United States
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Travel Analysis Report

PAGOSA RANGER DISTRICT

Responsible Official: Kevin Khung, District Ranger-Field Office Manager

Abstract:

This Travel Analysis Report documents a route-by-route analysis of all National Forest System roads and motorized trails on the Pagosa Ranger District and recommends the minimum road system needed for public access and forest management. This report also recommends changes to motorized trail designations. The project is within the Pagosa Ranger District, San Juan National Forest, Colorado.

Location:

Pagosa Ranger District, San Juan National Forest

Archuleta, Conejos, Hinsdale, Mineral & Rio Grande Counties, Colorado

Portions of Townships 33-39 North, Ranges 1-3 East and Ranges 1-5 West, N.M.P.M.

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Version 1.0

Table of Contents

INDEX OF TABLES

INDEX OF FIGURES

EXECUTIVE SUMMARY

This document is the Travel Analysis (TA) Report for the Pagosa Ranger District (Pagosa District) planning area. This Travel Analysis Report documents a route-by-route analysis of all National Forest System roads and motorized trails on the Pagosa District and recommends the minimum road system needed for public access and forest management. This report also recommends changes to motorized trail designations.

The outcome of the TA is a set of science-based recommendations for changes to the forest transportation system to meet current and future management objectives. These recommendations are based on an analysis of the physical, biological, social, and economic risks and benefits of every system road and motorized trail.

Travel Analysis is intended to inform subsequent National Environmental Policy Act (NEPA) processes, allowing individual projects to be more site-specific and focused, while still addressing cumulative impacts. The Travel Analysis Process (TAP) neither produces decisions nor allocates National Forest System lands for specific purposes. It merely provides the analytical framework from which to make recommendations that may then be examined in the NEPA process. It describes current conditions, risks, benefits, opportunities (needs for change), and priorities for action. Future NEPA analyses that include public involvement may carry forward, reject or change the recommendations in this report, and provide the basis for making specific transportation system related decisions.

Summary of Issues

Issues were identified using previous public involvement and internal Forest Service input and are as follows. Issues are discussed in more detail in Chapter 4.

- Insufficient resources for maintenance of the existing system of roads and trails
- Access Needs, including motorized recreation use, access and connectivity to a variety of recreational opportunities, access for forest management, and emergency access
- Environmental Impacts, including current condition and maintenance or repair costs, impacts to water resources, soil and geologic hazards, fragmentation and wildlife security, impacts to vegetation (particularly invasive species), and impacts to cultural resources
- Social Impacts, including impacts to recreationists preferring to recreate in areas not directly under the influence of motorized use
- Inappropriate jurisdiction

Analysis Performed

A risk-benefit assessment was used to rank system roads and motorized trails on the Pagosa District based on risks (road/trail condition/maintenance and repair costs, impacts on water resources, soil/geologic hazards, wildlife resources, invasive species, and cultural resources, social conflict potential, and jurisdiction) and benefits (motorized recreation use, recreation access/connectivity, forest management access, and emergency access). The categories chosen to rank risks and benefits were based on issues identified in Chapter 4 and by criteria set by the members of the Interdisciplinary Team (IDT) in Chapter 5.

Key Results and Findings

Through the Travel Analysis Process the IDT ranked routes based on their *risks* to natural, social, economic and cultural resources and their *benefits* to recreation use, forest management access, and

emergency access. Each road was then further evaluated to determine if it was needed as part of the minimum road system. Opportunities for changes to roads and motorized trails were also identified. A summary of these findings follows:

- 34 miles of roads in the current system (4%) have been assessed to have a greater risk than benefit, and should be considered for decommissioning, closure, or mitigated to reduce resource risk.
- 430 miles of roads in the current system (50%) have high to medium benefits and should be considered for regular maintenance to mitigate and prevent resource risk.
- Approximately 67 miles of system roads are recommended to be decommissioned, closed, or removed from the system.
- There was a need identified to add 11 miles of existing road to the system for long-term forest management. There was also a need identified to construct 0.3 miles of new road for long-term forest management.
- 28 miles of motorized trails in the current system (37%) have a greater risk than benefit and should be considered for decommissioning, closure, conversion to a non-motorized trail, or mitigated to reduce resource risk.
- 38 miles of motorized trails in the current system (49%) have high to medium benefits and should be considered for additional maintenance to mitigate resource risk. The other 51% of motorized trails were assessed as having low benefit, many of which should be evaluated for decommissioning, closure or conversion to non-motorized trails.

Chapter 6, Describing Opportunities and Setting Priorities, and maps in Appendices D and E, display the TA recommendations. Appendix F lists the recommended changes to roads. A complete list of the individual rankings for each road and motorized trail can be found in Appendices G and H.

How the Report will be Used

The Travel Analysis Report for the Pagosa District will assist in addressing issues related to the road and motorized trail systems. It will be used to inform future site specific analyses, decisions, and specific actions. Travel analysis is an ongoing process and it is anticipated that this document will be updated on an ongoing basis.

INTRODUCTION

Travel Management Rule

In 2005, the U.S. Forest Service adopted the Travel Management Rule. The rule changes the way that the Forest Service regulates motor vehicles on National Forests and Grasslands. The Travel Management Rule requires that National Forests identify their minimum road system and designate roads, trails, and areas for motor vehicle use. This means that after the designation process is complete, the public will be able to operate motor vehicles only on the roads, trails, and areas that have been designated. The designations will not only list what roads, trails, and areas can be used, but also what types of vehicles can be used, and what time of year they can be used.

There are some exceptions to these designations, which include persons with a Forest Service permit specifically authorizing the otherwise prohibited act, any Federal, State or local law enforcement officer, or member of an organized rescue or firefighting force engaged in the performance of an official duty, and Forest Service administrative use.

The object of the Travel Management Rule is not to unnecessarily limit access to the Forest, but to protect the Forest from unmanaged use. The Forest Service must strike a balance in managing all types of activities. To this end, a designated system of roads, trails, and areas for motor vehicle use, established with public involvement, will enhance public enjoyment of the National Forests while maintaining other important values and uses on National Forest System lands. The Travel Management Rule works to manage current use so future generations can continue to enjoy access to our National Forest System lands.

The travel management regulations (36 CFR 212.5(b)) require that the Forest Service "identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands"; and to identify the roads that "are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails".

Travel Analysis Process

Before the Forest Service adopted the Travel Management Rule, the Roads Analysis Process described in the Forest Service Manual (7712.1) and publication FS-643, *Roads Analysis: Informing Decisions about Managing the Transportation System,* was used. A Roads Analysis Report analyzing maintenance level 3, 4, and 5 roads across the San Juan National Forest was produced in July 2006. This Travel Analysis Report revises and updates the San Juan National Forest Roads Analysis Report, including adding maintenance level 1 and 2 roads and motorized trails managed by the Pagosa District. Maintenance levels are described in section 3.2 of this report.

The Travel Analysis Process consists of six steps which are as follows:

Step 1: Setting Up the Analysis
Step 2: Describing the Situation
Step 3: Identifying Issues
Step 4: Assessing Benefits, Problems, and Risks
Step 5: Describing Opportunities and Setting Priorities
Step 6: Reporting

Travel Analysis is an iterative, not a one-time, process. When conditions change, additional analysis may point to the need for revisions to the recommendations. In fact, a travel management route

designation process will likely result in additional information and, perhaps, decisions that will then be reflected in changes to the recommendations in this report.

This TA does not address nonmotorized trail opportunities; it is focused only on the motorized trail and road systems.

The TAP is not a decision process. Travel Analysis provides the analytical framework from which to make recommendations that may then be examined in the NEPA process, which provides the basis, including formal public involvement, for making decisions.

Forest Plan Direction

The San Juan National Forest Land and Resource Management Plan 1983, amended 1992 (Forest Plan) establishes programmatic direction for the management of National Forest System lands.

The San Juan National Forest is broken into discrete Management Areas. Management Areas provide management direction by emphasizing a particular resource and identifying associated guidelines (prescriptions) for management activities. The following management areas are located in the analysis area: 1A, 1B, 2A, 2B, 3A, 4B, 5B, 6B, 7E, 9A, 10A, 10C, 10D, 1.11, 1.12, and 1.13. Applicable Forest-wide transportation General Direction statements as well as transportation related direction for each management area are located in Appendix A.

Compliance with Forest Plan Direction

The analysis and recommendations in this report are consistent with Forest Plan direction.

STEP 1: SETTING UP THE ANALYSIS

Purpose

The purpose of this step is to:

- Identify the analysis area
- State objectives
- Identify the roles of technical specialists
- Develop an analysis plan
- Identify information needs

Analysis Area

The analysis area is the Pagosa District which is approximately 698,105 acres in size. Approximately 581,664 acres of the analysis area (83%) are on National Forest System lands. The remaining 116,441 acres are private lands within the boundaries of the National Forest. 26% of the analysis area is in the Weminuche and South San Juan Wilderness Areas, and 7% is in the Piedra Area. The remaining 67% is on non-wilderness lands. Although the analysis area is limited to the Pagosa District, roads, resources, and recreational opportunities on adjacent lands were considered in this analysis.

Objectives

The objective of this science-based analysis is to provide information for managing roads and motorized trails that are responsive to public needs and desires, conform to the Forest Plan, are determined to be needed to meet resource and other management objectives, minimize adverse environmental impacts, and better reflect long-term funding expectations. All existing system roads and motorized trails within the analysis area are included in this Travel Analysis Report. Only non-system roads that were considered for addition to the transportation system were analyzed in this TA.

The Travel Analysis Process is intended to be a broad scale comprehensive look at the transportation network. The main objectives of the TAP are:

- Balance the need for access while minimizing risks by examining important resource, social, and economic issues related to roads and motorized 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 change by comparing the current road and motorized trail system to the desired condition; and
- Make recommendations to inform decisions in subsequent NEPA documents.

Specialist Roles

The Interdisciplinary Team (IDT) members and their primary discipline(s) are listed below:

Brian Bachtel – Range
Paul Blackman – Recreation
Sara Brinton – Ecology
Anthony Garcia – Wildlife
Steve Hartvigsen – Timber
Steve Henschel – Fire, Emergency Access
Pete Merkel – Engineering
Mark Roper – GIS
Becca Smith – Hydrology, Geology, Project Leader
Wendy Sutton – Cultural
Scott Wagner – Fire and Fuels

Analysis Plan

The IDT followed these steps in order to carry out the analysis:

- Reviewed and assembled existing data, including the San Juan National Forest Roads Analysis Report.
- Verified accuracy of system road and motorized trail locations on maps.
- Identified discrepancies between on-the-ground conditions and the Forest's INFRA and GIS databases. Documented and corrected where possible these data discrepancies.
- Where possible, verified the current conditions of roads and motorized trails, including safety issues, surface type and environmental impacts.
- Identified preliminary access and resource issues, concerns, and opportunities through previous public involvement and internal resource staffs.
- Performed the analysis concurrently with other plans and projects ongoing on the District.
- Recommended changes to the road and motorized trail systems based on the findings of this Travel Analysis in order to identify the minimum road system and improve the management of forest resources relying on the transportation system.

Information Needs

Information needs were identified and the IDT worked to gather as much information as available about the following:

- Accurate location and condition of system roads and motorized trails within the analysis area. A complete inventory of non-system routes was not conducted.
- Maintenance responsibility.
- Assessment of previous and current opportunities, problems and risks for all roads and motorized trails in the analysis area.
- Soil, hydrology, vegetation, invasive species, wildlife, and cultural resources and areas where they are being impacted by roads and/or motorized trails.
- Areas of special sensitivity, resource values, or both.
- Public access and recreational needs and desires in the area, including access for nearby landowners.
- Conflicts among uses, public access, user safety, and accessibility.
- Anticipated future levels of motor vehicle use and changes in motor vehicle technology.
- Transportation needs for Forest management activities.
- Transportation investments necessary to meet land management plan objectives.
- Current observed road and motorized trail uses.
- Economic costs and benefits.
- Road and motorized trail management objectives.
- Best management practices.
- Forest Plan and other management direction.
- Agency objectives and priorities.
- Interrelationship with other governmental jurisdictions for roads and motorized trails.
- Applicable federal, state, and local laws.
- Public and user group values and concerns.
- Forest-wide and project level road and motorized trail analyses.
- Previous administrative decisions regarding travel management.

STEP 2: DESCRIBING THE SITUATION

Purpose

The purpose of this step is to:

- Describe the existing management direction
- Describe the existing road and motorized trail systems

Road Management

The transportation system on the San Juan National Forest (SJNF) serves a variety of resource management and access needs. Most roads on the SJNF were originally constructed for commercial access purposes which included grazing, timber, and mineral extraction. Other roads resulted from construction of gas pipelines, power transmission corridors, and other activities. Over the past 100 years, an extensive road network was developed that continues to serve commercial, recreation, and administrative purposes and provide access to private lands located within the Forest.

National Forest System Roads (NFSR) are managed in accordance with the Road Management Objectives (RMO) established for the each road. RMOs stipulate the uses for which the road was designed and currently managed, maintenance levels, target maintenance frequencies and tasks, and other information, as well as future needs for the road.

National Forest System Roads are assigned a specific maintenance level which defines the level of service provided by, and maintenance required for, each specific road. Roads may be currently maintained at one level and planned to be maintained at a different level at some future date. The operational maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the level to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. On the Pagosa District, most roads are being maintained at their objective levels, i.e. the operational and objective maintenance levels are the same.

Discussions about roads in this TA report will use the Forest Service maintenance level (ML) terminology which includes MLs 1-5: ML 1 (closed roads); ML 2 (high clearance vehicles); ML 3 (suitable for passenger car travel); ML 4 (suitable for passenger car travel, provides comfort at moderate speeds); and ML 5 (paved, or chip sealed). On the Pagosa District, ML 1 and 2 roads are usually native surface and ML 3 and 4 Roads are usually surfaced with material, such as gravel.

Maintenance levels 1-5 (operational and objective) are described in more detail in Forest Service Handbook (FSH) 7709.59, Section 62.32.

Trail Management

Many of the Pagosa District's trails evolved over the past 100 years through repeated use by grazing permittees and other forest users and visitors, while some were designed and constructed by Forest Service employees or contractors. Over time, a system of trails was established and formally administered by the Forest Service. The majority of motorized trails on the District were "grandfathered" into the system by virtue of historic motorized use at a time when such use was not regulated.

National Forest System Trails (NFST) are managed in accordance with the Trail Management Objectives (TMO) established for the trail. TMOs stipulate the uses for which the trail was designed and currently managed, prohibited uses, seasons of use, target maintenance frequencies and tasks, trail class, and design parameters. Trail classes range from 1 through 5, with 1 being the most undeveloped and 5 being the most highly developed. Target design parameters and maintenance frequencies are based on the trail class and level of development. Maintenance tasks include trail opening, logging out, brushing, tread drainage, and tread maintenance.

Designed and managed uses for standard terra (i.e., summer) trails are as follows: hiker/pedestrian, pack and saddle, bicycle, motorcycle, and ATV. A trail is considered to be designed for one use (the highest use based on the intensiveness of management required, with ATV trails being the most intensive and hiker/pedestrian being the least), though it may be *managed* for multiple uses (e.g., a trail with a designed use for ATVs may be open and managed for all other uses).

It should be noted that following the implementation of the Travel Rule, trail terminology relating to accepted and prohibited uses was refined and differs slightly from the terminology used in TMOs. Motorized trails on the San Juan National Forest may be designated as open to all motor vehicles less than 50 inches in width (which includes ATVs and motorcycles), or they may be designated as open only to motorcycles (referred to as "single track" motorized trails).

Geographic Information System and Corporate Database

Two of the tools used to catalog information about roads and trails are 1) a geographic information system (GIS), and 2) a corporate database known as INFRA. Each of these computer-based tools contains slightly different information. The INFRA database lists all the system roads and trails on the Forest and includes a variety of survey-based information about each route, such as route number, length, beginning and ending locations, ownership, ranger district, surface type, and other similar data. The database also includes features along the route, such as culvert pipes, switchbacks, signs, waterbars, cattle guards, and gates. The database also includes maintenance information. The geographic information system, or GIS, spatially displays the roads and trails and other information across the landscape. Using GIS, transportation routes may be overlaid with streams, wildlife areas, land ownership, and a host of other information.

