mesa-Vernon- 24,880 acres- Apache-Sitgreaves National Forests

On the Coconino National Forest 185,596 acres are identified for mechanical treatment as part of the Rim Country EIS. On the Apache-Sitgreaves National Forests 212,487 acres are identified for mechanical treatment. On these two forests, all mechanical treatment acres are assumed to

require adequate road access to facilitate the removal of forest product resulting from forest restoration work.

On the Tonto National Forest 164,397 acres have been identified for mechanical treatment as part of Rim Country, however, many of these acres are dominated by chaparral, juniper or other vegetation with less ponderosa pine present. While these areas may be mechanically treated, it is unlikely that mechanical thinning would be carried out on all of these acres due to the small amount of merchantable material present.

Areas not proposed for mechanical treatments with wood products removal would not need the same level of access as those areas where forest products would be utilized. A minimum cutoff of 100 square feet of basal area/acre of ponderosa pine was used to determine which acres would likely need adequate road access to remove forest products. Based on this cutoff point of 100 square feet of basal area/acre of ponderosa pine, 48,589 acres on the Tonto National Forest were analyzed for temporary road construction needs. The remaining 115,808 acres on the Tonto National Forest were not analyzed for temporary road construction needs as removal of forest products is considered to be unlikely.

As a result of these previous analyses and the basal area threshold of 100 sq. ft./ac. on the Tonto National Forest, temporary road needs will only be analyzed for on 212,487 acres of the Apache-Sitgreaves National Forests, 185,596 of the Coconino National Forest and 80,561 acres of the Tonto National Forest for a total of 446,671 acres within the Rim Country project area.

Road decommissioning will be analyzed for on 1,080,341 acres within the Rim Country EIS project area. This represents the entire project area outside of the Larson and Upper Rocky Arroyo analysis areas, which have already been analyzed for road decommissioning in previous analyses.

Summary of Alternatives and Resource Protection Measures (Design Features, Best Management Practices, Mitigation and Conservation Measures)

The design features relating to transportation and shown in Table 3 below, would be implemented under the Rim Country EIS

Table 3. Transportation Design Features

DF/BMP/M&CM Number	Description	Primary Purpose
TR001	Avoid locating temporary roads on soils with severe erosion hazard.	The completion of a total maximum daily load assessment may result in developing additional water quality improvement strategies and mitigation of effects within associated watersheds.

DF/BMP/M&CM Number	Description	Primary Purpose
TR002	On areas to be prescribed burned, if decommissioned roads are used as fire lines, return decommissioned roads to their pre-burn condition. Rehabilitation of the surface should refer to the soil and water BMPs for rehabilitation of fire lines and disturbed areas.	Discourage use on previously decommissioned roads and maintain a safe and economic road system.
TR003	Where temporary road construction is unavoidable, provide soil protection through implementation of any of the following methods to control sediment and protect water quality. Methods may include but are not limited to properly locating the temporary road in an upland position, road drainage (waterbars/rolling dips), and outsloped roads. For activities adjacent to the road to control runoff, include tactics such as wattling, hydro-mulching, straw or wood-shred mulching, spread slash, erosion mats, terraces, blankets, mats, silt fences, riprapping, tackifiers, soil seals, seeding and side drains.	To protect long-term soil productivity.
TR004	Utilize road safety signage with any project road activities that are related to project implementation.	Provide for user safety.
TR005	Utilize the closest material source that has the specified material type for all road maintenance/reconstruction/relocation projects.	Minimize energy use for road maintenance/reconstruction/relocation activities.
TR006	The timber contract or stewardship contract should require pre-haul and post-haul maintenance on all roads to be used for haul.	Provide for a safe travel surface and provide for access to the project area.

