United States
Department of
Agriculture
Forest Service

Cibola National Forest
Mt. Taylor Ranger District
Travel Analysis Process

For

Mt. Taylor Ranger District
Travel Management

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Executive Summary

Travel management in the Forest Service was traditionally split between Engineering for road management and Recreation for trails management. The recently revised regulation now combines the analysis of the motorized use of trails and roads under the Travel Analysis Process (TAP). The Travel Management Rule (TMR) requires each administrative unit (national forest, national grassland, etc.) or ranger district to designate those National Forest System (NFS) roads, NFS trails, and areas on NFS lands that are open to motor vehicle use by class of vehicle and, if appropriate, by time of year (36 CFR 212.51). Travel Analysis Process (TAP) has been completed for the Mt. Taylor Ranger District of the Cibola National Forest. The key concept underlying the TAP approach is to focus on possible changes to:

- The forest transportation system; or
- Restrictions and prohibitions on motor vehicle use.

The Travel Analysis Process helps to fulfill two major requirements of 36 CFR 212, subparts A and B:

1. To identify the minimum road system
2. To identify and subsequently designate a system of roads, motorized trails, and areas for motor vehicle use.

TAP will follow the same six step process outlined in the roads analysis process. The roads analysis process is currently described in a Miscellaneous Report, *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System* (1999).

The TAP outcomes are a set of recommendations to the forest transportation system. These recommendations will be evaluated through a subsequent National Environmental Policy Act (NEPA) process. A thorough Travel Analysis allows for subsequent environmental analysis (EA), if necessary, with the intention that individual projects be focused, while still addressing cumulative impacts. An anticipated upcoming environmental analysis will address which roads, trails, and areas to designate for motor vehicle use—to be published on motor vehicle use map (MVUM).

Chapter 4, section Recommendations for Roads and Maps 7 through 12 list and show the TAP recommendations. A complete list of the individual rankings for each road can be found in Appendix A. A breakdown of miles and percent of miles for the Transportation System are shown in Chapter 4 section Risk and Benefit Assessment (Roads Risk/ Benefit Matrix including Recommendations for Roads).

The Travel Analysis Process

The Travel Analysis Process provides Forest Service Line Officers with critical information to ensure that existing and developed road and motorized trail systems:

- provide for user safety and convenience
- respond to public needs and desires
- provide sustainable access
- are affordable within current and future expected budgets
- are efficiently managed
- have minimal negative ecological effects on the land
- are administered in an environmentally responsible manner
- balance with available funding for needed management actions
- are consistent with land management objectives.

A forest scale Roads Analysis of the primary transportation routes was completed for the Cibola National Forest in 2003; however, it only analyzed passenger car forest roads (maintenance level 3-5), and did not include high clearance vehicle and closed roads (maintenance level 2 & 1 roads), unauthorized roads, or trails where motorized use has been accepted as part of the analysis. Refer to Chapter 2 section Road Maintenance Levels for a complete description of the road maintenance levels.

Travel Analysis will not change or modify any existing travel system decisions. However, due to the information generated by the analysis, the Line Officer (Mt. Taylor District Ranger or Cibola National Forest Supervisor) may choose to reconsider previous decisions and perhaps at some future date revise previous travel system decisions.

Travel Analysis is intended to identify opportunities for the national forest transportation system to meet current or future management objectives, and to provide information that allows integration of ecological, social, and economic concerns into future decisions. The process is intended to complement, rather than replace or preempt, other planning and decision processes.

The Travel Analysis Process uses the six-step process identified in *FS-643, Roads Analysis: Informing Decisions about Managing the National Forest Transportation System (1999).* The Analysis is tailored to local situations and landscape/site conditions by forest staffs and coupled with public input.

The steps are designed to be sequential, with the understanding that the process may require feedback among steps over time as an analysis matures. The process provides a set of possible issues and analysis questions for which the answers can provide recommendations about the management of motorized roads and trails, and the management of motorized areas. Decision makers and analysts determine the relevance of each question, incorporating public participation as appropriate. TAP is not subject to NEPA as it makes recommendations. Further analysis would be necessary to make decisions. This TAP will be used to assist in development of the proposed action and alternatives for the Mt. Taylor Travel Management project. The steps in the process are:

- Step 1. Setting up the Analysis

- Step 2. Describing the Situation
- Step 3. Identify Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting

The product of this analysis is a report that documents the information and analysis used to identify opportunities, set priorities, and make recommendations for future motorized use of roads, trails and areas in conformity with the Travel Management Rule. Included in the report is a map displaying the known road and motorized trail systems for the analysis area, and the needs and opportunities for each road/trail, or segment of road/trail.

It documents the travel analysis procedure used for the Mt. Taylor Ranger District Travel Analysis Area and presents findings from the analysis. This report is a "living" document, reflecting the conditions of the analysis area at the time of writing. Thus, the document can be updated as the need arises and conditions warrant.

Recommendations from the report:

- Identify needed and unneeded roads and trails;
- Identify road/trail associated environmental and public safety risks;
- Identify site-specific priorities and opportunities for road and trail improvements and decommissioning
- Identify areas of special sensitivity or any unique resource values; and
- Provide other specific information that may be needed to support project-level decisions.

Project Introduction

The Mt. Taylor Ranger District of the Cibola National Forest is comprised of two mountain ranges, San Mateo Mountains (Mt. Taylor) and the Zuni Mountains, totaling nearly 520,000 acres of National Forest land. Elevations range from 6,500 to 11,301 feet. Mt. Taylor is an area of special religious and cultural significance to several Native American communities. Both mountain ranges are rich in cultural resources including historic sawmills, logging community sites, and logging railroad beds. The Mt. Taylor Ranger District of the Cibola National Forest includes a wide variety of terrain and vegetation types that greatly influence the places where motorized vehicles are used. A number of state and US highways cross the district, and additional county and municipal roads provide a connecting network to National Forest system roads (NFSRs). The Mt. Taylor Ranger District office is located in Grants, New Mexico refer to Appendix L for a vicinity map of the Mt. Taylor Ranger District.

The Mt. Taylor Ranger District is separated into six Management Areas (MAs) refer to Table 1.0 below. Designations and descriptions can be found in the Cibola National Forest Plan 1985. They provide direction for the administration and management of areas within the forest. Private and state roads are not considered forest roads unless agreements have been made regarding their use and jurisdiction.

Table 1.0 Cibola National Forest Plan 1985 Management Areas for Mt. Taylor Ranger District

Management Areas	Acres
8	194,099
9	4,377
10	5,932
13	60,465
14	236,185
18	17,419

The Mt. Taylor Ranger District (RD) is also known for dispersed recreation. Overnight camping with recreational vehicles is a popular activity, and many of these forest visitors bring off-highway vehicles to explore the forest beyond their base camp. Major forest roads (posted with horizontal route identification markers) are usually maintained on an annual basis, providing initial access for dispersed recreationists to get from towns and highways to remote locations. These main roads connect with a large system of low-standard roads. Most of these national forest roads were built for administrative activities such as timber harvesting, and do not receive regular maintenance. They are identified with vertical route identification markers.

A large number of additional system roads are managed as closed to public motorized use and kept in storage for future management activities. Many of these closed roads, along with many unauthorized routes, are commonly used by the public for motor vehicle operation. Berms, gates, fences, and signs have degraded or been vandalized over time, creating a confusing situation for forest visitors. Tire tracks are now a common site over and around barriers. The motor vehicle use map (MVUM), in combination with a fully implemented sign plan, should greatly enhance visitor understanding and expectations related to motor vehicle allowed uses on the Mt. Taylor RD.

Late summer and fall are popular hunting seasons where many OHVs are used across the forest. A number of outfitter guides operate on the forest, and a large number of out of town visitors come to this forest to hunt elk, deer, antelope, bear, turkey, quail, and also to fish. Motor vehicles typically play a large role in the hunts, not only for camping but also to access game. If the allowed use of motor vehicles to retrieve game is changed, it is likely to affect hunters on the Mt. Taylor RD.

Currently, there are no routes solely managed as a motorized trail on the Mt. Taylor RD. In general, the district is legally "open to cross-country motor vehicle use unless posted closed". The scale of this analysis includes all known National Forest System (NFS) roads, trails, and open areas on lands within the Mt. Taylor Ranger District boundaries excluding the areas with previous decisions for travel management.

Summary of Issues

Issues were identified using public involvement and internal Forest Service input. These issues include:

- Damage to resources and facilities from use of motorized vehicles on and off of National Forest System roads and trails.
- Inadequate maintenance of existing NFS roads/trails.
- NFS routes without Rights-of-Way or easements where they cross private lands is/will lead to lack of public and administrative access to substantial portions of the Cibola National Forest.
- High volume of unauthorized roads, and restoration and enforcement of the closed unauthorized roads
- Environmental impacts
- Ensure motorized access to fight Human Caused Fire

Summary of Recommendations Responding to Issues

- Improve route number signage on roads/trails to enhance compliance and enforcement.
- Rehabilitate areas damaged by off roads/trails driving.
- Reduce the number of roads/trails to reduce impacts to wildlife habitat, soils and cultural resources and decrease maintenance costs.
- Develop partnerships with various State, County and local groups to defray maintenance costs.
- Recognize Right-of-Way needs and prioritize
- Expand public outreach through information and interpretation to improve understanding of resource damage from improper use of off roads and trails driving. Provide accurate information to users for more informed decisions when choosing routes to travel.

Analysis Performed

A risk-benefit assessment was used to rank roads and motorized trails based on risks (wildlife disturbance, impacts on cultural resources, etc) and benefits (access to facilities, recreational opportunities for OHV users, etc.). The categories chosen to rank risk-benefit were based on issues (Appendix B) and by criteria set by the members of the Interdisciplinary Team in Chapter 4.

Key Results and Findings

Motorized travel off authorized routes, and/or use by incompatible or off-season motorized equipment causes damage to cultural resources, reduces soil and water quality and affects wildlife habitat.