The Forest Service has not always kept such detailed records of roads and trails. On the San Juan National Forest, aerial photographs were used as an initial step to inventory all existing roads, and most everything that looked like a road on the photo was identified as such. These routes were identified as non-system routes and were not categorized as system roads. The District has worked to ensure that the GIS and INFRA databases match what is actually on the ground. Level 1 and non-system roads have not all been field-verified, and in some places across the Forest, features that are not roads are still identified in the inventory as non-system roads. Some of these are fence lines, ditches and other non-road features that looked like roads on aerial photos; others are unauthorized or user-created routes that were never intended as long-term Forest Service road assets to be kept on the system. There may be additional unauthorized routes that are not mapped. All motorized system trails on the District have been field-verified.

The INFRA database and GIS are working tools to help manage the transportation system. Over the years the database and GIS have been refined. As problems or mistakes are discovered, corrections are made.

In a three year effort beginning in 2006, engineering employees field-verified 1,058 miles of ML2 roads across the San Juan National Forest, mapping current alignments with GPS units and comparing the data with INFRA and GIS. They found that 20% of the roads Forest-wide (and 71% of the roads on the

Pagosa District) either followed a different alignment, had incorrect lengths, or had the wrong maintenance level assigned to them. Minor discrepancies were corrected in the databases while the more significant changes were addressed with District staff members on a case-by-case basis. In addition, Road Management Objectives (RMO's) were reviewed or developed for all Level 2-5 roads. These are available at the Engineering Office in the San Juan Public Lands Center.

In a similar effort beginning in the late 1990s, trail inventories and condition surveys were completed for the majority of the District's system trails. Alignments were often corrected using GPS data collected along the trails, and features were documented in the INFRA database.

Existing Direction

Travel analysis is focused on identifying needed changes to the forest transportation system. Identifying the existing direction is an important first step. In general terms, the existing direction includes how the National Forest System roads and trails are currently managed for motor vehicle use. Restrictions, prohibitions, and closures on motor vehicle use are also part of the existing direction.

The Pagosa District completed an Environmental Assessment and Decision Notice for travel management in 2008 which covered the entire District (Pagosa District Travel Management Analysis of C and D Areas, Off-Road Vehicle Access and Seasonal Road and Motorized Trail Closures). This travel management decision was implemented in part by publishing a Motor Vehicle Use Map (MVUM) in March, 2010. This map contains the existing direction for motor vehicle use on the district. Motor vehicle use (excluding snowmobiles operating on snow) is allowed on designated roads and trails shown on the MVUM. There are no designated motorized areas. The MVUM for the Pagosa District is available on the web at: http://www.fs.usda.gov/goto/sanjuan/home.

States, counties, other Federal agencies, and private entities may control roads that cross Forest land by obtaining easements from the Forest Service. Roads that have easements issued to other entities are generally not managed as National Forest System Roads.

Existing Condition

Table 1 lists the number of miles of system roads by maintenance level and system motorized trails by use classification on the Pagosa District.

Table 1: System Roads and Motorized Trails on the Pagosa District

Roads	Miles
Maintenance Level 5	0.4
Maintenance Level 4	0
Maintenance Level 3	220
Maintenance Level 2	191
Maintenance Level 1	442
Total System Roads	853
Motorized Trails	
Open to Vehicles < 50" in width	76
Single-Track Motorized Trails	0
Total Motorized Trails	76

In order to protect the road and trail surfaces and other resources, most roads and all motorized trails on the Pagosa District are seasonally closed to all motor vehicles during the winter and spring seasons (except snowmobiles operating on snow).

Not all non-system roads or routes were analyzed in the TA. Only non-system roads that were considered for addition to the minimum road system were carried forward for analysis. Other non-system roads and motorized trails will be analyzed as necessary on a case-by-case basis in future analyses.

Road Density

The Forest Plan provides a desired level of road density for many of the management areas (MA) across the Forest. These mile per square mile guidelines reflect the management emphasis of each particular area. The guidelines focus on roads open to public use only. The Pagosa District road densities are one indicator of how well the area is contributing to Forest Plan objectives.

Table 2: Road Density Guidelines by Management Area

MA	Emphasis	Forest Plan (mi/sq mile)	Existing System
1A	Existing and Proposed Developed Recreation Sites	Not specified	Not mapped
1B	Winter Sports Sites	Not specified	0.2
2B	Rural and Roaded Natural Recreation	0.5-1	1.1
3A	Semi-primitive Non-motorized Recreation in Roaded or Non-roaded areas	Not specified	0.2
4B	Habitat for Management Indicator Species	0.5-1	0.3
5B	Big-Game Winter Range in Forested Areas	0-0.5	0.7
6B	Livestock Grazing	0.5-1	0.8
7E	Wood-Fiber Production and Utilization	1-3	0.9
9A	Riparian Area Management	Not specified	Not mapped
10A	Research Natural Areas	Not specified*	0.0
10C	Special Interest Areas - Chimney Rock	Not specified	0.5
10D	Wild and Scenic Rivers	Not specified	1.9
1.11	Wilderness – Pristine	Not specified**	0.0
1.12	Wilderness – Primitive	Not specified**	0.0
1.13	Wilderness – Semi-primitive	Not specified**	0.0

*Generally roads are not permitted in MA 10A.

**Use of motor vehicles is prohibited in the Weminuche Wilderness, South San Juan Wilderness, and Piedra Area.

The road density guideline for MA 2A (Semi-primitive Motorized Recreation) is, "Do not exceed an average open local road density of 1 mile/square mile in fourth order watersheds". There are two areas of MA 2A on the Pagosa District. One of these is east of Porcupine Road and the other is in the Wolf Creek area. The road density for the portion of the MA 2A polygon east of Porcupine Road that is within a 4th order watershed is 0.08 miles/square mile. The road density for the portion of the MA 2A polygon in the Wolf Creek area that is within a 4th order watershed is 0.75 miles/square mile.

Current open road densities are within or below Forest Plan desired levels in most management areas, however MA 2B and 5B are slightly above Forest Plan desired levels. The management emphasis for MA 2B is for rural and roaded-natural recreation opportunities. Many of the MA 2B polygons are corridors along existing major roads, such as West Fork Road, East Fork Road, and Highway 160. Changes to management of these major roads are not proposed. Implementation of NEPA decisions currently in process will reduce the road density in MA 5B to approximately 0.6 mi/sq mi.

Motorized Trail Density

Direction in the Forest Plan addressing motorized trail density is sparse, with only two management areas containing any specific standards and guidelines. These are as follows:

Management Area 2A (Semi-Primitive Motorized Recreation Opportunities)

- Do not exceed an average motorized trail density of 4 miles per square mile on fourth-order watersheds.
- Do not exceed an average motorized trail density of 2 miles per square mile in nonforested areas of fourth-order watersheds.

Management Area 2B (Rural and Roaded-Natural Recreation Opportunities)

- On all nonforested areas, motorized trail and local road density is not to exceed 4 miles per square mile.

There are no motorized trails on the Pagosa District within Management Area 2A and there are only two very short sections of motorized trail in Management Area 2B. Motorized trail densities on the Pagosa District are well below the limits established for these two Management Areas.

STEP 3: IDENTIFYING ISSUES

Purpose

The purpose of this step is to:

- Identify key issues related to management of the existing road and motorized trail systems

Key Issues

The key issues were identified using recent public involvement and comments that addressed the Pagosa District transportation system as well as input from Forest Service personnel. These issues are listed in random order and do not represent a hierarchy of importance.

1. **Insufficient resources for maintenance of the existing system roads and motorized trails**
   Inadequate maintenance reduces access for National Forest users and management, accelerates soil erosion by concentrating surface water flow, and affects water quality and aquatic habitat 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. (See Appendix B for more information on road and trail maintenance costs.)

2. **Access Needs**
   Motorized vehicle access, of various types, is needed in order to provide recreational opportunities, efficiently manage the Forest, and provide access for emergency response.
   a. **Motorized Recreation Use:** Roads are used for various types of motorized recreation including driving for pleasure, 4-wheel driving, ATV and motorcycle riding, and snowmobile riding. Motorized Trails are used by Off Highway Vehicles (OHV) less than 50" in width (including motorcycles and ATVs) for recreational trail riding experiences. Recent travel management analyses, formal and informal public scoping, and anecdotal evidence suggest that opportunities for motorized recreation on trails are not meeting user preferences. A lack of loop opportunities, insufficient miles of trail open to motorized use, and the non-existence of any single-track motorized trails are the primary concerns cited by users.
   b. **Recreation Access/Connectivity:** Roads and motorized trails provide motor vehicle access to recreational activities occurring off roads, such as hiking, camping, hunting, firewood gathering, rock collecting, etc. Roads and motorized trails are often more desirable if they provide connectivity to other roads and motorized trails.
   c. **Forest Management:** Roads, and to a lesser extent motorized trails, provide access for forest management activities such as fuels reduction, timber harvest, grazing, mining, oil and gas development, noxious weed treatment, etc.
   d. **Emergency Access:** Roads, and to a lesser extent motorized trails, provide access to facilitate responding to emergencies such as fire suppression and search and rescue.

3. **Environmental Impacts**
   There are concerns about damage from motor vehicle use, including:
   a. **Impacts to water resources:** Erosion and sediment transport off roads and motorized trails in areas with perennial, intermittent, and ephemeral stream channels or wetlands impair the ecological and hydrologic function of drainage channels;
   b. **Soil and Geologic Hazards:** Much of the analysis area has soils that erode easily. These soils are extremely susceptible to compaction, rutting, gullying, and development of mud holes. Some roads and motorized trails are susceptible to mass movement, such as landslides.

c. **Fragmentation and wildlife security:** Motorized routes may fragment wildlife habitat, create barriers to movement, reduce wildlife habitat capability to sustain populations, and increase areas of disturbance.
d. **Impacts to vegetation:** Motor vehicle use may cause the spread of invasive species by dispersing seed sources.
e. **Impacts to cultural resources:** Motorized routes and use of these routes may impact cultural resources.

4. **Social Impacts (motorized trails only)**
The use of motor vehicles on trails is viewed by some non-motorized trail users as disruptive to their recreational pursuits and experiences. Providing recreation opportunities for motorized users that minimize these types of user group conflicts is a challenge for land managers and planners.

5. **Inappropriate Jurisdiction (roads only)**
Roads that access private property where the majority of traffic on the road is related to the private property are better suited as county roads. The use of forest roads for the purposes of accessing private property, while not necessarily prohibited, cannot be said to be contributing to the protection, administration, and utilization of the Forest. In fact, the considerable maintenance and administrative costs associated with the private use of Forest roads, especially as relates to winter use and snowplowing, actually detracts from the agency's ability to manage roads for the purposes for which they were intended. The Forest Service cannot provide adequate maintenance or management to meet to needs for this access.

STEP 4: ASSESSING BENEFITS, PROBLEMS, AND RISKS

Purpose

The purpose of this step is to:

- Describe the analysis process
- Describe the criteria and rankings used in the risk and benefit analysis
- Summarize the results of the risk and benefit analysis

The Analysis Process

The risk and benefit criteria categories (Table 3) were developed by considering the issues from Step 3, the assessment of benefits, problems, and risks contained in the San Juan National Forest Roads Analysis Report, and additional knowledge and information from the District staff. The questions and answers for assessing the benefits, problems, and risks of the existing and potential road system contained in Step 4 of the San Juan National Forest Roads Analysis Report were reviewed and found to be applicable to this TA and are not repeated in this document. Each road and motorized trail was then evaluated against the identified risks and benefits.

Criteria and Rankings Used in the Risk and Benefit Analysis

Roads and motorized trails on the Pagosa District provide access for many uses and users. They also provide the infrastructure to facilitate motorized recreation and Forest management. However, their presence has possible negative effects on the natural and cultural resources of the Forest, maintenance and repair costs in excess of recent budgetary allocations, and in the case of motorized trails, the potential for social impacts. The IDT identified the following risks and benefits of roads and motorized trails as the most important resource issues for managing the transportation system on the Pagosa District.

Table 3: Road and Motorized Trail Risks and Benefits

Risks	Benefits
• Condition/Maintenance and Repair Costs • Water Resources • Soil/Geologic Hazards • Wildlife Resources • Invasive Species • Cultural Resources • Jurisdiction (roads only) • Social Conflicts (trails only)	• Motorized Recreation Use • Recreation Access/Connectivity • Forest Management Access • Emergency Access

The IDT evaluated each road and motorized trail for each of these risks and benefits and assigned a numerical value for each category. This was based on field knowledge of the routes, data contained in GIS layers, maintenance and repair cost data contained in INFRA, and professional knowledge of the routes, their resource impacts and benefits for various uses. High risks and benefits were assigned a numerical value of three (3), medium risks and benefits were assigned a numerical value of two (2), and low risks and benefits were assigned a numerical value of one (1). Where cultural resource risk was rated as "unknown", this category was not assigned a numerical value. Assignment of a High (3), Medium (2), or Low (1) rating for each risk and benefit category generally followed the guidelines presented below.

Table 4: Road and Motorized Trail Risk and Benefit Guidelines

Risks		
Issue	**Rating**	**Criteria Guidelines**
Condition/Maintenance and Repair Costs	High	High levels of deferred maintenance and repair needs as based on the presence of three or more of the following conditions: washboarding; surface deterioration; landslides; roadbed slumping; slope raveling; drainage problems; rutting or gullying; mud holes; poor condition of drainage structures or culverts; and design deficiencies.
	Medium	Moderate levels of deferred maintenance and repair needs as based on the presence of two or more of the above conditions.
	Low	Little or no deferred maintenance and repair needs; no existing damage or one of the above conditions present and condition fair or better.
Water Resources	High	Close proximity to surface water, history of drainage problems or sediment being transported off road/trail.
	Medium	Some buffer between route and surface water, some history of drainage problems or sediment being transported off route.
	Low	Distant from surface water, minimal history of drainage problems or sediment being transported off route.
Soil/Geologic Hazards	High	Forest Service knowledge of road/trail damage from landslides, slumps, mudflows, rockfall, retaining wall failure, gullying, soils that are unstable or extremely susceptible to erosion.
	Medium	Knowledge of minor road/trail damage from soil or geologic hazards.
	Low	No knowledge of damage from soil or geologic hazards.
Wildlife Resources	High	High levels of motorized and non-motorized use on roads/trails in highly roaded area.
	Medium	Moderate levels of motorized and non-motorized use on roads/trails in moderately roaded area.
	Low	Low levels of motorized and non-motorized use on roads/trails in minimally roaded area.
Invasive Species	High	Numerous known populations of noxious weeds in vicinity of route corridor.
	Medium	Some known populations of noxious weeds in vicinity of route corridor.
	Low	No or few known populations of noxious weeds in vicinity of route corridor.
Cultural Resources	High	Known historic properties within road/trail prism or in vicinity of corridor.
	Unknown	Area of unknown archaeological potential, little or no archaeological survey and/or the presence of "needs data" sites.
	Low	No known or located historic properties within prism or in vicinity of corridor where archaeological potential has been largely assessed (through Class III archaeological inventory) or Level 3 or higher road where cultural resources are likely to be compromised.

Social Conflict Potential	High	Heavy amount of non-motorized trail use and/or known user group conflicts
	Medium	Moderate amount of non-motorized trail use and/or known user group conflicts
	Low	Low amount of non-motorized trail use and/or known user group conflicts
Jurisdiction	High	Access to multiple private parcels or large private development(s).
	Medium	Access to few private parcels.
	Low	No private access.

Benefits		
Issue	**Rating**	**Criteria Guidelines**
Motorized Recreation Use	High	Roads/trails that are frequently used for motorized recreation activities (includes driving for pleasure, 4X4, ATV, motorcycle, or snowmobile use).
	Medium	Roads/trails that are occasionally used for motorized recreation activities.
	Low	Roads/trails that are rarely or never (ML1 roads) used for motorized recreation activities.
Recreation Access/Connectivity	High	Roads/trails that provide access to numerous or high value recreation opportunities and/or connectivity to many other motorized routes.
	Medium	Roads/trails that provide access to some recreation opportunities and/or connectivity to some other motorized routes.
	Low	Roads/trails that provide access to limited recreation opportunities and do not provide connectivity to other motorized routes.
Forest Management Access	High	Roads/trails that provide access to areas that periodically undergo management in multiple resource program areas (e.g. timber, range, fuels, fire, minerals, law enforcement etc.).
	Medium	Roads/trails that provide access to areas that infrequently have active management in more than one resource program area.
	Low	Roads/trails that provide access to areas that rarely have active management and serve only one resource program area.
Emergency Access	High	Roads/trails that are frequently used or will likely be needed for emergencies (such as fire suppression, search and rescue, etc.).
	Medium	Roads/trails that are infrequently used or needed for emergencies.
	Low	Roads/trails that are rarely used and will likely not be needed for emergency access.