DF/BMP/M&CM Number	Description	Primary Purpose
TR007	Decommissioned roads should have the roadbed removed and natural contours and gradients restored as much as possible. Slash or other suitable erosion material (mats, wattles, jute, silt fence, etc.) should be used where necessary and disturbed areas should be seeded with a suitable erosion control seed mix consisting primarily of native grass species. Roads that are in closed status should be either lightly scarified and seeded or stabilized with erosion control features (for example, rolling the grade, waterbars, etc.). Road entrances should be blocked to prevent access and signed as closed. Camouflaging of road entrances with large rocks and woody debris may prevent unauthorized access and improve stability. Road drainage features such as lead-out ditches or waterbars should not be hydrologically connected to stream channels on active or closed roads.	To protect long-term soil stability/productivity and water quality by reducing overland flow and sediment delivery originating from these locations.
TR008	As a condition of approval for use of a temporary road under any contract involving mechanical thinning, temporary roads would be decommissioned, using any one or combination of appropriate methods (FSM 7734.1, , also see TR007), by the purchaser/contractor immediately after mechanical treatments and restoration work are completed.	To protect long-term soil productivity and water quality and ensure that temp roads do not become de facto new roads.
TR009	Roads causing damage to hydrological resources, cultural resources or threatened endangered, and sensitive species habitat are a priority for decommissioning.	To reduce effects to aquatic habitats from roads.
TR010	Where feasible, relocate roads out of drainage bottoms to an upland location. If this is not feasible, rock armor outfall of drainage features as an energy dissipater.	To minimize sediment delivery into and disturbance to drainage systems, and minimize sediment production within channels.
TR011	Avoid road rehabilitation and maintenance during periods of sustained or heavy rainfall.	To minimize erosion and negative effects from sediment and other contaminants on water bodies and aquatic and associated habitats and cave/karst systems.
TR012	When deemed necessary to prevent potential damage to buried utilities, the Forest Service will coordinate any hauling activity which will cross buried utilities with the owner of the line. Care shall be taken to prevent damage to buried utilities which may include mitigation measures such as gravel padding or other suitable measures.	Prevent damage to water pipelines.
TR013	While a rock pit is in operation, appropriate dust abatement measures will be taken on roads and pit areas where trucks are operating if necessary.	Reduce dust and minimize visibility issues on roads.

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Effects

Use of Existing Roads

Under Alternative 1, no new restoration activities would take place and no additional use of existing roads would occur. Roads that are currently in custodial status (ML1) would remain closed and open roads would continue to provide access for recreational, commercial, and administrative functions in the same manner that they currently do.

Road Maintenance

Under Alternative 1, maintenance to provide public and administrative access would continue as normally scheduled, contingent on funding. This funding is generally devoted to the higher standard roads within the Analysis Area. No increase in road maintenance to accommodate restoration activities would occur. Current sediment delivery from road segments in need of maintenance would continue to have an impact on stream turbidity.

Road Decommissioning

Under Alternative 1, no road decommissioning would occur within the project area unless it is analyzed under separate NEPA analysis. System roads that are rutting, are no longer needed, or difficult to maintain will continue to deliver sediment and resource damage. Unauthorized routes will continue to erode and cause resource damage on the landscape.

Temporary Roads

Under Alternative 1, no new temporary roads would be constructed, unless constructed under separate NEPA analysis

Rock Pit Use and Expansion

Under Alternative 1, there would be no expansion of existing pits. Current use of existing and new pits analyzed under separate NEPA would continue.

Use of In-woods Processing and Storage Sites-

Under Alternative 1, no in-woods processing and storage sites would be created or used.

Land Management Plan Amendment

Under Alternative 1, there would be no Land Management Plan amendment to the 1985 Tonto National Forest Land Management Plan.

Cumulative Effects

Under Alternative 1, there would be no cumulative effects.

Direct and Indirect Effects Common to All Action Alternatives

An adequate transportation system to provide access for restoration work and for removal of forest products generated from restoration activities is critical for accessing stands identified for mechanical treatment. Listed in the following paragraphs are practices that are common to all action alternatives.