How the Report Will be Used

Travel Analysis Process results will assist the Mt. Taylor Ranger District in management of the roads and motorized trail system, and open areas. It will be used in the development and analysis of the Mt. Taylor Ranger District Travel Management project proposed action and alternatives.

Chapter 1
STEP 1: SETTING UP THE ANALYSIS

Purposes

The purposes of this section are to:

- Identify the project area and state objectives
- Clarify the roles of technical specialists
- Develop a process plan and an analysis plan
- Address information needs

Project Area and Objectives

The Travel Analysis Process will be conducted for Mt. Taylor Ranger District. The objective of the analysis is to provide scientific information for managing a road, motorized trail system, and areas that are safe and responsive to public needs and desires, conforms to the National Forest Land Management Plan, is efficiently administered, has minimal negative ecological effects on the land, and is in balance with funding available for needed management actions. All existing system and recommended motorized travel routes, within the project area, are included in this Travel Analysis Report.

The analysis area for this TAP includes those areas on the Mt. Taylor Ranger District where motorized use is currently permitted which is comprised of 444,148 acres. Areas with existing travel management decisions already in compliance with the Travel Management Rule, as determined by the authorized officer, have been excluded from this analysis. These areas are: Chivato Mesa, Ft. Wingate, Water Canyon, and Little Water Canyon. Refer to Map 1, 2 and 3 – Existing Direction for these excluded areas.

The main objectives of this travel analysis are:

- Balance the need for access while minimizing risks by examining important ecological, social, and economic issues related to roads and trails;
- Furnish maps, tables, and narratives that display transportation management opportunities and strategies that address future access needs, and environmental concerns.
- Identify the need for changes by comparing the current road and motorized trail system and areas to the desired condition;
- Make recommendations to inform travel management decisions in subsequent NEPA documents.

Roles of Specialists

An Interdisciplinary Team (IDT) was assigned by the Cibola National Forest Supervisor. The IDT members and their primary interdisciplinary discipline(s) or function are listed below:

Table 1.1: Final Analysis Team

Name	Primary Interdisciplinary Discipline(s) or Function
Arnold Wilson	Recreation: Trail uses, management and data, Recreation: Motorized recreation Recreation Opportunity Spectrum Visual Quality Objective Team Leader: Travel Management
Bobby Garley	Access needs for fuels management, fire management, community protection/safety
Bryce Bohn	Hydrologist, watershed health, riparian, wetlands, water quality/quantity, air quality, soil
Chuck Hagerdon	Mt. Taylor District Ranger
Consuelo V. Zamora	Wildlife, fish, rare plants, threatened and endangered species
Cynthia Benedict	Tribal (Liaison, traditional/sacred sites and uses)
Don Hall	Access for special uses
James Duran	Range Management
Keith Baker	Integration with NEPA requirement
Linda Popelish	Cultural resources, cultural properties, traditional/sacred sites/uses
Marcia Hagerdon	Project support
Mark Chavez	Public Affairs Specialist
Mike Gurule	TAP Team Leader, Road management, road maintenance, motorized mixed use analysis, road data, integration with other road jurisdictions
Rob Arlowe	GIS mapping and GIS analysis, identification of data needs
Rob Byers	Right-of-ways, land ownership
Sara Campney	Social and Economic Lead
Victor Wyant	Vegetation/Timber resources access needs

Process Plan

The interdisciplinary team will recommend to the Line Officer a process plan for conducting the analysis. The Line Officer approves the process plan. The process plan described in FS-643 *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System* will be followed.

Analysis Plan

- Review data collection and analysis
- Review State OHV laws.
- Verify accuracy of system road and motorized trail locations on maps.
- Verify the current conditions of NFS roads and motorized trails and features associated with these assets including safety issues, surface type and environmental issues.
- Review draft motorized trail management objectives (TMO) on each motorized trail.
- Identify discrepancies between on-the-ground conditions, the Travel Routes database and current management direction.
- Document these items giving priority to safety issues.
- ID Team and Line Officer identify preliminary access and resource issues, concerns and opportunities.
- Identify additional issues, concerns and opportunities through public involvement and internal resource staffs.
- Perform the analysis concurrently with other analyses ongoing in the project area.
- Recommend changes to the road and motorized trail system and areas based on the findings of this Travel Analysis.

Information Needs

- Accurate location and condition of all system roads and motorized trails within the analysis area. A complete inventory of unauthorized (user-created) routes is not required; however some of these routes were inventoried at the Forest's discretion.
- For each road and motorized trail include the following information:
    1. Owner of the underlying land of each system road and motorized trail
    2. Any easement dedication to the FS
    3. Any additional right-of-way required
    4. Maintenance jurisdiction for the road or motorized trail, (FS, County, City, Volunteer group or State)

- Assessment of previous and current opportunities, problems and risks for all roads and motorized trails in the analysis area.
- Soil, water resources, invasive species, environmental issues and biological communities.
- Public access and recreational needs and desires in the area, including access for all landowners.
- Current observed road uses.
- Current draft trail management objectives (TMO) on each motorized trail.
- Areas of special sensitivity, resource values, or both.

- Best management practices for the area.
- Current forest plan and other management direction for the area.
- Agency objectives and priorities.
- Interrelationship with other governmental jurisdictions for roads and motorized trails.
- State laws that regulate motor vehicle use on and off public roads.
- Examine applicable federal, state, and local laws.
- Public and user group values and concerns.
- Forest scale and any project level Roads Analysis Process (RAP).
- Cultural Resources

Chapter 2
STEP 2: DESCRIBING THE SITUATION

Purpose

The purpose of this step is to:

Describe the existing road and motorized trail system

Describe the Existing Direction

Discuss Resource Concerns

List the New Mexico State OHV/ATV Laws

Describe Road Maintenance Levels

Discuss Trail Design and Classification

List the Best Management Practices

Existing Road and Motorized Trail System

Currently, the Mt. Taylor Ranger District does not have a motorized trail system nor do they have any areas specifically designated for motor vehicle use. However, 1011 miles of National Forest System (NFSR) roads are open to motorized use. They are managed for all motorized vehicles licensed by any state to operate on public roads. These routes are shown on Maps 1, 2, and 3.

Motor vehicle use on the Mt. Taylor Ranger District has increased in recent years as the surrounding communities' population continues to grow. This increased use has led to the proliferation of unauthorized (user-created) routes; increased conflict between motorized and non-motorized recreationists; and, areas of degraded soil, water, vegetation, and wildlife habitat conditions.

Existing Direction for Roads, Trails, and Areas

A. General

Because travel analysis is focused on identifying needed changes to the forest transportation system, identification of the existing direction is an important first step. In general terms, the existing direction includes the National Forest System roads and motorized trails currently managed for motor vehicle use, plus the restrictions, prohibitions and closures on motor vehicle use existing on an Administrative Unit.

Existing travel management direction and associated documentation determines the motorized routes and areas open to public motorized travel. Existing direction comes from: laws and regulations; official directives; Forest Plans; Forest Orders; including forest-wide and watershed or project specific roads analysis; and travel analysis. Additional sources of information about a Unit's managed system comes from: road and motorized trail management objectives (RMO's/TMO's);

maps, including visitor and travel management maps; Recreation Opportunity Guides (ROG's); road and motorized trail maintenance records; tabular database (INFRA); and other sources.

Existing direction does not preclude the designation of new roads, motorized trails or areas. Conversely, a road, motorized trail or area that is currently part of the existing direction does not assure it will remain designated. While the existing direction will be of great interest, in the end, recommendations will be made about roads, motorized trails and areas through the collaborative travel management planning process. Refer to Maps 1, 2, and 3 Existing Direction Maps.

B. Roads

The existing direction for roads open to the public for motorized use includes forest system roads which are currently in the Forest Service INFRA database (tabular data) with the following attributes:

- System = National Forest System Road
- Jurisdiction = Forest Service
- Route Status = Existing
- Operational Maintenance Level = 2-5

Roads in INFRA that meet any of the following criteria were not included in the existing transportation system. Exclude roads for designation where any of the following can be credibly documented:

- Technical Corrections –Incorrect coding in INFRA such as:
  1) Road record in INFRA but no corresponding road exists on the ground.
  2) Jurisdiction incorrectly coded as Forest Service.
  3) Unauthorized roads incorrectly coded as system roads (i.e., System = NFSR) instead of UNDETERMINED during any inventory or data editing process after the Road Policy came into effect on January 12, 2001 (See FSM 7703.2).
- Changes on the Ground - The road is in INFRA but no longer exists on the ground or the road has been converted to another use.
- Decision Not Recorded in INFRA – A NEPA decision to close a road exists but has not been recorded in INFRA.

Based on physical inventory 63.2 miles of roads were recorded in INFRA but no corresponding road exists on the ground. Therefore, these roads were deleted from INFRA for the following reasons:

- No evidence that the road existed
- No contract document
- No photos showing a location
- No NEPA documentation of any decommissioning decisions
- No records other than the entry in INFRA and the location on the Administrative maps

A list of these 63.2 miles which were deleted from the transportation system is located in Appendix F.

C. Motorized Trails

Currently there are no designated motorized trails on the Mt. Taylor Ranger District. The existing direction for motorized trails is the forest system of motorized trails populated in INFRA with the following attributes:

- Motorized Trail System = National Forest System Trail
- Jurisdiction = Forest Service
- Trail Status = Existing
- Allowed Use (from Access and Travel Management - ATM) = Any motorized vehicle with a management strategy of "manage" or "accept."

In some cases, motorized trails that meet the preceding criteria should not be included in the existing motorized trail system. Exclude motorized trails where any of the following can be credibly documented:

- Technical Corrections –Incorrect coding in INFRA such as:
  1. Motorized trail record in INFRA but no corresponding motorized trail exists on the ground.
  2. Jurisdiction incorrectly coded as Forest Service.
  3. Unauthorized motorized trails incorrectly coded as system motorized trails as a result of any inventory or data editing process after January 12, 2001 (See FSM 7711.03).
- Changes on the Ground – The motorized trail is in INFRA but no longer exists on the ground or the motorized trail has been converted to another use.
- Decision Not Recorded in INFRA – A NEPA decision to close a motorized trail to motorized use exists but has not been recorded in INFRA.