The same risk and benefit categories were used for all roads, regardless of maintenance level. This was done for simplicity and consistency. However, it is apparent that the benefits for open and closed roads are different. The vast majority of closed roads rated as low for motorized recreation use and recreation access/connectivity because these opportunities are generally not available on closed roads. Many of the closed roads also rated low for emergency access since they may not be readily available for motor vehicle use (i.e. overgrown or have down logs on them). This resulted in a large percentage of the ML1 roads rating as low benefit. The benefit categories could have been changed so as to better reflect the benefits of ML1 roads (such as by listing each forest management program area separately), but it was determined that it was beneficial to see all roads on the district rated with the same criteria so that they can be more directly compared to each other.

This risk and benefit analysis was based on GIS layers available at the time this analysis was being conducted. A matrix was created displaying each road and motorized trail and each risk and benefit category (Appendices G and H). Once a numerical value was assigned to each matrix category, an average was calculated for each road that is represented by the "overall risk (or benefit) ranking". Those rankings with a value of 2.34 or greater were assessed as "High", those rankings between 1.67 and 2.33 were assessed as "Medium", and those rankings less than 1.67 were assessed as "Low". These categories were calculated mathematically and did not consider the severity of the impact beyond the guidelines listed above. In the "Recommendation" column, the IDT recorded their recommendation as to whether the road should be part of the minimum road system. The "Opportunities" column was used for any suggested changes to the road or trail. The "Comments" column was used to note additional information about the road or trail. The "Comments" column was also used to note potential future changes to a road where current information is inadequate to definitively make a recommendation.

For additional information on the rationale and methodology employed by specialists in the evaluation process, see Appendix C.

Results of the Risk and Benefit Analysis

Appendices G and H contain the Risk/Benefit Analysis matrices, which list the risks and benefits associated with each road and motorized trail on the Pagosa District.

This analysis resulted in nine possible risk/benefit pair categories: High Risk/High Benefit; High Risk/Medium Benefit; High Risk/Low Benefit; Medium Risk/High Benefit; Medium Risk/Medium Benefit; Medium Risk/Low Benefit; Low Risk/High Benefit; Low Risk/Medium Benefit; and Low Risk/Low Benefit.

Table 5: Miles of System Roads in Each Risk/Benefit Category

Risk/Benefit Ratio	# miles	%
ML5 Roads		
Medium Risk/Medium Benefit	0.11	31%
Low Risk/Medium Benefit	0.25	69%
Total	0.36	100%
ML3 Roads		
High Risk/High Benefit	4.20	2%
High Risk/Medium Benefit	0.00	0%
High Risk/Low Benefit	0.00	0%
Medium Risk/High Benefit	125.75	55%
Medium Risk/Medium Benefit	6.40	3%

Medium Risk/Low Benefit	1.50	1%
Low Risk/High Benefit	41.26	19%
Low Risk/Medium Benefit	29.78	14%
Low Risk/Low Benefit	11.02	7%
	219.91	100%
ML2 Roads		
High Risk/High Benefit	3.70	2%
High Risk/Medium Benefit	13.65	7%
High Risk/Low Benefit	1.58	1%
Medium Risk/High Benefit	33.07	20%
Medium Risk/Medium Benefit	66.63	34%
Medium Risk/Low Benefit	11.52	6%
Low Risk/High Benefit	0.04	0%
Low Risk/Medium Benefit	29.46	15%
Low Risk/Low Benefit	31.77	15%
	191.42	100%
ML1 Roads		
High Risk/High Benefit	0.00	0%
High Risk/Medium Benefit	0.00	0%
High Risk/Low Benefit	0.00	0%
Medium Risk/High Benefit	0.00	0%
Medium Risk/Medium Benefit	0.00	0%
Medium Risk/Low Benefit	5.61	1%
Low Risk/High Benefit	6.50	1%
Low Risk/Medium Benefit	69.35	16%
Low Risk/Low Benefit	360.31	82%
	441.77	100%

Table 6: Miles of Motorized Trails Within each Risk/Benefit Category

Risk/Benefit Ratio	# miles	%
Motorized Trails		
High Risk/High Benefit	3.60	5%
High Risk/Medium Benefit	4.02	5%
High Risk/Low Benefit	6.56	9%
Medium Risk/High Benefit	10.47	14%
Medium Risk/Medium Benefit	5.16	7%
Medium Risk/Low Benefit	17.85	23%
Low Risk/High Benefit	1.93	3%
Low Risk/Medium Benefit	12.53	16%
Low Risk/Low Benefit	14.10	18%
	76.22	100%

STEP 5: DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

Purpose

The purpose of this step is to:

- Describe opportunities for roads
- List recommendations for roads and motorized trails
- Determine the minimum road system
- Describe future actions

Opportunities for Roads

Opportunities for changing the transportation system include the following options:

Change Jurisdiction
Opportunities may exist to convert some roads under Forest Service jurisdiction to another jurisdiction, such as a County or other government agency, thus shifting the maintenance responsibility to them. This could, however, require an initial investment to bring the road up to a designated standard prior to transfer of jurisdiction.

Close to Motorized Use
Opportunities may exist to convert some roads currently open to public motorized use, but for no obvious benefit, to ML1 roads, if they are deemed needed for forest management. This could effectively reduce the cost of maintaining the roads. There may be initial costs to ensure that these roads are made to be self-maintaining hydraulically before converting them to ML1 roads.

Convert to Another Use
Opportunities may exist to convert some roads, if the road is not needed, to another use, such as a motorized or nonmotorized trail, thus eliminating the need to use resources to maintain it as a road. This option, however, would shift the cost of maintaining the converted road to another program area, such as trails.

Decommission
Opportunities may exist to decommission some roads, if the road is not needed. This would eliminate the need to plan for expenditure of resources to maintain the road in the future. There may be one-time costs to decommission roads.

Remove from System
Opportunities may exist to remove some roads from the system. Some system roads exist on private property to which the Forest Service has not legal access. This is not the same as decommissioning because the roads may continue to be used by the private landowner.

Aggressive Storm-proofing
Installation of well-designed drainage dips at regular intervals can ensure long-term stability with reduced future maintenance costs. The benefits of expending maintenance funds to do this should be compared with the potential costs of future maintenance and repairs that would be needed if the drainage dips were not installed.

Recommendations for Roads

General recommended actions for roads that fall within each of the nine risk/benefit categories are described below. These are general recommendations and are not necessarily applicable to all roads that fall within each category. See Appendix H for recommendations and opportunities specific to each road.

High Risk/High Benefit – Mitigate/Maintain
High Risk/High Benefit roads should receive the highest priority for maintenance and mitigation. These roads have high benefits and should therefore be retained, while mitigation of resource impacts and frequent maintenance should occur as soon as possible to reduce the risk level. 7.90 miles of road on the Pagosa District fall into this category. These are the East Fork Road (ML3) and the native surface portion of the Turkey Springs Road (ML2). It is recommended that both roads be prioritized for maintenance, drainage improvement and gravelling.

High Risk/Medium Benefit – Close or Mitigate/Maintain
High Risk/Medium Benefit roads should be either closed to motorized use (change maintenance level to 1) or given a high priority for mitigation of resource impacts and maintenance. 13.65 miles of road on the Pagosa District fall into this category. These are the Blue Creek and Big Branch Roads (ML2). These roads have resource impacts but are the only roads through this portion of the district. They provide measurable public and management benefits. It is recommended that both roads be prioritized for mitigation and regular maintenance. They may be reconsidered in the future for closure.

High Risk/Low Benefit – Close or Decommission
High Risk/Low Benefit roads should be closed to motorized use (change maintenance level to 1) or decommissioned due to their high level of risk and low level of benefit. 1.58 miles of road on the Pagosa District fall into this category. This is the Blue Creek B road (ML2). It is recommended that this road be closed to full-sized motor vehicle use and decommissioned.

Medium Risk/High Benefit – Mitigate/Maintain
Medium Risk/High Benefit roads should be given a high priority for maintenance and mitigation. These roads have high benefits and should be retained, while mitigation of resource impacts and regular maintenance should occur to reduce the risk level. 158.82 miles of road on the Pagosa District fall into this category. These are numerous ML3 and ML2 roads. These roads have some resource impacts but also provide a high level of public and/or management benefit. It is recommended that these roads be routinely maintained in order to reduce the risks. It is also recommended that 1.14 miles of the Nipple Mountain Road (ML3) be closed and decommissioned because it is has several washouts and is not needed and that 6.22 miles of the Willow Draw Road (ML2) be closed to full-sized motor vehicle use because it traverses erodible soils, has numerous mud holes, and is adjacent to drainages.

Medium Risk/Medium Benefit – Mitigate/Maintain
Medium Risk/Medium Benefit roads should receive mitigation and maintenance, though secondary in priority to roads with high benefits or high risks that are being maintained on the system. 73.14 miles of road on the Pagosa District fall into this category. These are numerous ML2 and a few ML3 and ML5 roads. These roads have some resource impacts but also provide benefits. They are important for public access and resource management needs. It is recommended that these roads be routinely maintained in order to reduce the risks. It is also recommended that 2.40 miles of ML2 road that are not needed be closed and decommissioned and 4.80 miles of ML2 road that are not needed be closed.

Medium Risk/Low Benefit – Close, Decommission, or Mitigate/Maintain
Medium Risk/Low Benefit roads should be considered for closure to motorized use (change maintenance level to 1), decommissioning, or mitigation or maintenance. 18.63 miles of road on the Pagosa District fall into this category. These are one ML3 road (Devil Creek), several ML2 roads, and

two ML1 roads (Nipple Mountain and Nipple Mountain F). It is recommended that most of these roads be maintained, though lower in priority to roads with high benefits, high risks, or medium benefits. It is also recommended that 5.84 miles that are not needed be closed and decommissioned (the ML1 and ML2 portions of the Nipple Mountain Road and Nipple Mountain F).

Low Risk/High Benefit – Maintain
Low Risk/High Benefit roads have high benefits and should be retained. Since the risks are low, they are not a priority for maintenance, but should be maintained adequately to avoid deterioration. 47.80 miles of road on the Pagosa District fall into this category. These are numerous ML3 and ML1 roads.

Low Risk/Medium Benefit – Maintain
Low Risk/Medium Benefit roads should be retained in light of their importance to the public and/or management and their relatively low resource risk. Since the risks are low, they are not a priority for maintenance, but should be maintained adequately to avoid deterioration. 128.84 miles of road on the Pagosa District fall into this category. These are numerous ML3, ML2, and ML1 roads and two ML5 roads. It is also recommended that 2.34 miles of ML2 and ML1 road that are not needed be closed and decommissioned and 1.13 miles of ML3 and ML2 roads that are not needed be closed.

Low Risk/Low Benefit – Maintain, Close, or Decommission
Low Risk/Low Benefit roads should be evaluated for maintaining, closing to motorized use (change maintenance level to 1), or decommissioning. Since the risks are low, they are not a priority for these activities. 403.10 miles of road on the Pagosa District fall into this category. These are the majority of the ML1 roads and several ML3 and ML2 roads. Section 5.3 explained that the reason such a high percentage of the ML1 roads were rated low benefit is a function of the benefit categories used. The ML1 roads that were recommended to remain on the minimum road system are known to be needed for future management activities, particularly vegetation management treatments. It is recommended that most of these roads be maintained adequately to avoid deterioration. The terrain on the Pagosa District is generally steep. Redundant roads or user created roads have generally not been developed. The roads that exist have been used repeatedly in the past for forest management activities and will be needed again in the future. Since these roads are low risk and are not having resource impacts, there are not resource reasons to decommission them. In addition, the cost to decommission these roads is not justified since they are not causing resource impacts and maintenance costs are close to zero since they do not have existing problems needing to be fixed. It is recommended that 20.51 miles of ML1 and ML2 roads that are not needed be closed and decommissioned, 5.13 miles of ML2 roads be closed, and 4.40 miles of ML1 roads that are not needed be removed from the system. Future site-specific NEPA projects can look at whether decommissioning of additional roads is warranted.

Recommendations for Motorized Trails

General recommended actions for motorized trails that fall within each of the nine risk/benefit categories are described below. These are general recommendations and are not necessarily applicable to all trails that fall within each category. See Appendix G for opportunities specific to each motorized trail.

High Risk/High Benefit – Mitigate/Maintain
High Risk/High Benefit trails should receive the highest priority for maintenance and mitigation. These trails have high benefits and should therefore be retained, while mitigation of resource impacts and frequent maintenance should be undertaken as soon as possible to reduce risk levels. 3.6 miles of trail on the Pagosa District fall into this category: NFST 600 (Devil Mountain).

High Risk/Medium Benefit – Close or Mitigate/Maintain

High Risk/Medium Benefit trails should be either closed to motorized use or given a high priority for resource mitigation and maintenance. 4.02 miles of trails on the Pagosa District fall into this category: NFST 569 (southern section of Fourmile) and 580 (Turkey Creek). These trails have resource concerns but provide measurable public and/or management benefits. It is recommended that both trails remain open and receive the mitigation and maintenance they require.

High Risk/Low Benefit – Close or Decommission
High Risk/Low Benefit trails should be evaluated for closure to motorized use or decommissioning due to their high level of risk and low level of benefit. 6.56 miles of trails on the Pagosa District fall into this category: NFST 566 (Windy Pass), 577 (Navajo Peak), and 581 (Coal Creek). It is recommended that these trails be closed to motorized use but not decommissioned due to the important access they provide for non-motorized users.

Medium Risk/High Benefit – Mitigate/Maintain
Medium Risk/High Benefit trails should be given a high priority for maintenance and mitigation. These trails have high benefits and should be retained, while mitigation of resource impacts and regular maintenance should be undertaken to reduce risk levels. 10.47 miles of trails on the Pagosa District fall into this category: NFST 583 (Fourmile-Turkey Springs ATV), 590 (Monument Park), 654 (Middle Mountain), and 703 (Chris Mountain). These trails have some resource impacts but also provide a high level of public and/or management benefit.

Medium Risk/Medium Benefit – Mitigate/Maintain
Medium Risk/Medium Benefit trails should receive mitigation and maintenance, though secondary in priority to trails with high benefits or high risks that are being retained on the system. 5.16 miles of trail on the Pagosa District fall into this category: NFST 569 (Fourmile-north section). It is recommended that the short portion of this trail adjacent to the Weminuche Wilderness be closed to motorized use, as well as its southernmost section southwest of NFSR 634; the remaining segment should be maintained and evaluated for relocation to improve trail connectivity.

Medium Risk/Low Benefit – Close, Decommission, or Mitigate/Maintain
Medium Risk/Low Benefit trails should be considered for closure to motorized use, decommissioning, or mitigation and maintenance. 17.85 miles of trails on the Pagosa District fall into this category: NFST 583 (Piedra Stock Drive-Trail Ridge), 589 (Middle Fork), 593 (Sand Creek), 565 (Treasure Mountain), and 569 (Fourmile-Coyote Hill). It is recommended that the southernmost section of NFST 583 be considered for closure to motorized use, while its remainder should be evaluated for potential expansion or closure. NFST 589, 593, and 569 should be evaluated for closure to motorized use and in the case of NFST 593, decommissioning. NFST 565 should be considered for designation as a single-track motorized trail to better reflect on-the-ground conditions. Trails remaining open to motorized use should receive mitigation and maintenance, though lower in priority to trails with high benefits, high risks, or medium benefits.

Low Risk/High Benefit – Maintain
Low Risk/High Benefit trails have high benefits and should be retained. Since the risks are low, they are not a priority for maintenance, but should be maintained adequately to avoid deterioration. 1.93 miles of trail on the Pagosa District fall into this category: NFST 582 (Connection).

Low Risk/Medium Benefit – Maintain
Low Risk/Medium Benefit trails should be retained in light of their importance to the public and/or management and their relatively low resource risk levels. Since the risks are low, they are not a priority for maintenance, but should be maintained adequately to avoid deterioration. 12.53 miles of trail on the Pagosa District fall into this category: NFST 691 (Mule Mountain) and NFST 704 (Snow Ranch).

Low Risk/Low Benefit – Maintain, Close or Decommission

Low Risk/Low Benefit trails should be evaluated for maintaining, closing to motorized use, or decommissioning. 14.10 miles of trail on the Pagosa District fall into this category: NFST 583 (Piedra Stock Drive-jct. with 600), 686 (Asplin Hut), 689 (Elk Creek), 690 (Horse Creek), 692 (Mule Mountain Spur 1), and 693 (Mule Mountain Spur 2). It is recommended that the NFST 583 segment and 686 be closed to motorized use, and that options be evaluated in the future for providing increased trail connectivity between NFST 689, 690, 692, and 693, thereby increasing the benefits associated with these trails (especially in light of their minimal resource concerns).