Use of Existing System Roads

It is assumed that nearly all of the existing roads within the Rim Country analysis area may at some point in time be used to provide access for a variety of restoration activities, including hauling of forest products resulting from mechanical treatments. Mileage of existing system roads by maintenance level (ML) is shown in table 1. Majority of the Forest System roads within the project area are ML 1, 2 or 3 roads with less than 1% of the total mileage ML 4 or 5. This analysis addresses temporarily opening existing closed roads (ML-1), to utilize them for the time period that they are needed to provide access for restoration work. These roads shall be closed upon completion of work in the area they access and returned to a closed status (ML-1).

During project implementation, traffic would increase from moving equipment in and out, hauling forest products, and worker travel to and from the project area. Traffic management in accordance with standard contract provisions would mitigate risks to workers and provide for safe public traffic. Short-term temporary route closures to public travel would be implemented to provide for worker and public safety during project implementation.

It is proposed in the preferred alternative in the Tonto National Forest Travel Management EIS that 354 miles of ML 2 roads be converted to motorized trails. These have received minimal maintenance over the years and their current condition is not anticipated to improve (narrowing, roughening up or otherwise modifying the road as it's redefined to a motorized trail). Full size vehicles would be authorized to use these routes under Tonto National Forest Travel Management and they would be managed as motorized trails. A motorized trail is defined as: "A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail." It's anticipated that pre-haul maintenance is all that would be needed in the future to prepare the motorized trails for use to access mechanical treatment areas.

Roads used for hauling of forest products under this analysis would be maintained or reconstructed to meet road management standards under National Best Management Practices for Water Quality Management on National Forest System Lands.

Road Maintenance and Reconstruction

Road maintenance is defined as, "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. This work includes brushing of roadside vegetation, falling danger trees, road blading, cleaning ditches, cleaning culvert inlets and outlets, etc." (36 CFR 212.1). Maintenance activities generally do not disturb ground outside of existing roadway (toe of fill to top of cut) other than removing materials around culvert inlets.

Road maintenance on roads that receive substantial use (generally ML 3,4, or 5) by the public are often maintained by the Forest Service on a regular basis as funding allows. When there is a substantial increase in use of a road by a Forest Service contractor for uses such as hauling, this contractor is required to perform maintenance both during and after their use of the road

commensurate with their use. Road maintenance on roads that are closed to the public would be performed by the logging contractor.

Some roads may require more substantial work outside of road maintenance. These improvements would be done to improve and restore National Forest System roads. Improvements would provide serviceability for project haul vehicles and harvest equipment, as well as proper hydrologic function and stream protection according to applicable best management practices. Actions could include clearing, excavation, adding or replacing culverts, constructing drain dips, road widening, or riprap fills.

Maintenance and Reconstruction would protect or improve soil and water quality and improve access for timber harvest, recreation, administration, and other uses. Following implementation, the combination of road maintenance and reconstruction would provide long-term public and administrative access within the project area. These improvements would leave the road system in a more stable and functional condition, minimizing adverse resource impacts.

Roads used for hauling of forest products or other restoration activities under Rim Country would generally be maintained by contractors. This maintenance would likely be done while the road is being used and at the completion of hauling. All maintenance performed by contractors would be in accordance with Forest Service maintenance standards.

Road Decommissioning

Road decommissioning is defined as: "Activities that result in the stabilization and restoration of unneeded roads to a more natural state." (36 CFR 212.1, FSM 7705 – Transportation System) The Forest Service Manual (7712.11- Exhibit 01) identifies five levels of treatments for road decommissioning which can achieve the intent of the definition. These include the following:

- Block entrance
- Revegetation and water barring
- Remove fills and culverts
- Establish drainageways and remove unstable road shoulders
- Full obliteration recontouring and restoring natural slopes

These five treatment levels provide a wide range of options to stabilize and restore unneeded roads. Depending on ground conditions and road location, restoration may be achieved by either blocking the entrance, full obliteration, or a combination of the treatments listed.