D. Areas

Currently there are no designated motorized areas on the Mt. Taylor Ranger District. Areas identified in Forest Plans or other planning documents, which have been specifically designated for unrestricted motor vehicle use, constitute the existing direction. Tracts of forest which currently lack motor vehicle use restrictions, but are not specifically designated for unrestricted motor vehicle use, are not included as part of the existing open to motor vehicle use as areas.

Areas designated for motor vehicle use are not intended to be large or numerous. The Rule preamble clearly states the provision allowing for this type of designation is to be applied sparingly. Designated areas are to have biophysical characteristics that are suitable for motor vehicle use, or they should be so significantly altered by past actions that motor vehicle use might be appropriate. If an area is designated, all of it will be open to cross-country motorized travel. Where practical, designated areas should be clearly delineated on the ground.

Resource Concerns

Much of the project area has soils rated as either erodes easily or low bearing strength, which indicates that the soil is susceptible to compaction and rutting. Severe erosion potential is more common to steeper slopes, but low bearing strength is common throughout the project area. These conditions make travel route construction and maintenance more difficult and costly considering the resource mitigations necessary to limit damage to soil productivity. Stream channels can be damaged by travel routes that either pass through or are directly adjacent to these channels. There can be damaged to the stream even when use only occurs when the channels are dry.

Generally, roads and motorized trails cause disturbance or displacement of wildlife, habitat fragmentation, habitat loss, reduction of habitat productivity, and in some cases, wildlife mortality. In some areas, improper placement of roads and trails has led to loss or reduced productivity of important wildlife habitats.

Heritage resources are a concern throughout the analysis area as they are important considerations in all management activities on the District. There has been human occupation in the area for thousands of years. Roads and motorized trails can impact heritage sites, and necessitate rerouting a road or trail.

There is fire risk wherever people use the forest. This risk can come from many sources; smoking, vehicles, and campfires. The transportation system is critical for access in fire suppression activities and fire patrols.

New Mexico State OHV/ATV Laws

Under New Mexico state laws, ATV's and off highway motorcycles can **only** be ridden on unpaved roads. Some pertinent excerpts of these laws are:

Section 66-3-1011 (Effective January 1, 2006) Operation on streets or highways; prohibited areas.
A. A person shall not operate an off-highway motor vehicle on any:
(1) limited access highway or freeway at any time; or
(2) any paved street or highway except as provided in Subsection B of this section.
B. Off-highway motor vehicles may cross streets or highways, except limited access highways or freeways, if the crossings are made after coming to a complete stop prior to entering the roadway. Off-highway motor vehicles shall yield the right of way to oncoming traffic and shall begin a crossing only when it can be executed safely and then cross in the most direct manner as close to a perpendicular angle as possible.

(i.e. By default, OHV's can operate on gravel & native surfaced roads in NM.)

Section 66-3-1012 (Effective January 1, 2006) Driving of off-highway motor vehicles adjacent to highway.
A. Off-highway motor vehicles issued a validating sticker or nonresident permit may be driven adjacent to a highway, yielding to all vehicles entering or exiting the highway, in a manner so as not to interfere with traffic upon the highway, only for the purpose of gaining access to or returning from areas designed for the operation of off-highway motor vehicles by the shortest possible route and when no other route is available or when the area adjacent to a highway is being used as a staging area. Such use must occur between the highway and fencing that separates the highway from private or public lands.
B. When snow conditions permit, an off-highway motor vehicle may be operated on the right-hand side of a highway, parallel, but not closer than ten feet, to the inside of the plow bank.

Further information may be obtained at:

- New Mexico ATV Brochure: http://www.wildlife.state.nm.us/publications/documents/OHV_Brochure_2007.pdf

- The NM Off-Highway Motor Vehicle Law:
  http://www.nmtourism.org/OHV/SB_252_Final_Version.pdf
  The 2006 law addresses safety, age restrictions, training requirements, fees, penalties and OHV use.

Road Maintenance Levels

The Forest Service differentiates types of forest roads into five maintenance levels which define the level of service, and maintenance required at that maintenance level. Brief descriptions of the five maintenance levels are listed below: (FSH 7709.58).

Maintenance Level 1
Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses and the road may be converted to a motorized trail.

Maintenance Level 2
Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

Maintenance Level 3
Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

Maintenance Level 4
Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.

Maintenance Level 5 *- Currently there are no ML 5 Roads on the Cibola National Forest.* Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage."

Decommissioned Road
Decommissioned roads have been permanently removed from the national forest system. They continue to be tracked in the transportation atlas for future reference. These roads should have received a level of physical maintenance, ranging from a Maintenance Level 1 type closure to a complete obliteration. For administrative purposes, these roads are not considered as existing and are not available for motorized use. In order to return a decommissioned road to service as a system road the NEPA process must be followed even when no physical work is required to physically allow motorized traffic back on the road.

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)

Table 2.0 Road and Motorized Trails: Summary of Miles by type for the Analysis Area

Maintenance Level (ML)	Mt. Taylor Ranger District Analysis Area Total Miles
ML 5 Road	0.0
ML 4 Road	0.2
ML 3 Road	91.4
ML 2 Road	921.7
Open NFS Roads -- Total	**1013.3**
ML 1 Road (Closed Roads)	71.6
Open NFS Roads plus ML 1 Roads (Closed Roads) - Total	**1084.9**
Decommissioned Roads	260.0
Unauthorized Roads	177.1
Additional Roads Analyzed for the Minimum Road System	23.5
Total Miles of Roads Analyzed	**1545.5**

NOTE: Under New Mexico state laws, ATV's and OHV's can **only** be ridden on unpaved roads.

Not all unauthorized roads were analyzed in the TAP. Other unauthorized roads will be analyzed on a case by case situation in Mt. Taylor Travel Management analysis. If any unauthorized motorized routes are selected for route designation in the final decision of the EA they will be added to the forest transportation system.

Mt. Taylor RD Previous Travel Management Decisions

Table 2.1 summarizes the previous Travel Management decisions for the Mt. Taylor Ranger District. These areas were excluded from the travel analysis process based on previous travel management decisions. All the roads that are located within these areas are listed in Appendix G.

Table 2.1 Mt. Taylor RD Previous Travel Management Decisions

Area	Acres	Direction
Water Canyon area – Mt. Taylor Unit & Little Water Canyon area – Zuni Mountain Unit	7,141	Cibola Forest Plan decision closed these areas to off road vehicle use, except for those routes designated on the map.
Chivato Area	62,253	Chivato Travel Management Plan Decision to close the area to all motorized vehicle except for those routes designated on the map.
Ft. Wingate Area	640	Cibola Forest Plan decision closed area to all motorized vehicles from December 15 to March 31 as a seasonal restriction.

Chapter 3
STEP 3: IDENTIFYING ISSUES

Purpose

The purpose of this Step is to:

Identify key questions and issues related to management of existing roads and trails in the analysis area.

List the current Road Maintenance Costs

The Issues

The origins of the issues were identified using public involvement and internal Forest Service input. These are the road issues in the analysis area in random order and do not represent a hierarchy of importance.

1) **Resource and facility impacts through the use of motorized vehicles off of system routes**

   Cross country travel has been permitted on much of the Mt. Taylor Ranger District. New roads and trails developed from this use, adding miles of unauthorized roads and trails. Private land owners bordering the National Forest are creating private access points into the Forest resulting in the establishment of additional unauthorized trails. There is interest from OHV recreationists to consider many of these routes for designation.

   There are impacts resulting from cross country motor vehicle. Use can damage vegetation, accelerate soil erosion, damage heritage sites, and disturb wildlife. Funding and resources to rehabilitate areas damaged by cross-country OHV travel is not adequate.

2) **Maintenance of existing system roads**

   Inadequate maintenance reduces access for National Forest uses and management, accelerates soil erosion by concentrating surface water flow, and affects water quality by increasing sediment into water courses and intermittent drainages. Funding for road and trail maintenance is not adequate to maintain the existing system and perform needed monitoring.

3) **Right-of-Way and access**

   Due to lack of road right-of-way, private land ownership and subdivisions bordering Forest lands, access is restricted for forest use and management. Existing or new land owners close gates to improve their privacy and to reduce vandalism and damage from people accessing National Forest areas across their land. Unsuccessful negotiations with landowners to obtain rights-of-ways for NFS trails may result in the elimination of some previously used access routes.

4) **High volume of unauthorized roads, and restoration and enforcement of the decommissioned and unauthorized roads**

Since cross country travel has been permitted on the Mt. Taylor District, there has been a proliferation of unauthorized roads. Successful closure and/or decommissioning of some of these roads have proven impossible. Funds to close and/or decommission some of these roads have been insufficient to the task.

5) **Environmental impacts**

There is concern about damage from motorized use designations. The reason for route designations are to eliminate cross country travel, and travel on routes not designated, resulting in overall less damage. The motorized use designations being recommended could cause environmental impacts including:

a) Fragmentation and Wildlife Security: There is a concern that designating NFS roads and trails and unauthorized routes and constructing new trail segments may fragment wildlife habitat and create barriers to movement. There is also a concern that the addition of such routes will reduce wildlife habitat capability to sustain populations and increase areas of disturbance;

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

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

d) Impacts to vegetation: Concern was expressed about the loss of vegetation due to increased vehicle use and spread of invasive species from seed sources dispersed by motorized vehicles; and

e) Impacts to heritage and tribal resources: There is concern about potential impacts to heritage resources by motorized vehicles.

6) **Human Caused Fire**

Eliminating cross-country travel would decrease the overall fire risk. In addition, eliminating cross-country travel would reduce the possibility of mechanical equipment starting fires in fine fuels that normally do not exist within a road or trail due to maintenance and/or normal use. Managed roads and trails could also be effectively utilized for fire-line construction during an emergency or during fuels treatment projects. The evacuation of Forest users in an emergency could be accomplished much more effectively as the general users would be in designated areas.