Motorized Trail System

See Appendix G for a list of each motorized trail, its risk and benefit rankings, and recommendations. Should the recommended changes to the road system discussed in Section 6.2 be adopted, an additional 9.1 miles of trails open to motor vehicles less than 50" in width would be added to the trail system through conversion of ML2 roads to motorized trails. The table below summarizes the changes to the District's motorized trail system should the road and trail recommendations presented above be implemented.

Table 7: Summary of Proposed Changes to Motorized Trail System

Trail Use	Current Miles	Miles Retained	Roads Converted To Trails (miles)	Total Miles	Difference
Vehicles < 50" in width	76.2	54.2	9.1	63.3	-12.9 (17%)
Single-track Motorized	0	6.5	0	6.5	+6.5
Total	76.2	61.7	9.1	70.8	-5.4 (7%)

Of the 14.5 miles of trail currently open to motorized vehicles that are recommended for closure to motorized use, 6.1 miles are recommended to be removed from the system, while the remaining 8.4 miles are recommended to be retained as non-motorized trails.

It should be noted that this trail analysis was confined to the existing motorized trail system only and did not include examining any opportunities for system expansion, either through new construction, adoption of non-system routes, or re-designation of non-motorized trails. This was due simply to the fact that only the existing motorized trail system could be analyzed in sufficient detail in this Travel Analysis Process. Consideration of site-specific additions to the system are reserved for subsequent analyses wherein concrete proposals are being presented and can be adequately analyzed.

Opportunities for expansion and enhanced connectivity may exist on several trails that could improve the benefit ratings of these trails (See Appendix G). Additionally, as noted in Section 4, public input has indicated repeatedly that opportunities for motorized recreation on trails are not meeting user preferences on the Pagosa District. To address this public concern and the opportunities for potential improvement to the motorized trail system, it is recommended that subsequent travel management endeavors include, as appropriate, consideration not just of the reductions being proposed in this analysis but also opportunities to improve and/or expand the existing motorized trail system.

Minimum Road System

The minimum road system is the road system needed for safe and efficient travel and for administration, utilization, and protection of the National Forest System lands. (36 CFR 212.5(b)(1))

Roads included in the minimum road system serve the Forest Service mission by providing access for forest management activities, recreational opportunities, and utilization of forest resources. The

minimum road system includes roads designated for public motorized use as well as closed roads that are necessary for forest management.

Recent funding allocations are adequate to perform annual maintenance on many, but not all, roads on the Pagosa District. The deferred maintenance costs are considerably higher than the appropriated funding. See Appendix B for more information on road maintenance costs. There is no precise number of miles of road that can be maintained under any given future budget scenario. Forest Service policy (FSM 7705) is that passenger car roads open to public use are subject to the Highway Safety Act requirements; and roads need to be maintained to prevent significant resource damage. However, beyond those requirements, there is a range of how well roads must be maintained and, therefore, a range of how many miles can be maintained with any given budget level. Nonetheless, it appears likely that future allocations will make it difficult to maintain the existing system to an acceptable level; and therefore reducing the size of the road system will allow for better maintenance.

There is no minimum road system that is static over time. The recommended minimum road system developed in this process represents the best one point in time estimate of a current minimum road system. It is difficult to know what routes may be needed in the future. Therefore, the minimum road system may be updated, adjusted, and revised on an ongoing basis as conditions warrant.

Federal regulations require the Agency to identify roads that are no longer needed to meet forest resource management objectives and those that should be recommended to be decommissioned or considered for other uses, such as conversion to trails. Future NEPA analyses for various projects will consider the recommendations in this travel analysis report and will implement or revise the recommendations based on more site specific information.

Process Used to Develop the Minimum Road System

In addition to the information produced in the Risk/Benefit Analysis Matrix, the IDT considered the following issues in identifying the minimum road system:

- Are there any nonsystem routes that should be part of the road system?
- Is a Forest system road redundant with another road that leads to the same area? If so, one of the roads is likely not needed.
- Is a Forest system road located properly (i.e., not in drainage bottoms, on steep slopes, or on erodible soils)?
- Does the route create unacceptable resource impacts?
- If resource impacts are acceptable, is a Forest system road needed for public or administrative use?

The logic used by the staff specialists in forming recommendations involved whether there are resource reasons not to designate a route as part of the minimum road system (risks), and whether there will be access or recreational needs provided by designating such a route (benefits). Generally, if there are benefits provided and no major resource reasons not to designate, the route was recommended for designation. Generally, if there are resource reasons not to designate that cannot be mitigated or are not cost effective to mitigate, and benefits are minimal then the route was recommended to be removed from the road system. In some cases, routes were identified as not needed simply because they were redundant with other routes. In this manner, benefits and risks were compared in developing recommendations for the minimum road system.

The opportunities resulting from this final step of integrating all the considerations can be found in the spreadsheet in Appendix F.

Pagosa District Minimum Road System

The results include potential changes to roads that are open to public motorized use as well as to roads that are closed to public motorized use. Roads that are not needed are recommended to be removed from the system through several different methods.

Some roads are recommended to be added to the system. The majority of these roads are roads that were constructed for Forest Service timber sales. These roads should have been added to the system at that time, but were not. These roads are needed for long-term Forest management and were assigned a preliminary maintenance level. None of the roads proposed to be added to the system are user-created routes. As with all recommendations and opportunities listed in this report, none of them can be implemented without a NEPA analysis being conducted.

The mileages for the currently identified minimum road system compared with the existing condition are shown in the table below. In addition, the minimum road system is depicted on a map in Appendix E. Appendix G contains a list of recommended changes to roads and Appendix H contains road-by-road recommendations.

Table 8: Mileages of Minimum Road System Compared to Existing Road System

Maintenance Level	Current Miles	Minimum Road System Miles	Difference
5	0.4	0.4	0
4	0	0	0
3	222	217	-5
2	189	161	-28
1	442	437	-5
Total	853	815	-38

The recommendations were based on risks to natural and cultural resources, and benefits to recreation use, forest management access, and emergency access. Minimal upgrades to existing roads were recommended (changes to a higher maintenance level). Some roads were recommended for downgrading to a lower maintenance level. Some existing roads that are needed for long-term forest management or public access were recommended to be added to the system. 0.3 miles of new road construction needed for long-term forest management was recommended. The travel analysis recommended that approximately 67 miles of the system roads could be decommissioned, closed, or removed from the system. Some roads were recommended to be converted to ATV trails. Appendices E, F, and H shows the system road recommendations.

Although the currently recommended minimum road system does not greatly reduce the total miles of system road on the Pagosa District, it does create a more efficient road system which better reflects those roads that are needed to meet resource and other management objectives and minimize adverse environmental impacts. The recommended minimum road system contains fewer miles than the existing system and these reductions focus on removing redundant or unneeded roads and protecting soil and watershed health. Under this system, the maintenance needs will be slightly less than for the current system. In the future, there may be opportunities to transfer jurisdiction and maintenance responsibilities on some roads to County governments, further reducing Agency financial obligations and better reflecting the primary use.

The minimum system focuses on reductions in ML2 and ML1 roads. The minimum system retains most existing ML3 and all ML5 roads. Use of roads beyond this designated system should be short-term and temporary, such as access for fire suppression or temporary timber sale roads. Improving the

ground cover, reducing erosion, reducing maintenance needs and discouraging unauthorized use are desired conditions which can be achieved by implementing the minimum system.

Future Actions

The minimum road system and recommendations for motorized trails in this document for the Pagosa District are recommendations only. As stated previously, future site specific NEPA analyses that include public involvement may carry forward for implementation, reject, or change the recommendations in this report, and provide the basis for making specific road and trail related decisions. These future decisions will include consideration of the minimum road system along with other factors such as environmental, social, and economic implications. These NEPA analyses, in combination with strategic prioritization of anticipated allocated funding, will determine how this report is implemented or modified. As additional information is gathered in the future, this information may result in future modifications to the recommendations in this Travel Analysis.

It should be noted that road maintenance needs and expenses must be considered together in developing the minimum road system. The road maintenance costs in Appendix B indicate that the appropriated funding is adequate to perform annual maintenance on many, but not all, roads on the Pagosa District. The deferred maintenance costs are considerably higher than the appropriated funding. As a result, most of the deferred maintenance needs are not currently being addressed. However, creating a road system to match the available funds by simply closing and decommissioning roads will not result in a road system that meets the access needs for public and administrative purposes. Items that were considered in achieving a fully functional, affordable minimum road system included decreasing the miles of roads on the system, lowering the maintenance levels of system roads as appropriate, converting roads to trails as appropriate, and decommissioning or removing from the system unneeded system roads.

Similarly, while funding for the District's trail program has been insufficient in recent years to cover actual maintenance and repair costs—which has resulted in the accumulation of additional deferred maintenance—establishing a trail system that is solely based on fluctuating annual appropriations would not be practical (or even possible), nor would it address public access concerns (motorized or non-motorized). Rather, subsequent analyses and projects should seek to balance resource and funding concerns with recreation concerns in a way that maximizes the effectiveness—financial and otherwise—of the system under analysis. Items to consider to this end include improved, sustainable trail design, seasonal closures, re-designation of existing routes, closure of additional non-sustainable or unneeded routes, grants for maintenance, "Adopt-a-Trail" programs, and the employment of youth corps trail crews. Each of these strategies will most certainly help to balance the risks and benefits associated with the Pagosa District's trail system, and taken as a whole, will result in a more cost-effective system.

Travel Analysis Report
Pagosa Ranger District
Version 1.0
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APPENDIX A: EXCERPTS FROM CURRENT FOREST PLAN FOR MANAGEMENT AREAS WITHIN THE PAGOSA DISTRICT

Forest-wide General Direction

Riparian Area Management: Locate and construct arterial and collector roads to maintain the basic natural condition and character of riparian areas. Incorporate structures which provide for fish passage in all new roads and trails crossing perennial streams which support a fishery.

Close all newly constructed roads to public motorized use unless documented analysis shows: a) Use does not adversely impact other resources; b) Use is compatible with the ROS class established for the area; c) They are located in areas open to motorized use; d) They provide user safety; e) They serve an identified public need; f) The area accessed can be adequately managed; or g) Financing is available for maintenance or coop-maintenance can be arranged.

Manage road use by seasonal closure if: a) Use causes unacceptable damage to soil and water resources due to weather or seasonal conditions; b) Use conflicts with the ROS class established for the area; c) Use causes unacceptable wildlife conflict or habitat degradation; d) Use results in unsafe conditions due to weather conditions; e) They serve a seasonal public or administration need; f) Area accessed has seasonal need for protection or nonuse; or g) Use causes unacceptable damage to the road prism due to weather or seasonal conditions.

Keep existing roads open to public motorized use unless: a) Financing is not available to maintain the facility or manage the associated use of adjacent lands; b) Use causes unacceptable damage to soil and water resources; c) Use conflicts with the ROS class established for the area; d) They are located in areas closed to motorized use and are not "designated routes" in the Forest travel management direction; e) Use results in unsafe conditions unrelated to weather conditions; f) There is little or no public need for them; g) Use conflicts with wildlife management objectives; or h) Use causes unacceptable damage to the road prism.

Closed or restricted roads may be used for and to accomplish administrative purposes when: a) Prescribed in management area direction statements; b) Authorized by the Forest Supervisor; and c) In case of emergency.

Construct and reconstruct arterial and collector roads to meet multiple resource needs.

Construct and reconstruct local roads to provide access for specific resource activities such as campgrounds, trailheads, timber sales, range allotments, mineral leases, etc., with the minimum amount of earthwork.

Maintain all roads to the following minimum requirements: a) All arterial and open collectors – level 3; b) All open local roads – level 2; and All closed roads – level 1. Level 1 maintenance includes upkeep of drainage structures and vegetation cover necessary to prevent erosion.

Maintain structures, bridges, cattleguards, etc., to be structurally sound and safe for use.

Maintain all trails to the following minimum requirements: a) structures (bridges, corduroy, etc.) are structurally sound and safe for specified class of user; b) maintain drainage structures to prevent unacceptable resource damage; and c) remove hazards from trails to allow safe passage for specified class of users.

Provide a full range of trail opportunities in coordination with other Federal, State, and municipal jurisdictions and private industries both on and off NFS lands.

Construct or reconstruct trails when needed as part of the transportation system.

Management Area 1A (Existing and Proposed Developed Recreation Sites)
Management emphasis is for developed recreation in existing and proposed campgrounds, picnic grounds, trailheads, visitor information centers, summer home groups, and water-based support facilities. Proposed sites (sites scheduled for development in the Plan) are managed to maintain the site attractiveness until they are developed.

Maintain roads to accommodate high constant, uninterrupted use.

Maintain roads to maintenance levels 4 or 5, depending on the experience level provided at individual developed sites.

Management Area 1B (Winter Sports Sites)
Management emphasis provides for downhill skiing on existing sites and maintains selected inventoried sites for future downhill skiing recreation opportunities. Management integrates ski area development and use with other resources management to provide healthy tree stands, vegetative diversity, forage production for wildlife and livestock, and opportunities for non-motorized recreation.

Design and locate local roads in the permitted area: a) to facilitate management of tree stands and wildlife as well as recreation; and b) with the minimum of mileage and earthwork.

Management Area 2A (Semi-primitive Motorized Recreation Opportunities)
Management emphasis is for semi-primitive motorized recreation opportunities such as snowmobiling, four-wheel driving, and motorcycling both on and off roads and trails. Motorized travel may be restricted or seasonally prohibited to designated routes to protect physical and biological resources.

General Direction for Dispersed Recreation - Emphasize semi-primitive motorized recreation opportunities. Increase opportunities for primitive road motorized trail use. Specific land areas or travel routes may be closed seasonally or year-round for compatibility with adjacent area management, to prevent resource damage, for economic reasons, to prevent conflicts of use, and for user safety. Manage use to allow low to moderate contact with other groups and individuals.

Manage local constant roads for dispersion of recreationists, hunter access, and pleasure driving.

Do not exceed an average open local road density of 1 mile/square mile in fourth-order watersheds.

Manage local intermittent roads to accommodate light use. Close to public use.

Construct roads to enhance motorized recreation use, 4x4 vehicles, trail bikes and snowmobiles.

Roads will not exceed design guides specified in FSM 7721.3 for local roads. Construct all roads with no gravel support.

Maintain roads to provide quality semi-primitive motorized opportunities and for public safety.

a. Maintain local constant roads to maintenance level 3 when used for project activities and to maintenance level 2 for general motorized use.

b. Maintain local intermittent roads to maintenance level 2 when open for project activities.

Maintain existing motorized routes or construct routes needed as part of the transportation system. Provide loop routes of one-half to one day's travel time with at least one-half the total route located within the semi-primitive motorized ROS class and utilizing primitive local roads and/or trails suitable for motorized trail bike travel.

a. Do not exceed an average motorized trail density of 4 miles per square mile on fourth-order watersheds.

b. Do not exceed an average motorized trail density of 2 miles per square mile in nonforested areas of fourth-order watersheds.

Management Area 2B (Rural and Roaded-Natural Recreation Opportunities)
Management emphasis is for rural and roaded-natural recreation opportunities. Motorized and non-motorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources.

Provide roaded natural or rural recreation opportunities along Forest arterial, collector and local roads which are open to public motorized travel. Manage recreation use to provide moderate to high incidence of contact with other groups and individuals. Where arterial, collector or local roads or areas are closed to public motorized recreation travel, provide for dispersed non-motorized recreation with a moderate to high incidence of contact with other groups and individuals in a roaded natural or rural setting.

Prohibit motorized travel off system roads and trails except for designated areas, corridors, parking areas and camping areas.

Close roads and trails to motorized travel when the surface would be damaged to the degree that resulting runoff into adjacent water bodies would exceed sediment yield threshold limits.

Manage public use of roads with techniques such as, seasonal closure, time of day closures, etc.

Manage local constant roads for medium to high use (SADT above 50) and construct to all season standard.

Manage the area for a moderate density (one-half to one mile/square mile) of constant roads.

Manage local intermittent roads to accommodate light use (SADT 0-20). Close local roads to public use. Designate routes and areas which can be periodically opened to gathering firewood and operating oversnow vehicles.

Construct roads for dispersion of recreationists and pleasure driving. Construct or reconstruct local constant roads with full gravel support. Abate dust on high use (SADT above 195) roads. Construct local intermittent roads with no gravel support.

Maintain roads to provide quality motorized recreation opportunities and for public safety. Maintain local constant roads to maintenance levels four and five. Maintain local intermittent roads to maintenance level two when open for project activities.