This analysis will only provide estimated mileage and not identify specific road segments for decommissioning. Rather it shall provide the NEPA coverage over the project area to decommission roads and road segments at the time that task orders or other projects are implemented. Roads would be evaluated for decommissioning at that time.

Roads may be decommissioned for a variety of reasons including but not limited to roads that are:

- No longer needed for future management
- To protect cultural resources
- Causing soil or water resource damage
- Not useable without significant investment beyond current and future funding levels
- An ongoing road maintenance challenge
- An unauthorized road (an unauthorized roads is defined as road that is not a forest road or a temporary road and that is not included in a forest transportation atlas).

-
- Other unique situations

Under these alternatives both National Forest Systems roads that are not open to public use but has been used for administrative and/or permittee use and unauthorized roads, all of which are not open for public use, could be decommissioned. When a system road is decommissioned it is also removed from the National Forest Road System Database (INFRA).

Road decommissioning recommendations contained in the Transportation Analysis Process (TAP) reports (which determines the minimum road system), Travel Management Rule (TMR), and Travel Management Decisions for the Coconino, Apache-Sitgreaves and Tonto National Forests and site specific on the ground evaluations would be adhered to in selecting roads for decommissioning.

On the Tonto National Forest, decommissioning of system roads is being analyzed as part of the Tonto National Forest Travel Management EIS and roads for decommissioning are identified. Roads identified for decommissioning under the Tonto National Forest Travel management EIS could be physically decommissioned as part of restoration work undertaken as part of the Rim Country EIS. Additional roads on the Tonto National Forest could also be identified for decommissioning as needed under the Rim Country EIS.

Unless already identified for decommissioning under the Tonto National Forest Travel Management, roads on all 3 forests in Rim Country that are needed to provide reasonable skidding distances for future harvesting would not be decommissioned. Roads that are needed to provide access for leases and other special uses on National Forest lands would not be decommissioned, unless other suitable access is provided. If these roads are needed for future management but are a problem for soil and water resources, they would instead be relocated, and the existing road template would be decommissioned.

Unauthorized roads within the project area could be decommissioned under this decision on all forests. Unauthorized roads are not open for public use, were never designed to be on the landscape, and are currently causing resource damage. Roads currently designated as open under a forest's Motor Vehicle Use Map would not be decommissioned or closed under this alternative. Any road currently not designated as open under a forest's Motor Vehicle Use map is not open to the public at this time.

Road Relocation

Road relocation is defined as moving an existing road from its current location and re-locating it to a new location. Unfortunately many roads within the project area are poorly located and were never properly designed. As a result these roads are in need of relocation. Roads that could be considered for relocation include those that are:

- Too steep resulting in significant erosion
- Below the level of the surrounding land and are difficult to drain.
- Are too close to a seasonal or perennial waterbody and contributing sediment to the waterbody
- Other unique situations
- Any combination of the reasons listed above

When roads are relocated, their former location would be decommissioned. This would result in little if any net gain or loss in road mileage in most cases. Road relocation of a system road is not

considered construction of a new permanent road. It is considered a relocation of an existing road.

This analysis will not identify specific road segments for relocation. Rather it shall provide the basis to relocate roads and road segments at the time that task orders or other projects are implemented. Roads would be evaluated for relocation at that time using the criteria listed above. The purpose of road relocation is to reduce adverse environmental effects and allow for a safer, more economically feasible transportation system that has minimal effects to the surrounding area.

Temporary Roads

The Collaborative Forest Landscape Restoration Program(CFLRP), does not allow for the construction of new permanent road in CFLRP projects. Any new road constructed under CFLRP must be a temporary road and cannot be added to the National Forest road system. All new road construction in this project will be considered temporary.