Road and Maintenance Costs

Road Maintenance Costs

Selected roads are maintained annually to provide safe use, address resource issues, and maximize available maintenance funds. These selections are based on consultation between the District Ranger, and the Engineer Road Manager, and then approved by the Forest Supervisor. Maintenance is prioritized, with any known safety needs having the highest priority.

Federally appropriated funds for road operation and maintenance funding on the Cibola National Forest (N.F.) have ranged from about $800,000 to $950,000 per year over the last 5 years. This funding falls significantly short of the need. The Forest Service has conducted annual road condition surveys since 1999 to determine the maintenance and associated funding needed to maintain roads to the required safety standards and assigned maintenance levels. These surveys describe the features of the roads (e.g., surfacing, ditches, drainage dips, and culverts) and their condition. The maintenance cost of those roads and features is calculated from those surveys using a regional standard cost guide. Those surveys indicate that the annual maintenance funding needed for all of the Cibola National Forest System roads to be maintained to standard is about $3,350,000.

Costs associated with road maintenance include expenditures in the repair or upkeep of a road necessary to retain the roads approved maintenance level. Local roads, which constitute the majority of roads within the analysis area, are generally assigned to maintenance level 2. These roads are open for use by high clearance vehicles and are not maintained for passenger vehicles.

The average Cibola N.F. cost to adequately maintain a level 2 road each year is $420 per mile. Actual costs can vary due to location, grade, vegetation, unusual weather, the frequency of required maintenance, and other conditions.

Table 3.0 lists the forest wide average annual maintenance cost per mile per maintenance level for roads on the Cibola N.F. and the Mt. Taylor Ranger District. It also lists the total forest wide costs and the Mt. Taylor Ranger District costs.

Table 3.0: Road maintenance costs by road maintenance level

	Cibola National Forest			Mt. Taylor Ranger District – Analyzed in TAP		
Maintenance Level	Existing Miles	Annual Cost per Mile	Annual Cost	Existing Miles	Annual Cost per Mile	Annual Cost
5	0	-	0	0	-	0
4	14	$9,851	$137,914	0.2	$9,851	$1,970
3	292	$6,759	$1,973,628	91.2	$6,759	$616,421
2	2660	$420	$1,117,200	919.6	$420	$386,232
1	726	$107	$77,682	73.7	$107	$7,886
Totals:	**3,692**		**$3,306,424**	**1084.7**		**$1,012,509**

Road operation and maintenance funding on the Cibola National Forest have ranged from $800,000 to $950,000 per year over the last 5 years. This is an average of $838,800 per year for annual maintenance.

The current and foreseeable Cibola National Forest (and by extrapolation Mt. Taylor Ranger District) road maintenance budget can support only about 29% of the required road maintenance. Annual road maintenance costs need to be curtailed by reducing road mileage or road maintenance levels; the road maintenance budget increased or somehow augmented; or a combination of all of the above. The failure to fully fund road maintenance results in incremental loss of roadway infrastructure—surfacing, drainage, structure—further increasing future maintenance costs, or causing a reduction in road maintenance level. Based on the past three years the transportation budget has decreased by an average of 25 percent over the span of the three years.

Road Decommissioning

The cost associated with road decommissioning varies greatly and is dependent on the method of closure used. For example, the cost of felling trees or placing rocks to prevent access is much less expensive than reestablishing natural drainage patterns and stream channels (recontouring). Data for Region 3 (Southwestern Region) indicates that the average cost per mile for road decommissioning is $1,126.00 per mile (1995 – 2002). This figure primarily reflects very light decommissioning activities (e.g., scarifying and seeding, signing, and blocking entrances) that are being used around the region. The majority of roads in this analysis area would require one or more of the light decommissioning activities to effectively close them. Some roads, however, would require more extensive decommissioning activities (e.g., recontouring) because they are on steep slopes or erosive soils. These roads would require drainage structures, such as waterbars and drainage dips, which would significantly exceed the $1,126.00 per mile average.

Chapter 4
STEP 4: ASSESSING BENEFITS, PROBLEMS AND RISKS

Purpose

The purpose of Step 4 is to:

Describe the Analysis Process

Describe the Criteria Used in the Risk and Benefit Analysis Process

Describe the Scoring and Rating

Summarize the Risk and Benefit of Existing Motorized Routes

Recommendations for Roads and Motorized Trails

Identify Problem Areas

The Analysis Process:

The issues described in Step 3 were addressed by the Forest Interdisciplinary Team (IDT) in the following assessment. The risks and benefits were identified (Table 4.0) using the issues and the considerations described in 36 CFR 212.55. Each route was evaluated for the appropriately identified risks and benefits. Appendix B – Ecological, Social and Economic Considerations provides information generated by the interdisciplinary team that was used for the analysis.
The results of this tabulation may be used in many ways in the travel analysis.

The principle use of the results of this analysis will be to assist the IDT in developing a proposed action for the Mt. Taylor Ranger District Travel Management. Because one of the considerations in Travel Management is analysis of maintenance costs, the results of this analysis, such as High Risk and Low Benefit roads and/or motorized trails, will give the IDT a starting point to identify maintenance levels that can and perhaps should be changed or roads and trails that are no longer needed.

Roads and motorized trails on the Mt. Taylor Ranger District provide access for many uses. They also provide the infrastructure to facilitate motorized recreation and forest management. Their presence has effects on the natural and cultural resources of the National Forest.

The following categories for risks/benefits were identified by the IDT as the most important resource issues for managing the Mt. Taylor Ranger District transportation system. Most of the "issues" associated with the transportation system are from Step 3. Only the issues that the IDT members felt they had the knowledge and experience to analyze made the list.

Table 4.0 list the categories for the risk and benefit associated with roads.

Table 4.0 Resource Categories for Roads

ROADS	
RISK	**BENEFIT**
The presence or conditions of roads present risks associated with these categories:	Roads are a benefit to Forest management because they provide access to these categories:
HUMAN CAUSED FIRE	**TIMBER MANAGEMENT**
THREATENED ENDANGERED SPECIES	**TRIBAL ACCESS**
MANAGEMENT INDICATOR SPECIES	**ADMINISTRATIVE ACCESS**
MIGRATORY BIRDS	**PUBLIC / RECREATION ACCESS**
SEDIMENT DELIVERY	**EMERGENCY ACCESS**
SOIL PRODUCTIVITY	
HERITAGE RESOURCES	
UNDESIRED PLANT SPECIES	
TRIBAL USE	

Roads were scored with values of high, medium, or low risk combined with high, medium, or low benefit. Each resource specialist was asked to develop criteria for characterizing high, medium, or low values for roads for their resource area. Table 4.1 and 4.2 list the detail of these criteria.

Risk Assessment Criteria

Table 4.1 Risk Assessment Criteria

Human Caused Fire	
Risk assessment for the probability of wildfire from public use of Forest Service roads.	**HIGH –** Roads or motorized use trails that access areas with a recorded pattern of human caused fire ignitions, or access areas where use, land ownership, vegetation and fuel conditions indicate a high potential for human caused fire ignition.
	MEDIUM - Roads or motorized use trails that access areas that have had previous fuel reduction treatments.
	LOW - Roads or motorized use trails that access areas that are not evaluated as high risk.

Wildlife/Rare Plant Risk
Impacts from motorized road or trail use including maintenance, development and reconstruction will have varying degrees of risks (i.e. effects) depending on the spatial distribution, maintenance level, and distance of roads from important wildlife habitats. For this Transportation Analysis Process (TAP), the criteria for evaluating risk to wildlife are presented below. The criteria addresses risk from Forest Level 1, 2,3, and 4, roads on wildlife and rare plants and serves to rank the risk as either High, Medium (in one case) or Low. Wildlife and rare plants used for this analysis will be species that are, in order of priority, Endangered, Threatened, Candidate, and Sensitive. The reason for selecting these species over others such as game species is because they influence forest management activities more than other species. In addition, habitat for Management Indicator Species and Migratory Birds will be considered.
Threatened Endangered Species
Mexican Spotted Owl: Federally listed as Threatened under the Endangered Species Act with Critical Habitat.
HIGH – Road or trail intersects a Protected Activity Center (PAC) or is within a ¼ mile of a known nest site. If nest site is not known, then the center of the PAC core will be considered the nest site for this analysis. Road or trail intersects Critical Habitat as designated in 2004 or Protected Habitat (slopes over 40% in mixed conifer that haven't been logged in the past 20 years) as defined in the MSO Recovery Plan.
MEDIUM-Road or trail intersects Restricted Habitat (all mixed conifer or riparian habitat) as defined in the MSO Recovery Plan,
LOW - Road or trail does not intersect a PAC, Protected or Restricted Habitat or is more than ¼ mile away from a known nest site.

Bald Eagle: Listed as Sensitive by the Regional Forester.
HIGH - Road or trail intersects a wintering area.
LOW - Road or trail does not intersect a wintering area.
Peregrine Falcon: Listed as Sensitive by the Regional Forester.
HIGH - Road or trail intersects management zones A and B.
LOW - Road or trail does not intersect management zones A and B.
Northern Goshawk: Listed as Sensitive by the Regional Forester.
HIGH - Road or trail intersects a Post-Fledging Family Area (PFA) or is within ¼ mile from a known nest site. If nest site is not known, then the center of the PFA will be considered the nest site for this analysis.
LOW - Road or trail does not intersect a PFA or is more than ¼ mile from a known nest site.
Gray vireo: Listed as Sensitive by the Regional Forster.
HIGH - Road or trail intersects a known high density nesting area or known nest site.
LOW - Road or trail does not intersect a known high density nesting area or known nest site.
Zuni fleabane: Federally listed as Threatened under the Endangered Species Act.
HIGH – Road or trail intersects a stream with known individuals present.
LOW – Road or trail does not intersect a stream with known individuals present.
Zuni bluehead sucker: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects a stream with known individuals present.
LOW – Road or trail does not intersect a stream with known individuals present.
Loggerhead Shrike: Listed as Sensitive by the Regional Forster
HIGH - Road or trail intersects a nesting area or known nest site.
LOW - Road or trail does not intersect a nesting area or known nest site.
Merriam's shrew: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area of known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Dwarf shrew: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Spotted bat: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Gunnison's prairie dog: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Cebolleta southern pocket gopher: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Mt. Taylor Northern Pocket gopher: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Clam shrimp: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.