Maintain existing motorized routes or construct new routes needed as part of the transportation system. Develop loop routes and coordinate them to compliment semi-primitive motorized opportunities in and adjacent semi-primitive motorized ROS class areas.

On all nonforested areas, motorized trail and local road density is not to exceed 4 miles per square mile.

Management Area 3A (Semiprimitive, Nonmotorized Recreation in Roaded or Non-roaded Areas)
Management emphasis is for semi-primitive non-motorized recreation in both roaded and unroaded areas. Recreation opportunities such as hiking, horseback riding, hunting, cross-country skiing, etc., are available. Seasonal or permanent restrictions on human use may be applied to provide seclusion for wildlife such as nesting for raptorial birds, big game rearing areas, and mammals (mountain lion, wolverine, etc.) with large home ranges. Investments in compatible resource uses such as livestock grazing, mineral exploration and development, etc., occur; but roads are closed to public use.

Emphasize semi-primitive non-motorized recreation opportunities. Specific land areas or travel routes may be opened seasonally and with specific authorization to accomplish resource management activities. The area is never open for motorized recreation activities except for specifically identified motorized corridors through the area.

Provide facilities such as foot and horse trails, single lane local intermittent roads with primitive surface used as trails, development level 1 and 2 campgrounds, and necessary signing.

Local roads may be constructed for non-recreation purposes. Construct all roads with no gravel support.

Close local roads to public motorized use except for specifically identified motorized corridors through the area.

Maintain roads to minimum level necessary for administration and resource management entry. Maintain local intermittent roads to maintenance level 2 when open for project activities. Maintain local roads to level 1 during periods when access for resource utilization is not required.

Emphasize trails for hikers, cross country skiers and horse use.

Management Area 4B (Habitat for Management Indicator Species)
Management emphasis is on the habitat needs of one or more management indicator species. Species with compatible habitat needs are selected for an area. The goal is to optimize habitat capability, and thus numbers of the species. The prescription can be applied to emphasize groups of species, such as early succession dependent or late succession dependent, in order to increase species richness or diversity.

Recreation and other human activities are regulated to favor the needs of the designated species. Roaded-natural recreation opportunities are provided along Forest arterial and collector roads. Local roads and trails are either open or closed to public motorized travel. Semi-primitive motorized recreation opportunities are provided on those local roads and trails that remain open; semi-primitive non-motorized opportunities are provided on those that are closed.

Manage human recreational activities so they do not conflict with habitat needs of selected indicator species.

Provide roaded natural recreation opportunities as an overall objective. Both semi-primitive motorized and nonmotorized opportunities will be available until planned resource activities are implemented.

Restrict use to resolve people/wildlife conflicts, favoring wildlife in such conflicts.

Manage road use to provide for habitat needs of management indicator species including road closures and area closures, and to maintain habitat effectiveness.

Manage local constant roads to accommodate medium – light seasonal use. Regulate seasonal public use by closure if roadbed damage will occur and where travel conflicts with natural wildlife movements.

Manage the area for a moderate density (one-half to one mile/square mile) of constant roads.

Manage local intermittent roads to accommodate light use (SADT 0-20). Close to public use.

Construct transportation facilities to provide maximum economy of timber harvest and safety for the public while giving priority consideration to wildlife needs. Avoid winter range areas and unique wildlife habitats. Construct or reconstruct local constant roads with gravel support needed for timber operations and hauling. Construct local intermittent roads with no gravel support unless needed to extend logging seasons.

Maintain roads for a mix of resource uses and public safety. Maintain local constant roads to maintenance level 3. Maintain local intermittent roads to maintenance level 2 when open for project activities.

Provide trails for cross-country skiing, snowmobile, foot, and horse travel where people/wildlife conflicts do not exist.

Management Area 5B (Big-Game Winter Range in Forested Areas)
Management emphasis is on forage and cover on winter ranges. Winter habitat for deer, elk, bighorn sheep, and mountain goats is emphasized. Treatments to increase forage production or to create and maintain thermal and hiding cover for big game are applied.

New roads other than short-term temporary roads are located outside of the management area. Short term roads are obliterated within one season after intended use. Existing local roads are closed and new motorized recreation use is managed to prevent unacceptable stress on big game animals during the primary big game use season.

Restrict use to resolve people/wildlife conflicts, favoring wildlife in such conflicts.

Provide roaded natural recreation opportunities as an overall objective. Both semi-primitive motorized and nonmotorized opportunities will be available until planned resource activities are implemented.

Do not provide parking or trail head facilities during winter.

Allow new roads in the management area only if needed to meet priority goals outside the management area or to meet big game goals on the management area. Obliterate temporary roads within one season after planned use ends.

New permanent or temporary roads constructed in the management area must meet the following criteria: 1) There is no feasible alternative to build the road outside the area, and the road is essential to achieve priority goals and objectives of contiguous management areas, or to provide access to land administered by other government agencies or to contiguous private land; 2) The State Fish and Wildlife agency has been fully involved in the road location, planning and alternative evaluation; 3) Planned management of road use during winter will prevent or minimize disturbance of wintering big game animals, or will allow hunting and other management activities needed to meet wildlife management objectives; 4) Roads are constructed to the minimum standards necessary to provide safety for the road use purpose; 5) Roads cross the winter range in the minimum distance feasible to facilitate the necessary use; and 6) Road traffic and road cut or fill slopes must not block big game movement in delineated migration routes or corridors.

Manage the area for a low density (zero to one-half mile/square mile) of constant roads.

Close existing roads, prohibit off-road vehicle use and manage non-motorized use to prevent stress on big game animals.

Opening of existing roads during winter can be approved if the following criteria are met: 1) There is no reasonable alternative for owners or managers of contiguous private land or public land to reach their lands during winter; 2) Road use, off-road vehicle use, or non-motorized use of the area is essential and is the minimum necessary to meet priority resource management goals and objectives; and 3) The State Fish and Wildlife Agency is fully involved in planning human use of area during winter.

Provide trails only when needed to access other management areas.

Management Area 6B (Livestock Grazing)
This area is managed for livestock grazing. Investments are made in compatible resource activities. Dispersed recreational opportunities vary between semi-primitive non-motorized and roaded natural.

Provide roaded natural recreation opportunities as an overall objective. Both semi-primitive motorized and non-motorized opportunities will be available until planned resource activities are implemented.

Restrict use to resolve people/livestock conflicts, favoring livestock in such conflicts.

Manage local constant roads to accommodate medium-light seasonal use (SADT 10-50). Regulate seasonal public use by closure if roadbed damage will occur and where travel conflicts with livestock grazing.

Manage the area for a moderate density (one-half to one mile/square mile) of constant roads.

Manage local intermittent roads to accommodate light use (SADT 10-50). Close to public use.

Construct roads to accommodate livestock management with a mix of other resource activities. Design most facilities for multi-resource use. Construct or reconstruct local constant roads to 75% modified gravel support. Construct local intermittent roads with no gravel support unless needed to extend logging seasons.

Maintain roads for a mix of resource uses and public safety. Maintain local constant roads to maintenance level 3. Maintain local intermittent roads to maintenance level 2 when open for project activities.

Provide trails for cross-country skiing, snowmobile, foot, and horse travel.

Management Area 7E (Wood-Fiber Production and Utilization)
Management emphasis is on wood-fiber production and utilization of large roundwood of a size and quality suitable for sawtimber. Roaded-natural recreation opportunities are provided along Forest arterial and collector roads. Semi-primitive motorized recreation opportunities are provided on those local roads and trails that remain open. Semi-primitive non-motorized opportunities are provided on those that are closed.

Provide roaded natural recreation opportunities as an overall objective. Both semi-primitive motorized and nonmotorized opportunities will be available until planned resource activities are implemented.

Emphasize opportunities for dispersed motorized recreation and direct people to lesser-used areas.

Manage local constant roads to accommodate medium-light seasonal use (SADT 10-50). Regulate seasonal public use by closure if roadbed damage will occur.

Manage the area for a high density (one to three miles/square mile) of constant roads.

Mange local intermittent roads to accommodate light use (SADT 0-20). Close to public use.

Construct roads to support timber management activities along with a mix of other resource activities. Design most facilities for multi-resource use. Construct or reconstruct local constant roads to 75% modified gravel support. Construct local intermittent roads with no gravel support unless needed to extend logging seasons.

Provide parking areas for dispersed recreationists along system roads.

Maintain roads to support timber management activities along with a mix of other resource activities. Maintain local constant roads to maintenance level 3. Maintain local intermittent roads to maintenance level 2 when open for project activities.

Management Area 9A (Riparian Area Management)
Emphasis is on the management of all of the component ecosystems of riparian areas. These components include the aquatic ecosystem, the riparian ecosystem (characterized by distinct

vegetation), and adjacent ecosystems that remain within approximately 100 feet measured horizontally from both edges of all perennial streams and from the shores of lakes and other still water bodies.

Vehicular travel is limited on roads and trails at times when the ecosystems would be unacceptably damaged.

Semi-primitive non-motorized, semi-primitive motorized, roaded natural and rural recreation opportunities can be provided.

Proposed new land-use facilities (roads, campgrounds, buildings) will not normally be located within floodplain boundaries for the 100-year flood. Protect present and all necessary future facilities that cannot be located out of the 100-year floodplain by structural mitigation (deflection structures, riprap, etc.).

Locate roads and trails outside riparian areas unless alternative routes have been reviewed and rejected as being more environmentally damaging.

Management Area 10A (Research Natural Areas)
Emphasis is on research, study, observations, monitoring, and educational activities that are non-destructive and non-manipulative, and that maintain unmodified conditions.

Discourage or prohibit any public use which contributes to impairment of research or educational values.

Semi-primitive non-motorized opportunities will be available.

Generally, physical improvements, such as roads are not permitted.

Use special closures when necessary to protect the RNA from actual or potential damage from public use.

Management Area 10C (Special Interest Areas - Chimney Rock)
Emphasis is on management of areas of unusual scenic, historical, geological, botanical, zoological, paleontological, or other special characteristics to protect and where appropriate, foster public use and enjoyment of these areas.

Develop transportation system only to enhance cultural resource interpretive or maintenance opportunities.

Close the Chimney Rock Archaeological Area to all motorized vehicles except those used for maintenance, emergencies, administration, and guided tours, or those authorized by the San Juan National Forest Supervisor.

Construct no new roads.

Management Area 10D (Wild and Scenic Rivers)
Management emphasis is on river segments designated as a component of the National Wild and Scenic River System and those recommended for designation. "Wild Rivers" are managed to be free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and water unpolluted. "Scenic Rivers" are managed to be free of impoundments with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads. "Recreational Rivers" are managed to be readily accessible by road or railroad, and to maintain developments that may have occurred along the shoreline and impoundments or diversions that may have occurred in the past.

Provide the following recreation opportunities in the respective river segments:

Wild river segments: Semi-primitive non-motorized recreation in an unmodified setting.

Scenic river segments: Semi-primitive motorized recreation in an essentially unmodified setting.

Recreational river segments: Roaded natural recreation in a general unmodified setting.

Wild river segments: Close existing trails to motorized vehicle use.

Management Area 1.11 (Wilderness – Pristine)
Natural processes and conditions have not and will not be measurably affected by human use. These areas provide opportunities for solitude; travel in these environments require knowledge and skills, without dependence on management presence (trails, signs).

Prohibit man-made structures and facilities.

Management Area 1.12 (Wilderness – Primitive)
These areas of wilderness feature natural environmental conditions and offer a moderate degree of solitude. Natural processes and conditions have not been and will not be significantly affected by human activity (use). Areas are managed to protect ecological conditions with effects of human activity minimized.

Locate and design required access roads within the management area for authorized activities to minimize the biophysical and visual impact, and to facilitate restoration. Roads will not be authorized: on slopes steeper than 60%; in areas of high erosion hazard; in areas of high geologic hazard; in areas of low visual absorption capacity that are unlikely for successful restoration; and in areas which would adversely affect threatened and endangered plant and animal species.

Convert roads not needed for authorized activities to trails, or if they are not needed as part of the transportation system, restore them to the established VQO.

Construct or reconstruct trails only when needed to meet objectives of the wilderness transportation system.

Management Area 1.13 (Wilderness – Semi-primitive)
These environments are adjacent to primary access points and/or popular destination points. Day use is often the primary type of use. Encounters with other users will be moderate to frequent, caused by spatial and temporal concentration of recreational use. Areas are managed to protect natural conditions while providing for use and enjoyment of the recreational and natural features.

Locate and design required access roads within the management area for authorized activities to minimize the biophysical and visual impact, and to facilitate restoration. Roads will not be authorized: on slopes steeper than 60%; in areas of high erosion hazard; in areas of high geologic hazard; in areas of low visual absorption capacity that are unlikely for successful restoration; and in areas which would adversely affect threatened and endangered plant and animal species.

Convert roads not needed for authorized activities to trails, or if they are not needed as part of the transportation system, restore them to the established VQO.

Construct or reconstruct trails only when needed to meet objectives of the wilderness transportation system.

APPENDIX B: ROAD AND TRAIL MAINTENANCE COSTS

Maintenance is the act of keeping fixed assets (such as roads or trails) in acceptable condition. It includes preventive maintenance normal repairs, replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. (Financial Health – Common Definitions for Maintenance and Construction Terms, September 29, 1998)

Maintenance includes both annual maintenance and deferred maintenance. Annual maintenance is work performed to maintain serviceability, or repair failures during the year in which they occur. It included preventative and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance. (Financial Health – Common Definitions for Maintenance and Construction Terms, September 29, 1998)

Deferred maintenance is maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. (Financial Health – Common Definitions for Maintenance and Construction Terms, September 29, 1998)

Road Maintenance Budget

The San Juan National Forest appropriated budget allocation for road maintenance and management of roads was $1,317,916 in fiscal year (FY) 2008, $1,395,657 in FY2009, and $1,439,259 in FY2010. Of these amounts approximately 40% goes towards road maintenance activities Forest-wide. Approximately 13% (about $200,000) goes towards all road maintenance activities on the Pagosa District, including annual and deferred maintenance.

In prior years, appropriated road funding was supplemented by road construction and maintenance work performed by timber purchasers through the commercial timber sale program. This program has steadily declined over the past 20 years thus increasing demands on appropriated dollars for road maintenance.

Road Annual Maintenance

Annual road maintenance costs may be calculated by two methods, the INFRA database and estimated actual costs as determined by the San Juan National Forest engineering staff. These estimated actual costs include Forest-wide costs associated with the force account road crew (salary, purchase of heavy equipment, FOR, fuel, maintenance, and overhead) and the costs related to county cooperative agreements (dust abatement, asphalt patching, and cost for counties to blade the roads). Annual maintenance work accomplished through contracts is not included in the estimated actual costs. FY2010 accomplishment miles were used for a baseline on how much work the crew could do annually. The costs were then divided by accomplished miles resulting in an average Forest-wide cost per mile by maintenance level for annual maintenance. The following is a description of the estimated actual annual road maintenance costs for each maintenance level as determined by the SJNF engineering staff.

Maintenance Level 1 Roads:

ML1 roads are closed to public motorized use. They are used infrequently for administrative purposes. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns. No maintenance other than a condition survey may be required so long as no potential exists for resource damage. Most of these roads are in a stable, revegetated condition with functioning drainage, however, a few have drainage and erosion problems. In general terms these roads cost very little to maintain. Installation and maintenance of closure devices such as gates, berms, and

boulders is needed on these roads. Condition surveys are done very infrequently. Maintenance needs on ML1 roads are identified by the Districts when inspections reveal site specific issues. Currently the force account crew spends approximately five weeks of equipment and operator time correcting drainage problems and maintaining and installing closure devices on an annual basis, which equates to approximately $14,025. This results in approximately 5% (57 miles) of ML1 roads maintained Forest-wide for an annual cost per mile of $246.

Maintenance Level 2 Roads:

ML2 roads are open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are not provided with the exception that some signing may be posted at intersections. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Maintenance consists of maintaining the road prism for passage of high-clearance vehicles, maintaining drainage facilities, removing/repairing slides and slumps, brushing, cutting fallen trees off the roads, and installing/repairing seasonal closure gates. ML2 roads range from rocky roads that require little maintenance to incised roads in erosive soils that require frequent attention. Some of these roads require armoring of drainage dips to handle the traffic loads and minimize resource impacts. Condition surveys are done only sporadically. Currently, a minimum of 10% of the ML2 roads are maintained Forest-wide on an annual basis. Work typically includes reshaping dips, filling in deep ruts, pulling lead-off ditches, and maintaining culverts. Currently the force account crew spends approximately one full season of equipment and operator time maintaining ML2 roads on an annual basis, which equates to approximately $85,180. In FY2010, 127 miles of ML2 roads were maintained Forest-wide for an annual cost per mile of $671.