A temporary road is defined as: “A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road, or trail and that is not included in the transportation atlas.” (36 CFR 212.1)

In order to provide adequate access to the project area for wood product removal, some temporary roads would need to be constructed in some locations. Temporary roads for this project are intended to provide as short term access to a specific area for wood product removal and/or follow up treatments, such as prescribed burning. Temporary roads are often used to provide economically feasible skidding distances in harvest operations. The Forest Service and contractor have to agree on a temporary road plan that is based upon each contractor’s available equipment, making it impossible to accurately predict the exact location at this time. However, design criteria is followed in determining the amount and locations of these roads. Immediately following completion of work in the area they serve, temporary roads would be decommissioned and made impassable to vehicles. Decommissioning will be accomplished with one or more of the five levels of treatments described above, under Decommissioning.

Temporary roads may be either new construction or may utilize existing road prisms of unauthorized roads. If new temporary roads need to be constructed, they shall be placed in locations that minimize environmental effects to the greatest possible degree and constructed in the shortest distance possible.

When constructing new temporary roads, they will:

- Follow contour lines as much as possible, making gradual transitions between.
- Be outside of Aquatic Management Zones or Wildlife conservation areas
- Avoid stream crossings where practical and install necessary drainage features when unavoidable
- Consider soil types and any landslide potential
- Be the shortest distance possible and used for a minimal amount of time
- Only constructed when no other feasible option is available

Rock Pit Use and Expansion

Rock pit use and expansion could require a limited amount of temporary road in order to achieve expansion. This mileage is included in the estimated temporary road mileage under each action alternative.

Use of In-woods Processing and Storage Sites

In-woods processing and storage sites could require a limited amount of temporary road. This mileage is included in the estimated temporary road mileage under each action alternative.

Land Management Plan Amendment

There would be no effects on roads as a result of Land Management Plan amendment.

Cumulative Effects Common to Each Action Alternative

Additional road maintenance performed during project implementation, road reconstruction that would improve surface conditions, drainage feature function, hazard tree removal, and roadside clearing would provide long-term safe efficient travel with high user comfort that would have minimum adverse effects on resources. Road decommissioning would improve surface conditions and drainage feature functions, providing long term resource benefits to all resource areas. Road relocation would provide for less resource damage, moving the road to a location that would require less maintenance.

Under both proposed alternative actions, short-term traffic from harvest operations and forest product removal would require traffic control and temporary public road closures in areas with harvest operations activities. Trucker communications would maintain safe and efficient traffic flow. A short-term public access closure would minimize user conflicts during project implementation. Main collector and arterial forest roads would receive the majority of traffic and would have surface wear proportionate to traffic volume. Road maintenance would ensure drainage feature function and improve surface conditions.

Effects Unique to Each Action Alternative and Differences Among Them

Alternative 2- Modified Proposed Action

Direct and Indirect Effects

Use of Existing Roads

It is assumed that nearly all, if not all system roads within the project area could be utilized at some point in time to carry out restoration activities.

Table 4 displays the miles of road by maintenance level that could be used for timber harvest activities. This mileage is based upon all potential timber harvest units and could be reduced depending on ground conditions at implementation.

Table 4. Alternative 2 Timber Haul Road Mileage Summary

Maintenance Level	A-S	Coconino	Tonto	Total
1- Basic Custodial Care (closed)	1,226	160	298	1,683
2 - High Clearance	846	1,194	650	2,690
3 - Suitable for Passenger Vehicles	334	250	98	682
4 - Moderate Degree of User Comfort	21	10	39	69
5 - High Degree of User Comfort	0	0	3	3
Total System Roads	2,426	1,886	1,087	5,127

The remaining mileage in the project area could be used to complete other restoration activities.

Road Maintenance and Reconstruction

Roads that would be utilized for restoration work and hauling of forest products would likely see pre-haul maintenance or reconstruction if needed to make the roads passable to truck traffic, as well as maintenance during hauling and post haul maintenance. This maintenance would be in addition to a forest's regular schedule of maintenance.