Fairy Shimp: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Chaco milkvetch: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Arizona leatherflower clustered leather flower: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.
Sivinski's fleabane: Listed as Sensitive by the Regional Forester.
HIGH – Road or trail intersects an area with known individuals present.
LOW – Road or trail does not intersect an area with known individuals present.

Management Indicator Species			
Species	Habitat Type	High	Low
Elk	Mountain grassland Mixed conifer	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Mule Deer	Mountain shrub Pinyon-juniper	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Red-naped Sapsucker	Deciduous Forest	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
House Wren	Riparian	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Juniper Titmouse	Pinyon-juniper	Location or motorized use of road or trail impact Forest	Location or use of road or trail does not

		wide habitat or population trend	impact Forest-wide habitat or population trend
Red-breasted nuthatch	Spruce-fir	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Black bear	Spruce-fir Mixed conifer	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Pygmy nuthatch	Ponderosa pine	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Hairy woodpecker	Mixed conifer	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend
Merriam's Turkey	Ponderosa pine	Location or motorized use of road or trail impact Forest wide habitat or population trend	Location or use of road or trail does not impact Forest-wide habitat or population trend

Migratory Birds
Blue Grouse: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend. Use of road constitutes "take" or unintentional "take"
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Band-tailed pigeon: High priority species on the Cibola NF

High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Flammulated Owl: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Black-chinned Humming bird: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Broad-tailed Humming bird: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Lewis's Woodpecker: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Williamson's Sapsucker: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Red-naped Sapsucker: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Olive-sided flycatcher: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Hammond's Flycatcher: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Gray Flycatcher: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.

Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Loggerhead Shrike: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Pinyon Jay: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Black-throated Gray Warbler: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Grace's Warbler: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Vesper Sparrow: High priority species on the Cibola NF
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.
Golden Eagle: Fish and Wildlife Species of Concern
High – Location or motorized use of road or trail impacting forest wide habitat or population trend.
Low – Location or motorized use of road or trail not impacting forest wide habitat or population trend.

Sediment Delivery[1]	
Risk of eroded soil being delivered quickly and directly into stream channels where it could fill channels, disrupt stream flow and impair aquatic organism habitat.	**HIGH**: • More than 100 feet of road or motorized trail on severe erosion potential soil is in "close proximity" to a stream o "Close proximity" is defined as: ▪ For all mapped streams: • 50 feet either side of an intermittent /ephemeral channel; • 75 feet either side of a perennial channel; ▪ For water quality impaired (303d listed) reaches: • 100 feet either side of intermittent/ephemeral channels within the impaired watershed; • 300 feet either side of a perennial channel; -or- • Crosses stream channel two times or more; -or- • A road or motorized trail that rates as medium, but is a known fishery;
	MEDIUM: • More than 100 feet of road or motorized trail is in "close proximity" to a stream, but is not on soil rated as severe erosion potential; -or- • Crosses stream channel 1-2 times;
	LOW: • Road is not in "close proximity" to a stream; -and- • Road does not cross a stream channel.

Soil Productivity[2]	
Risk of soil being eroded off site, compacted or rutted to an extent where soil's ability to function chemically, physically and biologically is impaired.	**HIGH**: More than 25 percent of a road or motorized trail occurs on TEU with severe erosion potential;
	MEDIUM: • Between 1 and 25 percent of a road or motorized trail occurs on TEU with severe erosion potential; -or- • More than 25 percent of a road or motorized trail occurs on TEU with low bearing strength;
	LOW: • Less than 1 percent of a road or motorized trail occurs on TEU with severe erosion potential; -and- • Less than 25 percent of a road or motorized trail occurs on TEU with low bearing strength

[1] Ratings were adjusted based on known sedimentation, erosion, rutting or compaction problems observed in the field. Field observations are recorded in the notes in Appendix A.

[2] Ratings were adjusted based on known sedimentation, erosion, rutting or compaction problems observed in the field. Field observations are recorded in the notes in Appendix A.

Heritage Resources	
Evaluating the risk to heritage resources for individual roads or road segments is based on whether known heritage sites are located along the road and on the length of any unsurveyed portion of the road.	**HIGH –** • At least one 'protect site' is recorded in the road corridor.
	MEDIUM – • No 'protect sites' are present. AND • Any unsurveyed portion of the road is more than 0.25 mile long.
	LOW – • No 'protect sites' are present. AND • Any unsurveyed portion of the road is less than 0.25 mile long.

Undesired Plant Species	
Risk assessment for new introduced populations of undesirable plant species. Vehicles can carry and spread plant parts or seeds into disturbed areas along roads or in the road bed.	**HIGH –** Roads that act as main forest access routes or roads that are utilized as a crossing route through Forest Service lands. Includes roads that border or cross through lands that are not in Forest Service ownership or administration.
	MEDIUM - Roads that access Forest Service administrative sites and roads that contain high parking congregation levels.
	LOW - Roads that do not cross or border private lands and are not used as a crossing route through the Forest. Includes roads that do not access admin sites and roads where vehicle parking is not a regular occurrence.

Tribal Use/Traditional Cultural Property (TCP)	
	HIGH: • Route is on or near a identified TCP, or; • Route was highlighted by tribe(s) during consultation because of its proximity to TCP or traditional use area and they want it closed or to be non-designated, or because it contributes to trespass issue involving tribal lands.
	MEDIUM: • Route is in vicinity of area known for specific or landscape level TCPs and/or traditional cultural use • Specific location of TCP may or may not have been not been identified
	LOW: • No identified TCP in area • No traditional cultural use identified in area
NOTE: Near = causing interference with traditional activities. This is a subjective term, not a set distance. It means that motorized use on a given road is having an impact upon a traditional practitioner's use of a TCP or use area.	

Benefit Assessment Criteria

Table 4.2 Benefit Assessment Criteria

Timber Management
Road access for timber management Identify a base timber road network by doing the following: 1) within Suitable Timber Management Areas or areas managed for special forest products, select roads from known existing roads to create a network spaced approximately 1/2 mile by 1/2 mile - adjust spacing for topography in order to reduce the potential for adverse skidding - selection preference for roads with more improved surface and alignment conditions, and favorable haul *Suitable Timber Management Areas are defined and mapped in the Forest Plan. Areas managed for special forest products are suitable primarily for fuelwood harvest, generally capable of producing harvests greater than 3 cords per acre and on slopes less than 30%. Examples of other special forest products include, but are not limited to, Christmas trees, piñon nuts, vigas, latillas, wildlings, and posts.
HIGH – Roads that are part of the base timber road network as described above.
MEDIUM - Roads that are not part of the base timber road network AND Roads having at least 1/4th mile of their length passing through Suitable Timber or managed special product areas AND - Roads without physically and economically feasible alternate route options
LOW - Roads located outside of Suitable Timber and special forest product areas OR Roads located within such areas but not part of base timber network and with physically and economically feasible alternate route options

Tribal Access	
Note: Near = causing interference with traditional activities. This is a subjective term, not a set distance. It means that motorized use on a given road is having an impact upon a traditional practitioner's use of a TCP or use area.	**High:** • Route accesses an identified TCP • Route was highlighted by tribe(s) because it is valued or needed by tribe to access TCP or traditional use area
	Medium: • Route is a known access and/or parking area for accessing TCP or area where traditional use is known to occur • Specific location of TCP may or may not have been identified
	Low: • No known TCP in area. • Access for traditional cultural activities has not been identified as important to tribe. • No traditional use, or that use has not been identified

Administrative Access	
Access to FS administrative facilities, authorized improvements, and special use facilities. Access to private land and associated facilities is not a criteria used to assess the benefit of a FS operated road. The FS cooperates with State or County agencies for general public access.	**HIGH** - A high benefit road has Forest Service related facilities and authorized improvements that require frequent motorized access by an authorized operator or staff. Examples are administrative facilities such as fire lookouts, locations with crew quarters, personal and commercial use forest products other work facilities, and communication sites.
	MEDIUM – A medium benefit road has Forest Service related facilities and authorized improvements that require occasional motorized access by an authorized operator or staff. Examples are specialized administrative FS sites or special-use facilities that require service personnel access only.
	LOW - A low benefit road has no Forest Service related facilities and/or authorized improvements that require no motorized access by an authorized operator or staff. Example is a road in an area where motorized access is not critical to administrative/special use operations.

Public / Recreation Access	
Access to dispersed recreation areas, trailheads, campgrounds, District wide personal use forest products, traditional cultural activities and private inholdings with public road easements.	**HIGH** – Access is frequently used for the above resources, and can be accessed by passenger car. Examples are developed sites in the roaded natural Recreational Opportunity Spectrum (ROS) class.
	MEDIUM – Access is frequently used for the above resources and high clearance vehicles are necessary for access. Examples are developed sites in the semi-primitive motorized Recreational Opportunity Spectrum (ROS) class.
	LOW – Access is infrequently used for the above resources and high clearance vehicles are necessary for access. Examples are developed sites in the semi-primitive non-motorized Recreational Opportunity Spectrum (ROS) class.

Emergency Access	
Access for fire suppression, evacuation routes and emergency medical response.	**HIGH** – Roads or motorized use trails that provide primary or alternate emergency ingress and egress from populated areas. Roads that provide access to areas at high risk to life and property from fire in wildland urban interface areas which makes response time critical. Roads that provide access to facilities related to fires suppression.
	MEDIUM - Roads or motorized use trails that provide access to high benefit resource areas at high risk from fire.
	LOW- Roads or motorized use trails that provide access to areas that are not populated or where access by high clearance vehicles will be adequate for fire suppression.

Scoring and Rating

For each road analyzed the overall risk/benefit assessment was based on scores computed from separate risk assessments and benefit assessments. Scores were based on a point system in which a 'high' rating yielded 3 points, a medium rating yielded 2 points and a low rating yielded 1 point. Each resource category assessed generated a rating, and hence a score. The scores were totaled for the risk/benefit of each road.