Maintenance Level 3 Roads:

ML3 roads are open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations. These roads are typically surfaced with aggregate but can be native surface. A combination of drainage dips and culverts provide drainage. Potholing or washboarding may occur. These roads are subject to the requirements of the Highway Safety Act. Maintenance guidelines include replacing the base course and surfacing as needed, surface blading, cleaning ditches, cleaning/replacing culverts, cleaning/replacing cattleguards, clearing fallen trees off the roads, controlling the vegetation to provide for sight distance, repairing/removing slides and slumps, installing/maintaining regulatory signs per the Manual on Uniform Traffic Control Devices (MUTCD), and installing/repairing seasonal closure gates.

Surface blading and ditches: Currently the force account crew blades these roads a minimum of once per year. Higher traffic roads require blading more than once per year. Cooperative agreements with the counties (Schedule A) help to keep running surfaces smooth. Severe washboarding and potholing can create a safety hazard causing drivers to lose control of their vehicles. The aggregate surface on some of the roads has deteriorated to a point that they are no longer bladeable. Gravel that should be replaced every ten years has now gone beyond the 20 year mark. Site specific surveys indicate that although the road surface is deteriorating, resource impacts are generally not occurring. Ditches are pulled only when the drainage is no longer functioning.

Culverts, cattleguards and gates: All the ML3 roads are evaluated on an annual basis by the force account crew. Plugged culvert inlets, full catch basins, full cattleguards, and bent or broken gates are cleaned or repaired. Slumps, slides, and boulders in the road are removed and culverts are replaced when necessary.

Signing: The sign crew is responsible for installing, replacing, and straightening regulatory, warning, and guide signs on the Forest. The new MUTCD guidelines require that the retro-reflectivity requirements are met on these signs by 2015.

Dust abatement: Currently, $93,639 is spent annually applying magnesium chloride to select ML3 roads Forest-wide.

All of the above costs equate to approximately $520,419 on an annual basis. The costs of the counties blading ML3 roads is approximately $52,888 annually. In FY2010, 599 miles of ML3 roads were maintained Forest-wide for an annual cost per mile of $957.

Maintenance Level 4 Roads:

ML4 roads are open 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 with turnouts. Some roads may be paved and/or dust abated. MUTCD is applicable. These roads are subject to the requirements of the Highway Safety Act. The force account crew maintains very few miles of these roads, opting instead for the county cooperative agreements to maintain them. To compensate the counties for this work, the Forest pays for dust abatement and surface rock. The average cost paid to the counties on ML4 roads is $41,650 on an annual basis. The costs of the counties blading these roads is approximately $52,888 annually. In FY 2010, 79 miles of ML4 roads were maintained Forest-wide for an annual cost per mile of $1,197. There are no ML4 roads on the Pagosa District.

Maintenance Level 5 Roads:

ML5 roads are open roads that provide a high degree of user comfort and convenience. These roads are normally double lane with paved surfaces. However, some may be aggregate surfaced and dust abated. MUTCD is applicable. Annual blade patching costs approximately $25,000 Forest-wide. Roads generally are chip sealed every ten years for $80,000 per mile ($36,364 per year). In FY2010, 22 miles of ML5 roads were maintained Forest-wide for an annual cost per mile of $1,500.

Road Deferred Maintenance

Beginning in 1999, the Forest conducted road condition surveys to determine the actual cost of maintaining the road system to standard. Work items were also recorded to determine the cost of road maintenance deferred in previous years due to lack of funding. Finally, road improvement work necessary to bring the roads up to the desired maintenance level was identified and documented in INFRA. The INFRA database is used by the Forest as a bookkeeping tool to document and track deferred maintenance needs on National Forest System Roads. An example illustrated here is aggregate replacement on a ML3 road: a four inch depth aggregate lift costs approximately $80,000 per mile, and for tracking purposes is assumed to be required every 10 years. In practice, a particular road may need aggregate replacement more or less often, and a suitable aggregate surface may often be adequately maintained by spot surfacing and by application of dust abatement which extends surfacing life and protects the investment while providing for safe access and resource protection. Detailed surveys and investigation are required on aggregate surfaced roads in optimizing aggregate replacement and investment; utilizing appropriate surface maintenance procedures is also key to maximizing surfacing life and ensuring maximum return on the surfacing dollar. Thus, deferred maintenance numbers in INFRA may not be indicative of the actual funding needed for adequate road maintenance.

Deferred maintenance costs were determined from the INFRA database as of May 2011. Average District-wide $/mile were determined using only those roads for which costs had been entered into INFRA. There are many miles of ML1 and ML2 roads for which cost information is not available in INFRA.

Road Maintenance Costs

Annual and deferred maintenance costs for both the existing road system and the recommended minimum road system are displayed in the tables below. These are average costs. The costs vary widely from road to road based on site specific conditions. The "Annual $/mile" was calculated by dividing the $/mile by the maintenance interval. The "Total $" columns for both annual and deferred maintenance were

calculated by multiplying total miles by the Annual $/mile. Currently, it is anticipated that the engineers' estimated actual costs provide a low estimate and that the INFRA costs provide a high estimate. The actual maintenance costs are likely between the two numbers.

Table 9: Annual Maintenance Costs for Existing Road System

Maintenance Level	Total Miles (Pagosa District)	Engineers' $/mile (Forest-wide average)	INFRA $/mile (Pagosa District average)	Maintenance Interval	Engineers' Annual $/mile*	INFRA Annual $/mile*	Engineers' Total $	INFRA Total $
1	442	$246	$1,199	20 years	$12	$60	$5,304	$26,498
2	189	$671	$1,157	5 years	$134	$231	$25,326	$43,735
3	222	$957	$4,195	Annually	$957	$4,195	$212,454	$931,290
4	0	$1,197	NA	Annually	$1,197	NA	$0	NA
5	0.4	$1,500	$34,854	See below	$1,500	$34,854	$600	$13,942
Total	853						$243,684	$1,015,464

*Calculated for a 5 year interval on Level 2 roads and a 20 year interval on Level 1 roads. Costs for Level 5 roads include blade patching annually and chip sealing every 10 years.

Table 10: Annual Maintenance Costs for Minimum Road System

Maintenance Level	Total Miles (Pagosa District)	Engineers' $/mile (Forest-wide average)	INFRA $/mile (Pagosa District average)	Maintenance Interval	Engineers' Annual $/mile*	INFRA Annual $/mile*	Engineers' Total $	INFRA Total $
1	437	$246	$1,199	20 years	$12	$60	$5,244	$26,198
2	161	$671	$1,157	5 years	$134	$231	$21,574	$37,255
3	217	$957	$4,195	Annually	$957	$4,195	$207,669	$910,315
4	0	$1,197	NA	Annually	$1,197	NA	$0	NA
5	0.4	$1,500	$34,854	See below	$1,500	$34,854	$600	$13,942
Total	815						$235,087	$987,710

*Calculated for a 5 year interval on Level 2 roads and a 20 year interval on Level 1 roads. Costs for Level 5 roads include blade patching annually and chip sealing every 10 years.

Table 11: Deferred Maintenance Costs

Maintenance Level	Existing Road System			Minimum Road System		
	Total Miles (Pagosa District)	INFRA $/mile (Pagosa District average)	Total $	Total Miles (Pagosa District)	INFRA $/mile (Pagosa District average)	Total $
1	442	$1,585	$700,570	437	$1,585	$692,645
2	189	$11,315	$2,138,535	161	$11,315	$1,821,715
3	222	$66,766	$14,822,052	217	$66,766	$14,488,222
4	0	NA	NA	0	NA	NA
5	0.4	$788	$315	0.4	$788	$315
Total	853		$17,661,472	815		$17,002,897

The appropriated funding is adequate to perform annual maintenance on many, but not all, roads on the Pagosa District. The deferred maintenance costs are considerably higher than the appropriated funding. As a result, most of the deferred maintenance needs are not currently being addressed. This

Travel Analysis will inform subsequent site specific NEPA analyses that may carry forward for implementation, reject, or change the recommendations in this report. These NEPA analyses, in combination with strategic prioritization of anticipated allocated funding, will determine how this report is implemented or modified. As additional information is gathered in the future, this information may result in future modifications to the recommendations in this Travel Analysis.

Other Road Maintenance Funding Sources

Other funding sources supplement the appropriated funding. The Forest Service, the counties, and the State of Colorado have signed agreements (Schedule A) whereby the counties are paid to perform road maintenance on Forest Service roads (primarily blading of Level 3 and 4 roads). The counties are funded to perform this work through State of Colorado allocations of the Highway User Tax Funds. The work performed by the counties partly offsets the deficit in appropriated road maintenance funding.

Commercial undertakings such as timber sales, oil and gas wells, hauling from private lands, etc. have been charged a percentage of road maintenance costs or have conducted road maintenance actions as part of the project. Road maintenance is provided through these activities for the locations and timeframes when the commercial activity takes place.

A limited amount of road maintenance or decommissioning has occurred after timber sales are complete through the collection of Knudsen-Vandenberg (KV) funds for sale area improvement.

Recently American Recovery and Reinvestment Act (ARRA) funding has been utilized for surface replacement on paved roads, surface rock replacement on graveled roads, gate purchases and installation, and road decommissioning. In addition, Forest Service Legacy Funding has also been secured for these activities.

Trail Maintenance

The San Juan National Forest budget allocation for the maintenance and management of trails (motorized and non-motorized) was $386,000 in fiscal year (FY) 2008, $354,000 in FY2009, and $341,000 in FY2010. These appropriations are divided amongst the three Districts and the Supervisor's Office according to an established allocation criteria based largely on total trail miles. The Pagosa District has historically received approximately 32% of the Forest allocation, or $91,000 in FY 2008, $90,000 in FY 2009, and $89,000 in FY 2010.

Annual operations and maintenance costs for the District's entire trail system are estimated to be $136,574, as documented in the INFRA database which utilizes a variety of costing factors to determine maintenance costs. As the annual cost to maintain the entire District trail system to standard is higher than the amount appropriated and allocated to the District, annual trail maintenance targets have historically been reduced to reflect inadequate funding. Of the District's 580 miles of summer and winter trails, in FY 2008 209 miles (36%) were maintained to standard, in FY 2009 334 miles (58%) were maintained to standard, and in FY 2010 310 miles (53%) were maintained to standard. The District has been able to increase its annual trail maintenance targets despite declining budgets through the expanded use of volunteers and partnering organizations. Priorities for trail maintenance are set on the local level, with no predetermined method for dividing resources between motorized and non-motorized trails, and summer and winter trails. With roughly 50% of trails being maintained to standard each year, the majority of system trails receive maintenance at least once every other year, with the most popular and heavily used trails receiving maintenance yearly.

Summer motorized trail maintenance costs are estimated to be $26,287 annually. These trails make up 13% of the District's total system, yet account for 20% of the District's annual maintenance costs.

Motorized trails, especially trails open to vehicles less than 50" in width, generally require more intensive maintenance to meet standard, and hence the greater percentage of annual maintenance.

Deferred trail maintenance for the Pagosa District is currently estimated to be $610,532 as documented in the INFRA database. This number, however, does not reflect the considerable work undertaken during the 2010 field season to offset trail deferred maintenance as part of the ARRA-funded trail projects, and will be adjusted in the future as condition surveys document accomplishments. Efforts are made annually to address deferred maintenance items, both system-wide and through intensive reconstruction projects. Limitations in funding continue to hamper these efforts, especially relating to the larger reconstruction needs. That being said, considerable strides have been made in recent years to offset deferred maintenance on motorized trails through funding obtained by the Colorado State Trails OHV grant program. The District competed for and received grants for heavy trail maintenance and reconstruction in 2008, 2009, and 2010 and will continue to utilize this beneficial program to address deferred maintenance needs, as well as other sources of funding and labor not directly tied to standard appropriations, such as Forest Service Legacy Road and Trail funds, partnering trail maintenance organizations such as the Wolf Creek Trailblazers and Pagosa Nordic Club, and volunteer groups and individuals.

Deferred maintenance costs for summer motorized trails is estimated to be $167,328, which amounts to 27% of the District's total trail deferred maintenance.

APPENDIX C: RISK/BENEFIT ANALYSIS RATIONALE AND METHODOLOGY

RISKS

Condition/Maintenance and Repair Costs

Road and motorized trails are rated based on their existing condition. Routes in good condition are meeting the standards for the route. Although all routes require annual or routine maintenance, routes in poor condition also have deferred maintenance and repair needs in order to bring them back up to standard. Routes in poor condition may also be causing soil and watershed impacts as discussed below.

A high risk rating (3) was assigned to roads or motorized trails currently in poor condition and with high levels of deferred maintenance and repair needs as based on the presence of three or more of the following conditions: washboarding; surface deterioration; landslides; roadbed slumping; slope raveling; drainage problems; rutting or gullying; mud holes; poor condition drainage structures or culverts; and design deficiencies. A moderate risk rating (2) was assigned to routes with moderate levels of deferred maintenance and repair needs as based on the presence of two or more of the above conditions. A low risk rating (1) was assigned to routes that are in fair or better condition with little or no deferred maintenance and repair needs, no existing damage, or one of the above conditions present.

Water Resources

Roads and motorized trails can affect water resources primarily by sediment being transported off road and trail surfaces into streams or wetlands. Open roads and motorized trails are devoid of vegetation and have compacted surfaces. A variety of drainage structures are used where they cross drainages and stream channels, such as fords, culverts, and log culverts. Areas of poor drainage can develop mud holes which are deepened and churn up sediment every time vehicles pass through them. Poor route location and inadequate drainage when the route was constructed can exacerbate watershed impacts. For example a route that is adjacent to and parallels a stream is more likely to have poor drainage and direct sediment inputs to the stream than a route that is located further away from the stream and contours along a slope. Drainage structures need to be maintained on a regular basis in order to remain fully functional. Inadequate maintenance can result in increased sediment being transported to streams or wetlands. Closed roads are mostly vegetated and have fewer impacts to water resources, although drainage structures can fail and cause sediment to be introduced to streams or wetlands if the roads are not inspected periodically and maintained as needed.

A high risk rating (3) was assigned to roads or motorized trails located in close proximity to surface water and/or with a history of drainage problems or sediment being transported off the road or trail. A moderate risk rating (2) was assigned to routes that have some vegetated buffer between the route and surface water and/or have some history of drainage problems or sediment being transported off the route. A low risk rating (1) was assigned to routes that are distant from surface water and/or have a minimal history of drainage problems or sediment being transported off the route.

Soil/Geologic Hazards

Roads and motorized trails can affect soils primarily by causing erosion and loss of soil. Erosion from roads and motorized trails is increased in areas with soils with high erosion ratings, steep slopes, or routes with steep gradients. Poor route location, inadequate drainage structures, and inadequate maintenance can exacerbate soil impacts. Closed roads are mostly vegetated and have fewer erosion problems and impacts to soils, although drainage structures can fail and cause erosion if the roads are not inspected periodically and maintained as needed.

Roads and motorized trails can either be affected by or cause impacts to geologic hazards, such as landslides, slumps, mudflows, or rockfalls. Poorly located routes can exacerbate landsliding. Routes

can also be damaged by landslides, slumps, mudflows, or rockfalls, thereby increasing maintenance and repair costs.

A high risk rating (3) was assigned to roads or motorized trails with a history of road/trail damage from landslides, slumps, mudflows, rockfall, retaining wall failure, gullying, soils that are unstable or extremely susceptible to erosion. A moderate risk rating (2) was assigned to routes that have a history of minor route damage from soil or geologic hazards. A low risk rating (1) was assigned to routes with no history of damage from soil or geologic hazards.

Wildlife Resources

Three risk ratings were identified for wildlife resources for the Travel Analysis Report. The three ratings were low, moderate, or high, with a single risk rating provided for each road or motorized trail analyzed. The ratings focus on risks to habitat rather than risks to species as there are many species utilizing the diversity of habitats across the Pagosa District, and species response to disturbance associated with roads and motorized trails varies tremendously. A single risk rating that focuses on disturbance impacts to species would not suffice for all species, and a single risk rating that considers risks to both habitat and species would be difficult as individual roads and motorized trails are located in multiple habitats used by multiple species. Risk ratings focus on impacts to wildlife habitat based on road and motorized trail densities and use in a given area as explained below.