Under Alternative 2 approximately 79% of the Apache-Sitgreaves National Forests, approximately 86% of the Coconino National Forest, and approximately 94% of Tonto National Forest would receive some form of maintenance and/or reconstruction related to timber removal. The remaining mileage would see maintenance and/or reconstruction work for other restoration activities.

Road Decommissioning

Under this alternative up to 200 miles of system road on the Coconino and Apache-Sitgreaves National Forests could be decommissioned. These system roads are currently not on any forest's Motor Vehicle Use Map and not open for public use. The Tonto National Forest Travel Management EIS has identified approximately 290 miles of road within the Rim Country project area for decommissioning. In addition to system road decommissioning, up to 800 miles of unauthorized roads on all 3 forests may be decommissioned under this alternative. All 800 miles of unauthorized roads are currently not open for public use. All road decommissioning would be done in accordance with TMRs.

Road Relocation

Roads may be relocated as needed under this alternative in order to reduce adverse resource effects, to facilitate use for restoration activities and improve public safety. Although the exact location of these roads are not identified at this moment, the criteria previously listed will dictate which sections get relocated.

Temporary Roads

Under this alternative up to 330 miles of temporary road could be utilized to facilitate mechanical treatments. These temporary roads may be new construction or also utilize existing

unauthorized roads. Temporary roads would be decommissioned as soon as thinning and related restoration work is completed in the areas that they access.

Alternative 3- Focused Restoration Alternative

Direct and Indirect Effects

Use of Existing Roads

It is assumed that nearly all, if not all roads within the project area could be utilized at some point in time to carry out restoration activities.

Table 5 displays the miles of road by maintenance level that could be used for timber harvest activities. This mileage is based upon all potential timber harvest units and could be reduced depending on ground conditions at implementation.

Table 5. Alternative 3 Timber Haul Road Mileage Summary

Maintenance Level	A-S	Coconino	Tonto	Total
1- Basic Custodial Care (closed)	863	145	233	1,241
2 - High Clearance	643	1,015	561	2,219
3 - Suitable for Passenger Vehicles	300	250	98	647
4 - Moderate Degree of User Comfort	7	10	38	55
5 - High Degree of User Comfort	0	0	3	3
Total System Roads	1,812	1,420	932	4,165

The remaining mileage in the project area could be used to complete other restoration activities.

Road Maintenance and Reconstruction

Roads that would be utilized for restoration work and hauling of forest products would likely see pre-haul maintenance or reconstruction if needed to make the roads passable to truck traffic, as well as maintenance during hauling and post haul maintenance. This maintenance would be in addition to a forest's regular schedule of maintenance.

Under Alternative 3 approximately 59% of the Apache-Sitgreaves National Forests, approximately 75% of the Coconino National Forest, and approximately 91% of Tonto National Forest would receive some form of maintenance and/or reconstruction. The remaining mileage would see maintenance and/or reconstruction work for other restoration activities.

Road Decommissioning

Under this alternative up to 200 miles of system road on the Coconino and Apache-Sitgreaves National Forests could be decommissioned. These system roads are currently not on any forest's Motor Vehicle Use Map and not open for public use. The Tonto National Forest Travel Management EIS has identified approximately 290 miles of road within the Rim Country project area for decommissioning. In addition to system road decommissioning, up to 800 miles of

unauthorized roads on all 3 forests could be decommissioned under this alternative. All 800 miles of unauthorized roads are currently not open for public use. All road decommissioning would be done in accordance with TMRs.

Road Relocation

Roads may be relocated as needed under this alternative in order to reduce adverse resource effects, to facilitate use for restoration activities and improve public safety. Although the exact location of these roads are not identified at this moment, the criteria previously listed will dictate which sections get relocated.

Temporary Roads

Under this alternative up to 170 miles of temporary road could be created and utilized to facilitate mechanical treatments. These temporary roads may be new construction or also utilize existing road prisms of non-systems roads already present. Temporary roads would be decommissioned as soon as thinning and related restoration work is completed in the areas that they access.

Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources related to transportation are analyzed under individual resource areas in this document

Unavoidable Adverse Effects

Unavoidable adverse effects related to transportation are analyzed under individual resource areas in this document

Short-term Uses and Long-term Productivity

Effects from short-term uses and long-term productivity related to transportation are analyzed under individual resource areas in this document

Other Agencies and Individuals Consulted

Chris Miller- Forest Engineer, Apache-Sitgreaves National Forests - Road decommissioning and temporary road construction mileages and information on gravel pit locations

Debbie MacIvor- Forest Engineer, Apache-Sitgreaves National Forests Road decommissioning and temporary road construction mileages and information on gravel pit locations

Christine Crawford- Forest Engineer. Tonto National Forest- Gravel sources

Nick Warnke- Assistant Forest Engineer, Coconino-Kaibab National Forest, Zone Engineering- Gravel sources and pit locations

Glossary

Administrative NFS Road: Administrative National Forest System Roads are maintenance level (ML) 2-5 roads with motorized access restricted to administrative use only. Traffic may be managed with gates.

Arterial Road: A road that either connect to other arterial roads or to public highways. They are two or more lanes, usually paved and are developed for maximum mobility and travel efficiency (USDA Forest Service 2006).

Best Management Practices (BMP's): 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))

Closed Road: An existing system road closed to vehicular traffic, including administrative traffic. Closed roads are coded Maintenance Level (ML) 1 in the Forest Transportation Atlas data base.

Collector Road: A road that collects traffic from local roads to arterial roads. They are usually two-lanes and are of a higher standard than local roads. They are usually surfaced with gravel or pavement.

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 type closure to a complete obliteration.

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 (23 U.S.C. 101, 36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2, FSM 7705).

Local Road: A road that is usually sort, one-lane primitive roads (one-quarter to one-half mile in length) designed for single resource use and for vehicles with high clearance. There are some exceptions, such as some campground roads, which can be multiple lane, paved roads. Local roads on the National Forest system connect terminal facilities resources) with collectors, arterials, county roads, or state highways.

Motorized trails are defined as a trail that is designated for motorized travel that is 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 National Forest System lands (FSM 2353.05).

National Forest System Road. A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority. (36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2, FSM 7705)

Objective Maintenance Level. The maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, higher than, or lower than the operational maintenance level. The transition from operational maintenance level to objective maintenance level may depend on reconstruction or disinvestment. (FSH 7709.59, 62.3)

Opening a Road The act of allowing motorized use on an existing Maintenance Level 1 (ML1) National Forest system Road (NFSR). Activities to accommodate motorized use include removing physical barricades such as berms, boulders, vegetation, and re-establishing and maintaining drainages and runoff patterns along the roadway.

Recreation Opportunity Spectrum (ROS) – A framework for defining the types of outdoor recreation opportunities the public might desire, and identifies that portion of the spectrum a given national forest area might be able to provide

Road Decommissioning Activities that result in the stabilization and restoration of unneeded roads to a more natural state. (36 CFR 212.1)

Road Maintenance. The 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.

Road Maintenance Levels. Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. (FSH 7709.59, 62.32)

- **NFS ROADS CLOSED TO ALL MOTOR VEHICLES**

Maintenance Level 1 - These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources 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 non-motorized uses.

- **NFS ROADS OPEN TO ALL MOTOR VEHICLES:**

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.

- **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. 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. Manual on Uniform Traffic Control Devices (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. Manual on Uniform Traffic Control Devices (MUTCD) is applicable. The appropriate traffic management strategy is “encourage.”

Temporary Road or Trail. A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road, or trail and that is not included in the transportation atlas. (36 CFR 212.1)

Unauthorized Road or Trail. A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1, FSM 2353.05, FSM 7705).