There are nine resource risk categories for each road analyzed; however, the wildlife categories were separated into three different risk sub-categories (THREATENED ENDANGERED SPECIES, MANAGEMENT INDICATOR SPECIES, and MIGRATORY BIRDS). In order to maintain a balanced scoring for all risk categories the three wildlife sub-categories scores were added and divided by three allowing the highest overall wildlife score of three. Therefore, the maximum score for any risk resource category is three points and a maximum of 21 points overall. The overall high, medium, and low scores are based on a range of point scores for the risk and the benefits refer to example below in Table 4.3.

Table 4.3 Example of the RISK scoring system for a ROAD

	Risk Categories:	H, M, and L Rating	Points for each Rating
1	HUMAN CAUSED FIRE	M	2
2*	THREATENED ENDANERED SPECIES	H	3
	MANAGEMENT INDICATOR SPECIES	M	2
	MIGRATORY BIRDS	M	2
3	SEDIMENT DELIVERY	M	2
4	SOIL PRODUCTIVITY	L	1
5	CULTURAL RESOURCES	M	2
6	UNDESIRED PLANT SPECIES	L	1
7	TRIBAL USE	H	3
		TOTAL POINTS:	13.3 OUT OF 21 POSSIBLE **MEDIUM RISK**

*Note: Wildlife sub-categories summed to 7 then it was divided by 3 for 2.3 points. The remaining categories summed to 11 for a total of 13.3 points.

Table 4.4 Point range for the overall score for a RISK

	Point Range	Overall Score
RISK	7 – 11.9	Low Risk
	12 – 16.9	Medium Risk
	17 - 21	High Risk

Table 4.5 Example of the BENEFIT scoring system for a ROAD

	Benefit Categories:	H, M, and L Rating	Points for each Rating
1	TIMBER MANAGEMENT	L	1
2	TRIBAL ACCESS	M	2
3	ADMINISTRATIVE ACCESS	L	1
4	PUBLIC / RECREATION ACCESS	H	3
5	EMERGENCY ACCESS	H	3
		TOTAL POINTS:	10 OUT OF 15 POSSIBLE **MEDIUM BENEFIT**

Table 4.6 Point range for the overall score for a BENEFIT

BENEFIT	Point Range	Overall Score
	5 – 7.9	Low Benefit
	8 – 11.9	Medium Benefit
	12 - 15	High Benefit

Based on this example the overall score would be “Medium” for risk and “Medium” for benefit. Reference Appendix A – Risk/Benefit Assessment for each road for the overall risk and benefit results. The Risk/Benefit Matrix (Table 4.7) lists a summary of miles and percent of miles for all 1084.8 miles of road analyzed along with the recommendation.

Statistical Distribution of Risk/Benefit Assessment

Table 4.7 Roads Risk/ Benefit Matrix including Recommendations for ML 1 to ML 4 Roads

ROADS - OPERATIONAL ML 1 TO ML 4				
(RISKS)[3]	**(BENEFITS) [4]**			
	Scores	**Low 5-8**	**Medium 9-11**	**High 12-15**
	High 17-21	(HL) Decommission or Close **(0) or (0%)**	(HM) Mitigate or Restrict **(24.2) or (2.2%)**	(HH) Maintain- Highest Priority **(62.6) or (5.7%)**
	Medium 12-16.9	(ML) Restrict or Close **(58.6) or (5.4%)**	(MM) Mitigate-Maintain **(486.0) or (44.8%)**	(MH) Maintain-Second Priority **(91.0) or (8.4%)**
	Low 7-11.9	(LL) Close or Convert to Trail **(77.7)[5] or (7.2%)[6]**	(LM) Maintain-Low Priority **(277.2) or (25.6%)**	(LH) Maintain-Low Priority **(7.5) or (0.7%)**

TOTAL OPERATIONAL ML 1 TO ML 4 = 1084.7 MILES

[3] Risks represent the range of total risk scores assigned to each category.
[4] Benefits represent the range of total benefit scores assigned to each category.
[5] Represent the number of road miles assigned to each box in the matrix out of a total of 1084.8 miles for Operational ML 1 to ML 4 roads.
[6] Represent the percentage of roads

Table 4.8 Roads Risk/ Benefit Matrix including Recommendations for ML 1 Roads

ROADS - OPERATIONAL ML 1 (CLOSED ROADS)				
	BENEFITS			
RISKS	**Scores**	**Low 5-8**	**Medium 9-11**	**High 12-15**
	High 17-21	(HL) Decommission or Close **(0.0)**	(HM) Mitigate or Restrict **(0.0)**	(HH) Maintain- Highest Priority **(0.0)**
	Medium 12-16.9	(ML) Restrict or Close **(1.5) or (.02%)**	(MM) Mitigate-Maintain **(35.5) or (50%)**	(MH) Maintain-Second Priority **(0.0)**
	Low 7-11.9	(LL) Close or Convert to Trail **(10) or (14%)**	(LM) Maintain-Low Priority **(24.6) or (35%)**	(LH) Maintain-Low Priority **(0.0)**

TOTAL OPERATIONAL ML 1 (CLOSED ROADS) = 71.6 MILES

Table 4.9 Roads Risk/ Benefit Matrix including Recommendations ML 2 Roads

ROADS - OPERATIONAL ML 2 (HIGH CLEARANCE ROADS)				
	BENEFITS			
RISKS	**Scores**	**Low 5-8**	**Medium 9-11**	**High 12-15**
	High 17-21	(HL) Decommission or Close **(0) or (0%)**	(HM) Mitigate or Restrict **(22.1) or (2.4%)**	(HH) Maintain- Highest Priority **(42.8) or (4.6%)**
	Medium 12-16.9	(ML) Restrict or Close **(57.1) or (6.2%)**	(MM) Mitigate-Maintain **(449.7) or (48.8%)**	(MH) Maintain-Second Priority **(23.3) or (2.5%)**
	Low 7-11.9	(LL) Close or Convert to Trail **(67.1) or (7.3%)**	(LM) Maintain-Low Priority **(252.6) or (27.4%)**	(LH) Maintain-Low Priority **(7.0) or (0.7%)**

TOTAL OPERATIONAL ML 2 (HIGH CLEARANCE ROADS) = 921.7 MILES

Table 4.10 Roads Risk/ Benefit Matrix including Recommendations for ML 3 and ML 4 Roads

ROADS - OPERATIONAL ML 3 and 4 (PASSENGER CAR ROADS)				
	BENEFITS			
RISKS	**Scores**	**Low** **5-8**	**Medium** **9-11**	**High** **12-15**
	High **17-21**	(HL) Decommission or Close **(0.0)**	(HM) Mitigate or Restrict **(2.1) or (2.4%)**	(HH) Maintain- Highest Priority **(19.7) or (21.2%)**
	Medium **12-16.9**	(ML) Restrict or Close **(0.0)**	(MM) Mitigate-Maintain **(0.8) or (0.8%)**	(MH) Maintain-Second Priority **(67.6) or (74.2%)**
	Low **7-11.9**	(LL) Close or Convert to Trail **(0.6) or (0.7%)**	(LM) Maintain-Low Priority **(0.0)**	(LH) Maintain-Low Priority **(0.5) or (0.7%)**

TOTAL OPERATIONAL ML 3 AND 4 (PASSENGER CAR ROADS) = 91.4 MILES

Table 4.11 Roads Risk/ Benefit Matrix including Recommendations for Decommissioned and Unauthorized Roads

ROADS - ADDITIONAL ROADS (DECOMMISIONED AND UNAUTHORIZED ROADS)				
	BENEFITS			
RISKS	**Scores**	**Low 5-8**	**Medium 9-11**	**High 12-15**
	High 17-21	(HL) Decommission or Close **(0.0)**	(HM) Mitigate or Restrict **(0.0)**	(HH) Maintain- Highest Priority **(0.0)**
	Medium 12-16.9	(ML) Restrict or Close **(35.3) or (9.4%)**	(MM) Mitigate-Maintain **(114.4) or (30.3%)**	(MH) Maintain-Second Priority **(0.0)**
	Low 7-11.9	(LL) Mitigate-Close or Convert **(57.4) or (15.2%)**	(LM) Maintain-Low Priority **(169.6) or (44.9%)**	(LH) Maintain-Low Priority **(0.4) or (0.1%)**

TOTAL ADDITIONAL ROADS = 377.1 MILES

Decommissioned Roads = 260 miles
Unauthorized Roads = 117.1 miles
Total Roads = 377.1 miles

Table 4.12 Roads Risk/ Benefit Matrix including Recommendations for Additional MRS Roads

ADDITIONAL ROADS ANALYZED FOR THE MINIMUM ROAD SYSTEM				
	BENEFITS			
RISKS	**Scores**	**Low 5-8**	**Medium 9-11**	**High 12-15**
	High 17-21	(HL) Decommission or Close **(1.6) or (6.8%)**	(HM) Mitigate or Restrict **(0.0)**	(HH) Maintain- Highest Priority **(0.0)**
	Medium 12-16.9	(ML) Restrict or Close **(3.3) or (14.0%)**	(MM) Mitigate-Maintain **(1.1) or (0.04%)**	(MH) Maintain-Second Priority **(0.1) or (0.004%)**
	Low 7-11.9	(LL) Mitigate-Close or Convert **(6.9) or (29.3%)**	(LM) Maintain-Low Priority **(10.5) or (44.7%)**	(LH) Maintain-Low Priority **(0.0)**

TOTAL ADDITIONAL ROADS = 23.5 MILES

Recommendations for Roads

Below are the recommendations based on the risk and benefit assessment. The recommendations are site-specific to the roads but do allow for some options (i.e. Close Road or Convert to Trail). A complete list of the roads with the overall rankings are located in Appendix A.