The effects of roads and motorized trails on wildlife habitat depend on several important factors including their location within suitable habitat, densities within suitable habitat, and amount and type of use occurring. Roads and motorized trails provide access into areas that provide opportunities for an array of recreational use such as firewood collection, rock and mineral collection, collection of medicinal and edible plants, camping in dispersed and in designated areas, and other motorized and non-motorized uses year-round. Roads and motorized trails also provide access and opportunities for an array of forest management activities such as timber management, wildland and prescribed fire management, livestock grazing, oil and gas exploration, lands and special uses, and other activities. Recreational and forest management activities have the ability to negatively or positively affect wildlife habitat depending on their overall affect to key habitats (riparian and wetlands) and habitat attributes utilized for foraging, breeding, and security such as trees and shrubs, grass-forb vegetation, snags, and downed logs and other woody debris.

Based on the above rationale, areas with high road and motorized trail densities are expected to receive higher levels of public and administrative use. In this scenario, there is higher probability of direct and indirect impacts to habitat or habitat attributes utilized by species for breeding, foraging, and security resulting in high risk to the resource (risk rating 3). In contrast, areas with low road and motorized trail densities are expected to receive less use; therefore, the degree and probability of impacting habitat and/or key habitat attributes is expected to be less resulting in low risk to the resource (risk rating 1). Areas with moderate road and motorized trail densities are expected to receive moderate levels of public and administrative use, therefore resulting in moderate risk to the resource (risk rating 2).

Invasive Species

Motor vehicle use has the potential to spread invasive species by dispersing the seed source. The three risk ratings identified for invasive species were low, moderate, or high, with a single risk rating provided for each road or motorized trail analyzed. Risk ratings were tied to both the size and distribution of existing noxious weed populations, as well as the potential for spread of invasive species. The invasive species considered for this analysis are the plant species listed on the Colorado Noxious Weed List.

Risk level 1 (low) was assigned to roads and motorized trails with only a few, small known noxious weed populations, or no know noxious weed populations. These populations do not appear to be spreading.

Risk level 2 (moderate) was assigned to roads and motorized trails with several known noxious weed populations, of any size. These populations have the potential to spread.

Risk level 3 (high) was assigned to roads and motorized trails with numerous, often large and contiguous, known noxious weed populations. These populations are often known to be spreading.

Cultural Resources

Continued use and maintenance of roads and motorized trails has the potential to affect historic properties. Impacts are most commonly found within the road/trail disturbance itself as sites are exposed and damaged through use. Specific site types outside of the road area can also be adversely affected by the presence and use of roads (e.g., rock art panels, structures, Traditional Cultural Properties). Many roads and trails have been in use since before the National Historic Preservation Act (1966) was passed or were constructed as standards for NHPA analysis were in development; many have not been formally inventoried for the presence of cultural resources according to modern standards. Roads which have already resulted in significant ground disturbance through their construction and maintenance (Road Maintenance Level 3 and higher) have already probably done the damage they are going to do to any sites which were located within the road prism. Continued use and maintenance of these roads has generally been considered exempt from field analysis as actions that *"do not have the potential to cause effects on historic Properties"* as per 36 CFR 800.3(a) and (a)(1). Generally maintenance level 3 roads (and higher) were considered exempt from further analysis and were awarded a "low" risk rating. However, sites may still exist and be impacted by continuing road use and maintenance along less improved dirt roads and motorized trails. The procedure used to award risk ratings along maintenance level 1 & 2 roads during the current analysis involved consulting GIS map layers and other available information to determine if a road or area had been inventoried for cultural resources according to modern standards (pedestrian inventory with transects of approximately 15 meters). Site records for resources located in or near roads were consulted to determine if formal determinations of eligibility to the NRHP had been made for cultural resources along roads. In cases where resources along maintenance level 1 & 2 roads qualified as historic properties (or in the case of some trails were considered likely to qualify as historic properties) risks were considered "high" (risk rating 3). In cases where eligibility recommendations for sites along roads/trails were not available and/or there was inadequate inventory along the road/trail, risks were rated as "unknown." Only in cases where there was adequate inventory along a road/trail and no "needs data" or "eligible" sites were known to exist along the road/trail, were maintenance level 1 or 2 roads or motorized trails awarded a risk rating of "low" (1).

The cultural resource road risk analysis was based on GIS layers available at the time this analysis was being conducted. The majority of roads within the analysis area do not have adequate inventory available to assess risks. These roads are classified as "unknown." The "unknown" category is not weighted in the risk analysis.

The analysis of motorized trails was undertaken on 12/8/2010 and was based on both information available in the GIS layer and on information as yet not reflected in that layer that was gathered during the 2010 summer field season. Additionally, historic maps were consulted to determine if a trail was historic; making it highly likely that it would qualify as an historic property. In the event a trail was an historic trail, risks were rated as "high" (3). Analysis was otherwise identical to that used in road analysis for a Level 1 & 2 road.

Social Conflict (motorized trails only)

The use of motor vehicles on trails is often viewed by some non-motorized trail users as disruptive to their recreational pursuits and experiences. Providing recreation opportunities for motorized users that minimize these types of user group conflicts is a challenge for land managers and planners. Social

conflict, therefore, represents a potential risk associated motorized trails. To evaluate the level of risk, trails were assigned a rating of high (3) where there is heavy non-motorized use of the trail and/or instances of user group conflicts are common; a rating of moderate (2) where there is moderate non-motorized use of the trail and/or instances of user group conflicts are occasional; and a rating of low (1) where non-motorized use of the trail is low and instances of user group conflicts are rare. Non-motorized use levels and social conflict assessments were based on the combined professional judgment and field experience of the District specialists, as there was little quantitative use data available to the specialists at the time of analysis.

Jurisdiction (roads only)

Roads that access private property where the majority of traffic on the road is related to the private property are better suited as county roads. The term "forest road" is defined by 23 USC § 101 as a road wholly or partly within, or adjacent to, and serving the National Forest System that is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. The use of forest roads for the purposes of accessing private property, while not necessarily prohibited, cannot be said to be contributing to the protection, administration, and utilization of the Forest. In fact, the considerable maintenance and administrative costs associated with the private use of Forest roads, especially as relates to winter use and snowplowing, actually detracts from the agency's ability to manage roads for the purposes for which they were intended. Wheeled motor vehicle use in the winter and spring when roads are saturated results in road damage and off-road resource impacts including sedimentation into stream channels. Private property owner's plowing Forest Service roads also limits winter recreation opportunities as it is illegal to ride a snowmobile on plowed roads according to state regulations. Roads that access multiple private parcels that are used year-round incur a higher maintenance cost than roads that are only used seasonally. Roads that provide access to multiple private parcels or large private development(s) were generally rated as 3 (high). Roads that provide access to few private parcels were generally rated as 2 (moderate). Roads that have no private access were generally rated as 1 (low).

BENEFITS

Motorized Recreation Use

Roads are used for various types of motorized recreation including driving for pleasure, 4-wheel driving, ATV and motorcycle riding, and snowmobile riding. Motorized trails are used by Off Highway Vehicles (OHV) less than 50" in width (including motorcycles and ATVs) for recreational trail riding experiences. To evaluate the general level of benefit provided by each road and motorized trail to motorized recreationists, each route was assigned a benefit rating of high, moderate, or low according to its present level of use for recreation purposes. Routes that are frequently used for motorized recreation purposes were rated as high (3), routes that are occasionally used for motorized recreation were rated as moderate (2), and routes that are seldom or never used for motorized recreation were rated as low (1). Use levels were based on the combined professional judgment and field experience of the District specialists, as there was little quantitative data on actual road and motorized trail usage on the District available to the specialists at the time of analysis.

Recreation Access/Connectivity

Roads and motorized trails are often used to provide motor vehicle access to recreational activities occurring off roads, such as hiking, camping, hunting, firewood gathering, rock collecting, etc. Roads and motorized trails also can provide important connectivity to other roads and motorized trails. To evaluate the level of this type of benefit, roads and motorized trails were assigned a rating of high (3) if they provided access to numerous or high value recreation opportunities and/or connectivity to many other motorized routes, a rating of moderate (2) if they provided access to some recreation

opportunities and/or connectivity to other motorized routes, and low (1) if they provided access to limited recreation opportunities and/or connectivity to other motorized routes.

Forest Management Access

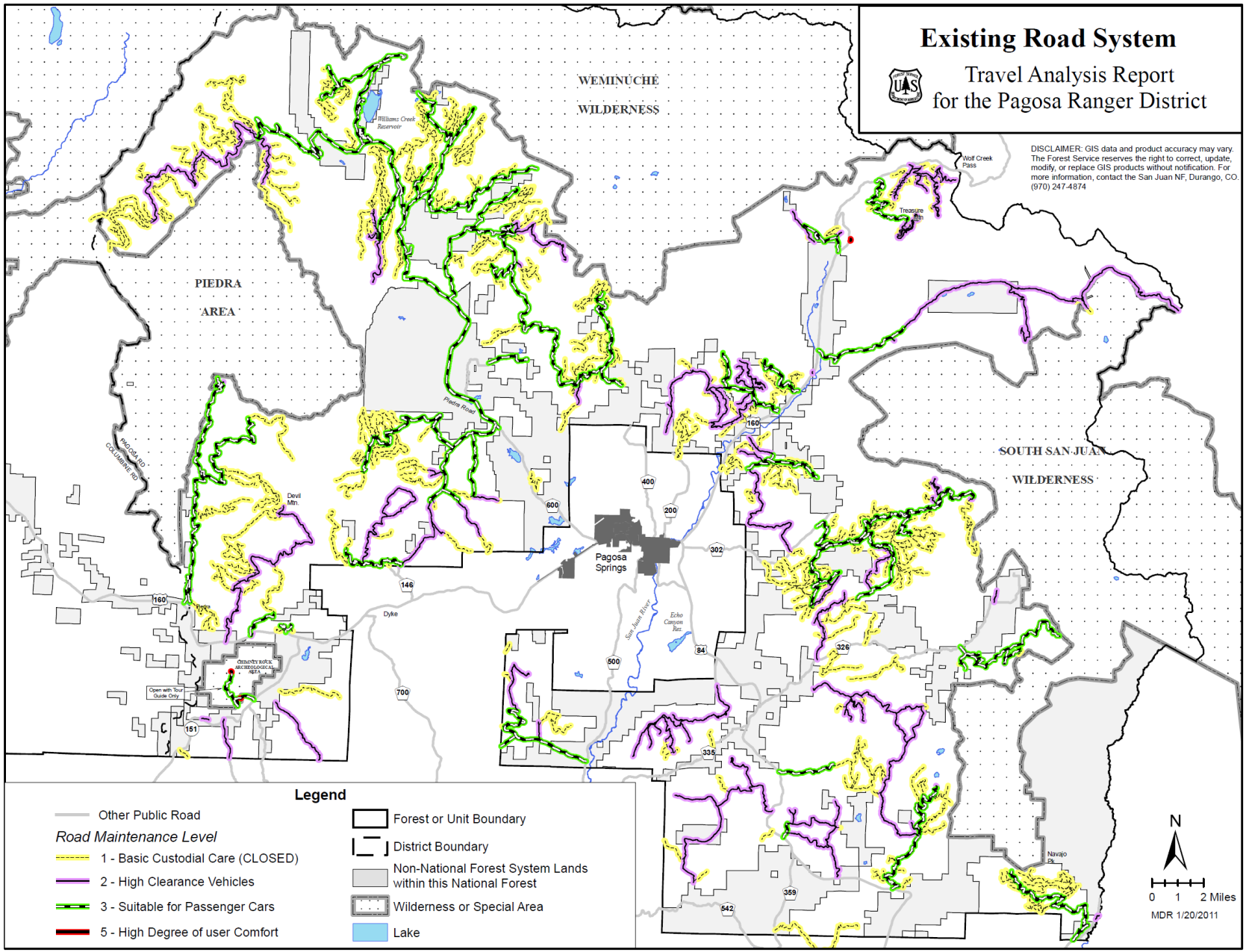
Roads and to a lesser extent motorized trails, are used in various forest management activities such as vegetation management, wildland and prescribed fire management, range management, oil and gas development, lands and special uses. Roads or motorized trails that provide motorized access to areas that periodically undergo management in multiple resource program areas were generally rated as high (3). Routes that provide motorized access to areas that infrequently have active management in more than one resource program area were generally rated moderate (2). Routes that provide motorized access to areas that rarely have active management or serve only one resource program area were rated low (1).

Emergency Access

Roads and motorized trails were rated as to their benefit for motor vehicle use for emergency access, primarily fire suppression and search and rescue. To evaluate the general level of benefit provided by each road and motorized trail to emergency access, each route was assigned a benefit rating of high, moderate, or low according to its past use or expected future use for emergency access. Routes that receive high public use, provide access to areas with high public use, or provide access to or are adjacent to private property generally were rated as high (3). Routes that receive moderate public use, provide access to areas with moderate public use, or provide access to or are adjacent to sparsely populate private property generally were rated as moderate (2). Routes that receive little or no public use, provide access to areas with low public use, or do not provide access to or are adjacent to private property generally were rated as low (1). Past and expected future emergency access use levels were based on the combined professional judgment and field experience of the District specialists, as there was little quantitative data on actual emergency access usage on the District available to the specialists at the time of analysis.

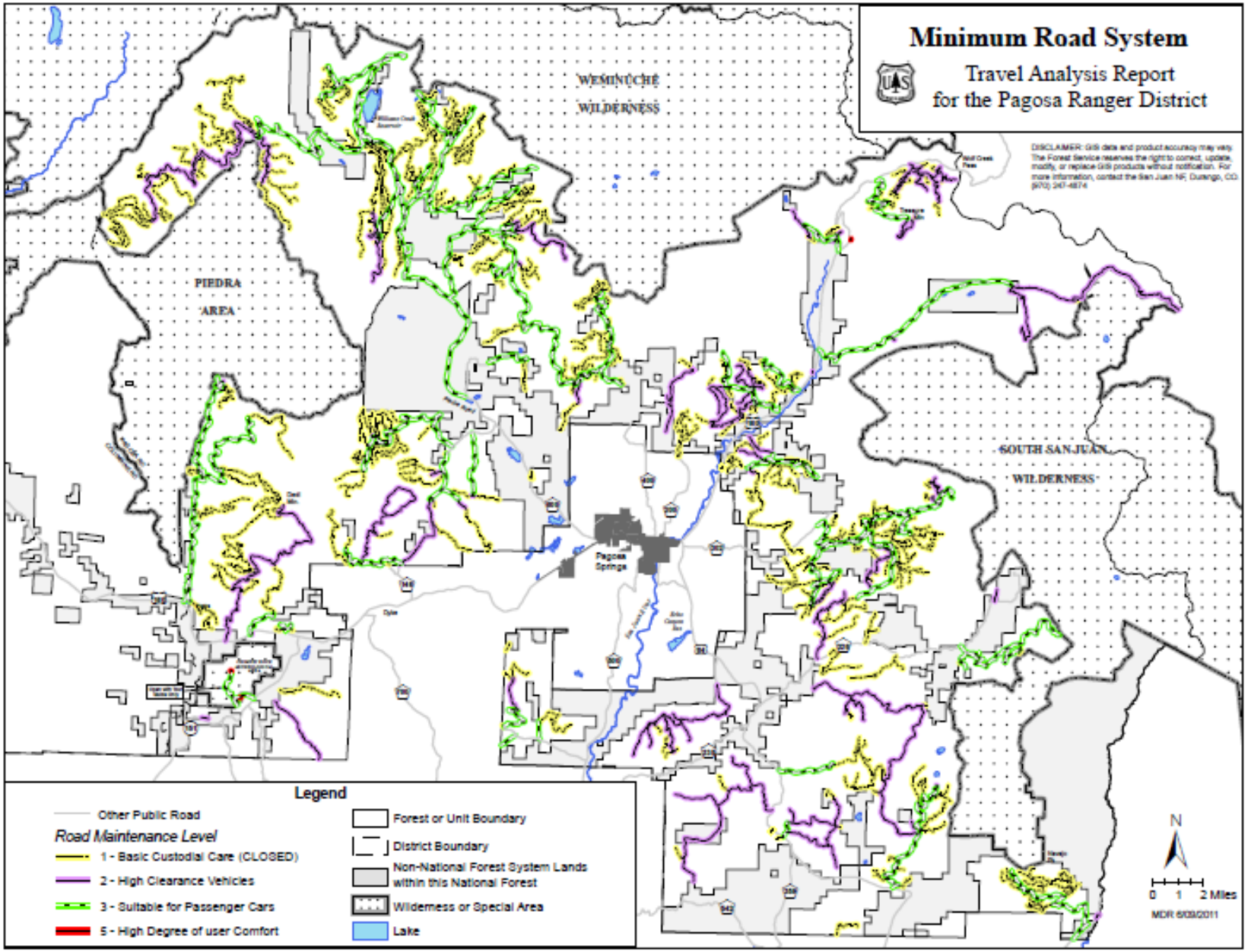
APPENDIX D: EXISTING ROAD SYSTEM MAP

Figure 1: Existing Road System Map



APPENDIX E: RECOMMENDED MINIMUM ROAD SYSTEM MAP

Figure 2: Recommended Minimum Road System Map



APPENDIX F: RECOMMENDED CHANGES TO ROADS

Table 12: Recommended Changes to Roads

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
629	Upper Turkey Springs	from Piedra Road to 629.A	ML3	L	2.46								
631	Piedra	from end of pavement to Jack's Pasture Rd	ML3	H	1.85								
649	Burns Canyon	from Trujillo Road to 649.C	ML3	M	3.64								
665	Nipple Mountain	from current closure point	ML3	H		1.14							
715	Bridge Campground	from northern connection with Piedra Road to north loop	ML3	M						0.20			
006	Kenney Flats	last ~0.5 mile	ML2	H		0.53							
006.B1	Kenney Flats B1	entire length	ML2	H		0.26							
008	Archuleta Canyon	end of road	ML2	M		0.22							
012.B	Blue Creek B	entire length	ML2	H			1.58						
029.J	Echo Canyon J	beyond intersection with 029.M1	ML2	L						0.43			
033	Hatcher	beyond recreation residences	ML2	L						0.28			
037.B1	Jackson Mountain B1	beyond campsite	ML2	M						0.86			
037.B3	Jackson Mountain B3	entire length	ML2	L						1.31			
039	Fall Creek	from 039.L to 039.N	ML2	M						0.28			
039	Fall Creek	from 039.N to 039	ML2	M		1.14							
609.A1	Bear Basin A1	entire length	ML2	M		0.34							