Table 4.13 Recommendations for Risk / Benefit Categories for Roads

Risk / Benefit	Recommendations for Roads
Low Risk / Low Benefit	Close or Convert to Trail Road access is not recommended based on the Risk/Benefit Analysis. Due to declining budget close road or convert to trail. Low risk indicates low priority for investment of time and funds to mitigate risk.
Low Risk / Medium Benefit	Maintain-Low Priority Recommend continued Forest Service or cooperative agency maintenance for passenger car access.
Low Risk / High Benefit	Maintain-Low Priority These roads are the "main transportation system" for the Forest. Recommend continued Forest Service or coop agency maintenance for passenger car access.
Medium Risk / Low Benefit	Restrict or Close Passenger car access is not recommended based on the Risk/Benefit Analysis. Due to declining budget restrict access or close road. Recommend reducing maintenance costs by restricting access for administration use only or closing road.

Medium Risk / Medium Benefit	Mitigate-Maintain Recommend continued Forest Service or cooperative agency maintenance for passenger car access. Recommend mitigation of risk. Mitigation depends upon the specific risks and may include, but is not limited to: additional maintenance effort, reconstruction, relocation, seasonal maintenance restriction, seasonal road closure.
Medium Risk / High Benefit	Maintain-Second Priority Recommend continued Forest Service or cooperative agency maintenance for passenger car access. Medium risk and high benefit indicate these are the *second* priority for investment of time and funds to mitigate or eliminate risk and accommodate uses. Recommend mitigation of risk. Mitigation depends upon the specific risks and may include, but is not limited to: additional maintenance effort, reconstruction, relocation, seasonal maintenance restriction, seasonal road closure.
High Risk / Low Benefit	Decommission or Close Passenger car access is not recommended based on the Risk/Benefit Analysis. Recommend reducing maintenance costs by reducing maintenance level to high clearance (ML 2), or administratively close. Coordinate with county government or private landowners to determine maintenance responsibility on roads needing passenger car access to private lands. On roads where the primary use is access to communities, request public roads agencies (county, towns, state government) to assume road operational jurisdiction. On roads where exclusive need is access to private land or needed to manage activities under special use permits, issue a road use permit for the road. On roads or road segments not open to the public, and not required for access to private land, close or decommission the road. Additional information may be needed to determine level and type of use.

High Risk / Medium Benefit	Mitigate or Restrict Passenger car access for enjoyment or use of National Forest resources. Due to declining budget mitigate or restrict access. Recommend mitigation of risk and possible reduction of the maintenance level. Mitigation depends upon the specific risks and may include, but is not limited to: additional maintenance effort, reducing maintenance level, reconstruction, relocation, seasonal maintenance restriction, seasonal road closure.
High Risk / High Benefit	Maintain-Highest Priority High risk and high benefit indicate these are the *highest* priority for investment of time and funds to mitigate or eliminate risk and accommodate uses. Recommend mitigation of risk.

Best Management Practices-Mitigating Risks

Some of these best management practices (road location, road design, and road management) could also be considered for addition as standards and guidelines during Forest Plan revision.

Road location:

- locate new roads and relocate existing roads to reduce the road grade and slope perpendicular to the road
- avoid cutting through weak geological formations when building or maintaining a road
- construct and realign roads so that back and fill slopes will be minimized
- decommission or realign roads located within floodplains

Road Design:

- armor drainage structure outlets
- improve the road surface by adding gravel, limestone, or pave it
- installation of waterbars or broad-based drivable dips to divert water that could cause road erosion
- install erosion mitigations, such as mulch and windrowed slash, on exposed back and fill slopes
- design proper road drainage to avoid too much excess water in a given area
- design road/stream crossings to convey streamflow over the road and back into the channel downstream rather that down the road if it were overtop (e.g. eliminate diversion potential using a drivable dip)
- minimize the height of road fill at all stream crossings to be overtopped during a flood event thus allowing flow and debris to go over the road and into the channel with minimal disturbance (e.g. high-water ford)

Road Management:

- close or restrict roads to minimize adverse impacts to wildlife species that require solitude or tolerate only minimal disturbance
- restrict or close roads over perennial streams.
- close or restrict roads to public traffic
- continue inventory efforts to evaluate the extent of noxious weed and invasive plant species of concern
- incorporate non-native invasive species prevention and control into road management and maintenance
- treat non-native invasive species before roads are decommissioned; follow-up based on initial inspection and documentation
- train road maintenance staff to recognize non-native invasive species and report locations to the vegetation management specialist

Chapter 5
STEP 5: DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

Purpose

The purpose of this Step is to list:

- Actions that would implement the minimum road system
- Strategies that reduce the level of road maintenance costs
- Actions that respond to the issues
- Project level recommendations

Actions that Would Implement the Minimum Road System

The Minimum Road System

36 CFR 212.5 (b) is a portion of the Travel Management Rule and it states "…

b) Road system--(1) Identification of road system. For each national forest, national grassland, experimental forest, and any other units of the National Forest System (Sec. 212.1), the responsible Official must identify the minimum road system (MRS) needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. In determining the minimum road system, the responsible official must incorporate a science-based travel analysis at the appropriate scale and, to the degree practicable, involve a broad spectrum of interested and affected citizens, other state and federal agencies, and tribal governments. The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance."

As with many public land management regulations, the direction to identify a minimum road system includes interests that pull in opposite directions. The transportation system that meets resource and management objectives would be close to the system we have in place today, as the current objectives include a broad range of current and future activities, commitments, and projects that require access by forest system roads. The Interdisciplinary Team identified the minimum road system using guidelines above. The approximate number of miles is 1330 for the MRS; these miles include maintenance levels ML1-ML4, decommission and unauthorized roads. Refer to Appendix H for a list of the MRS roads and Maps 16-18 for the location of the roads.

But based on road maintenance funding received over the previous five years the Cibola N.F. (alternatively Mt. Taylor RD) can afford to fully maintain only about 31% of the existing system. Following are suggested strategies for identifying the minimum road system.

Strategies that Reduce Road Maintenance Costs – To Reflect Long-Term Funding Expectations

Annual funding for operation and maintenance of National Forest System roads on the Cibola has ranged from $800,000 to $1,100,000 per year. The cost estimate to maintain the existing road system to meet forest service standards is about $3,300,000 per year. To meet these standards with current funding and the current distribution of maintenance levels, the transportation system would need to be reduced from 3692 miles to somewhat less than 1150 miles of roads. A breakdown of operational maintenance level by miles and percentages for each District is listed below.

Table 5.0: Operational Maintenance Level by Miles/Percentages for each District.

	MILES OF OPERATIONAL MAINTENANCE LEVELS						
Cibola NF Districts	ML 1	ML 2	ML 3	ML 4	ML 5	TOTAL	% of Miles of Road
D2 – Mt. Taylor RD	**136.7**	**952.6**	**91.2**	**0.2**	**0.0**	**1180.7**	**32.2%**
D3 – Magdalena RD	18.0	1185.5	103.8	0.3	0.0	1307.6	35.7%
D4 – Mountainair RD	10.6	411.5	56.9	0.0	0.0	479.0	13.1%
D5 – Sandia RD	12.4	56.0	9.4	9.5	0.0	87.3	2.4%
D6 – Black Kettle NG	85.2	25.6	3.6	3.3	0.0	117.7	3.2%
D7 – Kiowa / Rita Blk NG	0.1	492.6	0.0	0.0	0.0	492.7	13.4%
TOTAL MILES:	263.0	3123.8	264.9	13.3	0.0	3665.0	100.0%
Mt. Taylor RD % of Miles of Road	52.0%	30.5%	34.4%	1.5%			

NOTE: The mileage for the Mt. Taylor RD Operational Maintenance Levels include the roads that are excluded due to previous travel management decisions (Table 2.1).

Theoretically, Mt.Taylor RD has approximately 1/3 of the total mile for the Cibola NF, therefore, if road maintenance was fully funded per our USDA formula, Mt. Taylor RD would need to receive about $1,012,509 of $3,306,424 necessary to maintain their existing road system. However, the current budget for the entire forest is approximately $838,800 per year, therefore, 1/3 of the budget would be $277,000 for the Mt. Taylor RD to maintain their road system. Annual road maintenance for each district is based on health and safety, and forest resource management priorities. Furthermore, the forest is required to have heritage resource clearances to perform any road maintenance on level 1 and 2 forest roads. Therefore, not all Forest road maintenance funds are distributed evenly to each District.

Strategies that reduce the level of road maintenance funding needed include:

- decreasing maintenance levels on roads
- closing, abandonment or obliteration
- transferring jurisdiction to other maintenance entities (including private and county)
- converting open and/or closed roads to motorized or hiking trails

The following are different scenarios which address methods to decrease road maintenance costs. The purpose is to present hypothetical cost reduction analyses based on the current road system. This type of analysis will need to be conducted in a specific manner during the NEPA phase of the Travel Management Rule. For this exercise we are using four basic assumptions, none of which would be realistic to implement as a whole, but illustrate different methods to reduce maintenance costs.

The tables below contain average maintenance costs in dollars per mile of road to properly maintain the roads for resource and access needs. Road maintenance in one year could cost as much as $60,000 per mile due to installing new culverts, and/or chip sealing asphalt but the following 19 years or so the cost could be as low as $10,000 per mile (routine maintenance being completed).

One of the interesting misconceptions is that a closed road (ML1) has no maintenance cost. It does. Illegal motorized use of closed roads may require replacing a damaged gate, taking measures such as constructing berms or ripping the tread to deter travel and other such activities all at a cost. Erosion and drainage concerns on closed roads also require maintenance. *All roads converted to motorized trails do have a cost for maintenance which the Forest has not been able to afford and maintain all motorized trials.*

Scenario 1*:* Reduce 50% of ML3 roads to ML2 and close 50% of the ML2 roads then convert 50% of our ML1 roads to trails. The Mt. Taylor RD does not have any ML 5 roads. Existing ML 4 roads would remain at level 4 in this scenario because it would not benefit the Forest to mill our asphalt roads to gravel. This is the most drastic of the four scenarios but does provide the greatest cost savings to the Mt. Taylor RD. Please refer to Table 5.1 for the specifics. The Mt. Taylor Ranger District cost per year would be approximately $587,656, which saves the forest about $445,454, however, it is still far short of the current annual maintenance cost of $1,033,110.