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
609.B	Bear Basin B	beyond intersection with 609.C	ML2	M						0.57			
629.B	Turkey Springs Guard Stn	beyond fence gate	ML2	L						0.06			
629.B1	Turkey Springs B1	entire length	ML2	M						0.30			
629.D	Turkey Springs D	entire length	ML2	M							0.68		
639.H	Trail Ridge H	entire length	ML2	L						0.13			
646	Snowball Creek	from 646.B to 646.D	ML2	H			1.44						
649	Burns Canyon	last ~1.5 miles	ML2	M						1.56			
649.A	Burns Canyon A	entire length	ML2	L								0.75	
651.C1	Eight Mile C1	entire length	ML2	L						0.29			
651.D1	Eight Mile D1	entire length	ML2	L						0.56			
665	Nipple Mountain	entire ML2 length	ML2	H		0.23							
667	East Fork	from end of ML3 section to intersection with 684	ML2	M								5.02	
667.A	Minesite Cabin	entire ML2 length	ML2	H		0.54							
718.G	K Block G	entire length	ML2	M						0.31			
722	Willow Draw	between existing closure gates	ML2	M							6.22		
725	Wolf Creek	from 725.K to ATV trail	ML2	M							0.78		
725	Wolf Creek	western part of loop from trail 565 to 725	ML2	M		0.43							
842	Deep Canyon	entire length	ML2	L	1.64								

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
919	Brockover	beyond fence gate	ML2	M						1.33			
923	Newt Jack	as shown in Turkey Springs EA	ML2	M						1.13			
654	Job Corps Admin	end of road as if property gets transferred out of FS ownership	ML1	L					0.03				
012.A	Blue Creek A	entire length	ML1	M				0.40					
024.F	Porcupine F	south of where 024.F reconnects with 024	ML1	H				0.53					
029.A	Echo Canyon A	southern portion	ML1	L				0.71					
029.C	Echo Canyon C	entire length	ML1	H				0.74					
029.D	Echo Canyon D	entire length	ML1	M				0.44					
029.E	Echo Canyon E	entire length	ML1	L				0.54					
029.E1	Echo Canyon E1	entire length	ML1	L				0.30					
029.F	Echo Canyon F	entire length	ML1	H				1.43					
029.G	Echo Canyon G	from 029.F to 758	ML1	M				0.42					
029.I1	Echo Canyon I1	entire length	ML1	L				0.40					
029.K	Echo Canyon K	last ~0.2 mile	ML1	M				0.19					
039.H	Fall Creek H	entire length	ML1	L				0.38					
039.H1	Fall Creek H1	entire length	ML1	L				0.10					
039.H2	Fall Creek H2	entire length	ML1	L				0.20					
039.I	Fall Creek I	entire length	ML1	L				0.27					
039.J	Fall Creek J	entire length	ML1	L				0.46					
039.K	Fall Creek K	entire length	ML1	L				0.66					
039.K1	Fall Creek K1	entire length	ML1	L				0.20					

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
039.L	Fall Creek L	entire length	ML1	H								0.20	
039.M	Fall Creek M	entire length	ML1	L				0.10					
039.N	Fall Creek N	entire length	ML1	L				0.20					
039.P	Fall Creek P	entire length	ML1	L				0.10					
606	Mesa Cortado	from Coyote Creek Rd to end of Puma Pl	ML1	M					3.76				
607	Ute Boundary	entire length	ML1	M				0.49					
609	Bear Basin	beyond intersection with 609.B	ML1	H				0.57					
619	Klutter Mountain	beyond first 0.14 mile	ML1	H				0.51					
630.G1	Monument Park G1	entire length	ML1	M				0.10					
631	Piedra	portion within Piedra Area	ML1	M				0.31					
631.F	Piedra F	entire length	ML1	M				0.30					
631.N	Piedra N	portion within Piedra Area	ML1	M				0.57					
633.B1	McManus B1	entire length	ML1	L				0.10					
634.B1	Plumtaw B1	entire length	ML1	L				0.27					
639.F3	Trail Ridge F3	entire length	ML1	M				0.59					
639.H1	Trail Ridge H1	entire length	ML1	L				0.49					
646.D1	Snowball Road D1	entire length	ML1	L				0.44					
647.D	Turkey Creek D	entire length	ML1	L				0.20					
650	Gravel Pit	entire length	ML1	M					1.06				
650.A	Pipe Yard	entire length	ML1	L					0.05				
652.A	Lower Blanco A	entire length	ML1	M				0.63					
653.C	Valle Seco C	last ~0.6 mile	ML1	H				0.61					

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
653.D	Valle Seco D	entire length	ML1	H				0.70					
656.A	Blanco River A	entire length	ML1	H				1.10					
662.A	Mill Creek A	entire length	ML1	H				0.60					
662.A1	Mill Creek A1	entire length	ML1	M				0.40					
665	Nipple Mountain	beyond closure gate	ML1	H				4.70					
665.F	Nipple Mountain F	entire length	ML1	H				0.91					
665.F1	Nipple Mountain F1	entire length	ML1	H				0.20					
667.A	Minesite Cabin	entire ML1 length	ML1	H				0.28					
667.B	East Fork B	east of Crater Creek	ML1	H				0.08					
681.A	Chris Mountain A	western portion	ML1	M				0.40					
725.B1	Wolf Creek B1	entire length	ML1	M				0.27					
725.C	Wolf Creek C	middle portion	ML1	M				0.39					
725.E	Wolf Creek E	entire length	ML1	L				0.20					
725.F	Wolf Creek F	entire length	ML1	L				0.20					
725.G	Wolf Creek G	entire length	ML1	L				0.32					
725.H	Wolf Creek H	entire length	ML1	L				0.22					
725.I	Wolf Creek I	entire length	ML1	L				0.10					
725.J	Wolf Creek J	entire length	ML1	L				0.05					
725.K	Wolf Creek K	entire length	ML1	L				0.10					
725.L	Wolf Creek L	entire length	ML1	L				0.33					
725.M	Wolf Creek M	entire length	ML1	L				0.05					
725.N	Wolf Creek N	entire length	ML1	L				0.10					
738.A1	Laughlin Creek A1	entire length	ML1	H				0.20					

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
738.F	Laughlin Creek F	entire length	ML1	L				0.07					
758	Spruce Canyon	portion on private property	ML1	M					0.64				
024.F	Porcupine F	from current 024.F to 024	nonsystem	H									0.02
006.C	Kenney Flats C	extend length of ML2 section and add ML1 section as if we acquire Spiler private parcel	nonsystem	L									0.69
037.C	Jackson Mountain C	extend length of ML1 road to pond as if parcel became FS	nonsystem	L									0.29
622.XX	First Fork XX (622020)	entire length	nonsystem	L									1.19
622.XX	First Fork XX (622050)	entire length	nonsystem	M									2.84
631.XX	Piedra XX	South of Piedra Road between 631.D and Williams Creek Road	nonsystem	L									0.46
631.XX	Piedra XX	South of Piedra Road approximately across from Williams Creek Road	nonsystem	L									0.80
631.D1	Piedra D1	entire length	nonsystem	L									0.43
631.C5	Piedra C5	entire length	nonsystem	L									0.40
634.B2	Plumtaw B2	length identified in Pagosa Creek EA	nonsystem	M									0.53

Road No.	Road Name	Section	Current Status	Priority	Remove from System - Transfer Jurisdiction	Remove from System - Close and Decommission	Remove from System - Close and Decommission, ATV trail	Remove from System - Decommission	Remove from System - Change to Nonsystem	Change to ML1	Change to ML1 - ATV trail	Upgrade to ML2 or ML3	Add to System
637.XX	East Toner XX	south of East Toner Road, east of 637.C	nonsystem	M									1.01
646.F	Snowball Creek F	entire length	nonsystem	M									0.46
648.B	West Fork B	entire length	nonsystem	M									0.27
656.G	Blanco River G	entire length	nonsystem	M									0.07
661.E	Black Mountain E	entire length	nonsystem	M									0.23
746.A	JPRD A	south of Jack's Pasture Road near end of FS road	nonsystem	L									1.33
X007	Kenney South	across Hwy 84 approximately across from Kenney Flats Road	none	M									0.30
		Total Road Miles by Category =			**9.59**	**4.83**	**3.02**	**26.92**	**5.54**	**9.60**	**7.68**	**5.97**	**11.32**
		Total Remove from System (miles) =	**49.91**										
		Total Change to ML1 (miles) =	**17.28**										

APPENDIX G: MOTORIZED TRAIL RISK/BENEFIT MATRIX

Table 13: Motorized Trail Risk/Benefit Matrix

PAGOSA DISTRICT MOTORIZED SYSTEM TRAILS																			
TRAIL DATA			TRAIL RISKS									TRAIL BENEFITS							
ID	NAME	LENGTH	CONDITION	WATER RESOURCES	SOILS/GEOLOGIC HAZARD	WILDLIFE	INVASIVE SPECIES	CULTURAL RESOURCES	SOCIAL CONFLICTS	TRAIL RISK RANKING	OVERALL RISK ASSESSMENT	MOTORIZED RECREATION USE	RECREATION ACCESS/CONNECTIVITY	FOREST MANAGEMENT ACCESS	EMERGENCY ACCESS	TRAIL BENEFIT RANKING	OVERALL BENEFIT ASSESSMENT	OPPORTUNITIES	COMMENTS
MOTORIZED TRAILS																			
565	TREASURE MOUNTAIN	6.49	3	2	1	3	2	1	2	2.00	M	2	2	1	1	1.50	L	Convert to singletrack motorized trail	Not currently passable for ATV travel
566	WINDY PASS	3.96	3	3	3	3	1	u	2	2.50	H	1	2	1	1	1.25	L	Convert to nonmotorized tail	Not currently passable for ATV travel; wet location not sustainable for motorized use
569	FOURMILE STOCK DR.	5.16	2	2	2	2	2	3	2	2.14	M	2	1	2	2	1.75	M	Close segment above 4mile TH; close southern segment; Evaluate relocating middle segment to provide greater intra-connectivity.	
569	FOURMILE STOCK DR.	1.37	2	2	2	3	3	3	3	2.57	H	3	3	2	1	2.25	M	Maintain; address deferred maintenance	
569	FOURMILE STOCK DR.	1.37	2	2	2	2	2	3	1	2.00	M	1	1	2	1	1.25	L	Close to motorized use	Coyote Hill area trail; dead end.
577	NAVAJO PEAK	1.48	3	2	3	2	2	u	3	2.50	H	2	1	1	1	1.25	L	Close to motorized use	Dead end trail to Wild. Bndy
577	NAVAJO PEAK	0.34	2	3	2	2	3	u	3	2.50	H	1	1	1	1	1.00	L	Close to motorized use	Dead end trail to Wild. Bndy
580	TURKEY CREEK	2.65	2	3	3	2	3	u	3	2.67	H	3	3	1	2	2.25	M	Maintain; address deferred maintenance	Evaluate adding campsite access trail to system
581	COAL CREEK	0.78	3	2	3	2	2	3	2	2.43	H	1	1	1	1	1.00	L	Close to motorized use	Not currently passable for ATVs; dead end at Wild. Bndy
582	CONNECTION	1.93	2	1	1	2	2	1	1	1.43	L	3	3	1	3	2.50	H	Maintain	
583	PIEDRA STOCK DRIVEWAY	4.76	2	2	3	2	2	3	1	2.14	M	3	3	2	2	2.50	H	Maintain; address deferred maintenance	Turkey Springs ATV trail
583	PIEDRA STOCK DRIVEWAY	1.24	1	1	1	2	2	u	2	1.50	L	1	1	1	1	1.00	L	Remove from system	"Longest Mile" trail; dead end in 1.24 miles
583	PIEDRA STOCK DRIVEWAY	5.35	3	2	2	2	3	3	1	2.29	M	2	2	1	1	1.50	L	Close southern segment; evaluate options to expand trail connectivity using closed system roads and reconstruction to Piedra Road, or evaluate close whole trail	Trail Ridge area
589	MIDDLE FORK	1.09	3	3	3	2	1	u	2	2.33	M	1	1	1	1	1.00	L	Close to motorized use	Dead end trail to Wild. Bndy
590	MONUMENT PARK ATV	1.75	2	2	2	2	2	1	2	1.86	M	3	3	2	3	2.75	H	Maintain; address deferred maintenance	
593	SAND CREEK	3.55	3	2	3	2	2	u	2	2.33	M	1	1	1	1	1.00	L	Close to motorized use/decommission	Unrepairable trail erosion; dead end trail near Wild. Bndy
600	DEVIL MTN.	3.60	2	3	3	2	2	3	2	2.43	H	3	3	1	3	2.50	H	Maintain; address deferred maintenance	
654	MIDDLE MOUNTAIN	2.23	3	2	3	2	2	1	2	2.14	M	3	3	1	3	2.50	H	Maintain; address deferred maintenance	
686	ASPLIN HUT	0.96	1	1	1	2	1	1	1	1.14	L	1	1	1	1	1.00	L	Remove from system; close to motorized use	Not needed
689	ELK CREEK	5.43	1	1	2	2	2	1	1	1.43	L	1	1	2	1	1.25	L	Maintain	Evaluate potential extension to connect to 691 to create loop opportunity and incrase benefit rating
690	HORSE CREEK	3.26	1	1	2	2	3	1	1	1.57	L	2	1	2	1	1.50	L	Maintain	Evaluate potential extension to connect to 689 using 730 road and increase benefit rating
691	MULE MOUNTAIN	8.51	1	1	1	2	2	1	1	1.29	L	1	2	3	3	2.25	M	Maintain	Evaluate overall connectivity possibilities with First Fork trails to increase benefit rating
692	MULE MTN. SPUR 1	1.79	1	1	1	2	2	1	1	1.29	L	1	2	2	1	1.50	L	Maintain	Evaluate overall connectivity possibilities with First Fork trails to increase benefit rating
693	MULE MTN. SPUR 2	1.42	1	1	1	2	2	1	1	1.29	L	1	2	2	1	1.50	L	Maintain	Evaluate overall connectivity possibilities with First Fork trails to increase benefit rating
703	CHRIS MOUNTAIN	1.73	3	1	3	2	1	1	2	1.86	M	3	3	2	2	2.50	H	Maintain; address deferred maintenance	
704	SNOW RANCH C	4.02	2	1	2	2	2	1	1	1.57	L	3	1	1	2	1.75	M	Maintain	Evaluate potential expansion to connect to 654 or NFSR 626 to create loop opportunity
	TOTAL MILES	**76.20**																	

Value and Risk Assessments	**Overall value and risk assessment ratings**
Low Risk or Benefit = 1	H = High for priority ranking = 2.34 - 3
Moderate Risk or Benefit = 2	M = Moderate for priority ranking = 1.67-2.33
High Risk or Benefit = 3	L = Low for priority ranking 1 - 1.66

APPENDIX H: ROAD RISK/BENEFIT MATRIX