Table 5.1: Cost Savings of Reducing Maintenance Levels for Mt. Taylor RD Scenario 1

ML	For Mt. Taylor Ranger District Roads System				
	Existing Miles	Resulting System Miles	Annual Cost per Mile	Annual Cost after Scenario 1	Current Annual Cost
5	0.0	0.0	0	0	0
4	0.2	0.2	$9,851	$1,970	$1,970
3	91.2	45.6	$6,759	$308,210	$616,421
2	952.6	521.9	$420	$219,198	$400,092
1	136.7	544.7	$107	$58,278	$14,627
Totals:	1180.7	1112.4		$587,656	$1,033,110

Note: In this scenario the difference in total miles is approximately 68.3 miles (1180.7 – 1112.4 miles) because 50% (68.3 of 136.7 miles of existing roads) was converted from roads to motorized trails.

Scenario 2: Reduce maintenance levels by one for all low benefit roads "high risk - low benefit", "medium risk – low benefit" and "low risk – low benefit roads". These are the roads which are recommended to decommission, close, or convert to trails from our risk and benefit analysis for the Mt. Taylor RD. In this scenario the annual maintenance costs does decrease from the $1,033,110 to approximately $983,017 a savings of $50,093 . Please refer to Table 5.2 below.

Table 5.2: Cost Savings of Reducing Maintenance Levels for Mt. Taylor RD Scenario 2

For Mt. Taylor Ranger District Roads						
ML	Existing Miles	Miles to Reduce	Resulting System Miles	Annual Cost per Mile	Annual Cost after Scenario 2	Current Annual Cost
5	0.0	0.0	0	0	0	0
4	0.2	0.2	0.0	$9,851	$0	$1,970
3	91.2	0.4	91.0	$6,759	$615,069	$616,421
2	952.6	128.6	824.4	$420	$346,248	$400,092
1	136.7	62.5	202.8	$107	$21,700	$14,627
Totals:	1180.7	191.7	1118.2		$983,017	$1,033,110

Note: In this scenario the missing 62.5 miles (existing miles 1180.7 – resulting system miles 1118.7) of roads were converted to trails.

Scenario 3: Transfer Road Jurisdiction. An additional method of reducing annual road maintenance funding is to transfer jurisdiction on a combination of all the roads that are "high benefit" to private land access and some of the roads listed from Appendix E to the local counties. In this scenario if local counties would agree to transfer the road jurisdiction of these roads from Forest Service, the annual maintenance costs does decrease from the $1,033,110 to approximately $586,360 a savings of $446,750. Please refer to Table 5.3 below.

Table 5.3: Cost Savings of Transferring Road Jurisdiction for Mt. Taylor RD

Road #	Road Name	Oper Mtc Level	NFS High Benefit for Private Access (miles)	Annual Maintenance Unit Cost $/Mile	Annual Maintenance Savings
501	BOSQUE SPRING	2	5.0	$420	$2,100
400	MICROWAVE	2	3.0	$420	$1,260
157	RAMAH	3	2.6	$6,759	$17,573
193	HORACE MESA	3	4.5	$6,759	$30,416
193	HORACE MESA	3	1.0	$6,759	$6,759
464	CONTINENTAL DIVIDE	3	4.0	$6,759	$27,036
239	LOBO CYN.	3	5.0	$6,759	$33,795
50	MCGAFFEY	3	4.2	$6,759	$28,388
50	MCGAFFEY	3	27.0	$6,759	$182,493
178	DIENER CYN.	3	3.8	$6,759	$25,684
180	SAWMILL	3	13.5	$6,759	$91,247
			73.6	**TOTAL:**	$446,750

No scenario on its own meets the need to balance maintenance costs to our budgets. Well thought through combinations of these and other possible scenarios as well as creative management (ie: partnering with counties for maintenance cost sharing) needs to continue. It is also clear that creating a road system to match our budget by simply closing roads will not result in a properly functional minimum sustainable road system for the public or the Forest. This is a challenge that will be with us for the foreseeable future.

Actions that Respond to the Issues

The Issues Restated (please refer to chapter 3 for a complete definition of each issue)**:**

Issue 1: Resource and facility impacts through the use of motorized vehicles off of system routes

Through the public involvement process, OHV recreationists have requested that unauthorized routes be considered for designation. Some of these routes, particularly motorized trails, do provide loop opportunities and connectivity between parts of the district. Any unauthorized routes to be added to the system must first be analyzed through Roads Analysis. If additional routes are designated and added to the system it will be necessary to provide some reconstruction and maintenance so that they comply with FS standards. This Travel Analysis Process, the subsequent NEPA process, and subsequent decisions about route/area designations associated with the Travel Management Rule will determine which—if any—currently unauthorized roads may be designated as part of the motorized travel system.

Where cross country travel would no longer be permitted, the interdisciplinary team identified enforcement and education as key actions that address this issue. Voluntary compliance is expected to increase with the nation-wide implementation of a consistent policy for motorized travel on National Forests. Actions and costs for increasing enforcement and education are explored below:

- ***Action*****:** Enforcement to curtail off-road driving. Implement patrols and field presence at appropriate times of year (such as hunting season, holidays, weekends, etc) in identified areas. This effort is also used to educate users of the travel policy. The cost to have two people for 90 additional days, with $1000 training and $2000 vehicle use is about $25,000 per year. This could be supplemented by occasional assistance from the district law enforcement officer.

- ***Action*****:** Education to create an understanding of the problems created by off road driving. Implement an ongoing effort to educate forest users of the motorized travel policy. For one employee to make 6 presentations and produce information products such as fliers or news releases. Assume 20 days = $6,000 per year.

- ***Action:*** Route number sign installation. Install route numbers on all system roads and motorized trails at all junctions with system and unauthorized routes to assist with compliance. Thus, 105 days; $10,000 materials; and $5,000 vehicle use; for a total of $28,500 during the initial implementation year. After the initial implementation, an average of 15 days a year would be needed for monitoring and replacement of the route markers due to vandalism or accidents at about $3000 per year.

- ***Action:*** Providing information and education. Provide information about the Motor Vehicle Use Map (MVUM) and responsible use of motorized vehicles on the National Forest Install information board at area trail heads, recreation sites and parking areas. Approximately $10,000 for the first year, $2000 for monitoring and replacement materials in subsequent years.

- ***Action:*** Rehabilitate areas damaged by off-route driving. There are existing and will be increasing resources available for rehabilitation of areas where soil and vegetation have been damaged by off-road driving. The cost varies widely with the amount of area rehabilitated and the methods used. Dedicating about $50,000 per year significantly addresses about one area per year. NM State Recreation Trail Program, EPA's Clean Water Act 319 grant program, and a building

NM State OHV fund are all potential funding sources to rehabilitate and re-vegetate damaged areas in addition to federal appropriations.

Issue 2: Maintenance of existing system roads is inadequate

The actions to address this issue include reducing the maintenance need, leveraging funds, and seek more funding for maintenance.

- ***Action:*** Reduce the number of road miles that need maintenance or reduce the maintenance level to reduce the maintenance unit cost. This action is discussed (focusing on roads only) in the previous section titled 'Strategies that reduce the level of road maintenance costs'. Reducing the cost of roads by transferring closed roads into motorized trails will increase trail maintenance costs.

- ***Action*:** Leverage funds/efforts to increase maintenance completed. Continue to seek opportunities within the Forest, with other Forests, with Counties and private individuals to increase the amount of maintenance accomplished. For motorized trails there are opportunities to work with volunteers to maintain them. Insure that road maintenance is considered for all projects that generate significant road use.

- ***Action:*** Identify opportunities for transferring jurisdiction to other entities such as the counties. Forest system roads that provide access to residential developments. These routes would be good candidates to transfer to county jurisdiction.

- ***Action:*** Finalize road and trail management objectives (RMOs and TMOs) after the Travel Management Rule decision has been signed.

- ***Action:*** Seek more federally appropriated funding for maintenance.

Issue 3: Right-of-Way and access:

The primary action to address this issue is to emphasize acquisition of right-of-way or easements.

- ***Action*:** Maintain local skills within the work force in land ownership adjustment and land survey.

- ***Action*:** Emphasize right-of-way acquisition with out-year program planning and current year project planning. Adjust funding to areas directed at accomplishing right-of-way acquisition. Consider first roads that are high priority for transfer of jurisdiction to Counties as a means of prioritizing the work. Doing this facilitates a reduction in the number of road miles requiring maintenance with NFS funds.

- ***Action*:** Negotiate with land owners to obtain formal right-of-way access to routes needed.

- ***Action:*** Leverage road and trail system under FS jurisdiction to maximize cooperation from adjacent landowners. Issue a reciprocal easement as a preferred option with the landowners who deny access but still need forest access from their private lands.

Issue 4: Motorized routes have direct effects on wildlife and vegetation.

- ***Action:*** Reduce the number of road and trail miles that go through occupied habitat

- ***Action:*** Reduce the number of high use trials that go through nesting sites. Loop trails and trails near camping areas with high day use can be outside of known nesting areas for owls and hawks. Access point's location can help in reducing use of several trails.

- ***Action:*** Place timing restrictions on motorized trails and roads going through key nesting and roosting areas.

- ***Action:*** Reduce the road width and maintenance level to minimum needed for resource protection. Road widths including ditch are barriers for species and cause habitat fragmentation by limiting species dispersal (e.g., amphibian movement to and from wet area breeding sites in the spring).

- ***Action:*** Develop and promote trail uses that are outside of known threatened, endangered, or sensitive occupied habitats.

Chapter 6
STEP 6: REPORTING

Purpose

The purpose of this step is to:

- Report the key findings of the analysis.

Key Findings of the Analysis

At this point no trails or areas were recommended for motorized use; however, the TAP may be revisited after more public involvement in the Travel Management Rule process that may reflect the current recommendations. Chapter 4, section Recommendations for Roads and Maps 7 through 12 list and show the TAP recommendations. A complete list of the individual rankings for each road can be found in Appendix A.

Public Suggestions:

A full list with details of the Public involvement and collaboration for travel management issues on the Mt. Taylor Ranger District is listed in Appendix C.