United States Department of Agriculture

Forest Service

April 2014

Travel Analysis Report

Cherokee Park Fuels Project
CANYON LAKES RANGER DISTRICT

Arapaho Roosevelt National Forest & Pawnee National Grassland

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Abstract:

This Travel Analysis Report documents a route-by-route analysis of all National Forest System roads in the Cherokee Park Fuels Project on the Canyon Lakes Ranger District and provides recommendations that will aid in identifying the minimum road system needed for public access and forest management. The project is within the Canyon Lakes Ranger District, Arapaho and Roosevelt National Forest, Colorado.

Location:

Canyon Lakes Ranger District, Arapaho and Roosevelt National Forest and Pawnee National Grassland.

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Version 1.0

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EXECUTIVE SUMMARY

This document is the Travel Analysis (TA) Report for the Cherokee Park Fuels Project on the Canyon Lakes Ranger District, Arapaho Roosevelt National Forests and Pawnee National Grassland (ARP). This Travel Analysis Report documents a route-by-route analysis of all National Forest System roads in the Cherokee Park Fuels Project area and provides recommendations that will aid in identifying the minimum road system needed for public access and forest management.

The outcome of the TA is a set of science-based recommendations for route-by-route 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.

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.

The Cherokee Park Fuels Project Travel Analysis follows the same criteria and process that was developed for the ARP to satisfy the travel analysis requirements of Subpart A of the 2005 Travel Management Rule (refer to Step 2 for more information). The ARP travel analysis has been refined for the Cherokee Park Fuels Project EA.

Summary of Issues

Issues were identified using internal Forest Service input and are summarized below. Issues are discussed in more detail in Step 3.

- Insufficient resources for maintenance of the existing system of roads.
- Environmental impacts, including impacts to water resources and fish, soil and geologic hazards, fragmentation and wildlife security, impacts to vegetation including weeds and rare plants, and impacts to cultural resources.
- Access Needs, including motorized recreation use, access and connectivity to a variety of recreational opportunities, access to scenic viewpoints, access for forest management, access to Forest Service Administrative sites, and emergency access.
- Access for range, mineral, and other permit holders.

Analysis Performed

Utilizing a GIS and Infra (database) query that modelled Resource Criteria developed by the respective ARP Forest Interdisciplinary Team (IDT) Resource Area experts (as part of the ARP travel analysis conducted to satisfy Subpart A of the 2005 Travel Management Rule), a route-by-route risk-benefit assessment was used to rank system roads and unauthorized routes in the

Canyon Lakes Ranger District, including roads in the Cherokee Park Fuels Project Area. Each road was further evaluated by the Cherokee Park Fuels Project IDT to refine modelled results. Numerical ranking results were combined and averaged in order to provide a recommendation on whether a road was needed as part of the District transportation network.

Key Results and Findings

The IDT ranked routes based on *risks* to natural ecosystem and cultural resources and *benefits* to forest management and multiple access needs.

Opportunities for changes to roads were also identified as summarized below in Table 1:

Table 1: Recommendations to Roads in the Cherokee Park Fuels Project Area

Recommendations	Number of Miles*	FS Miles**	Number of Roads
Maintain and/or mitigate Current Forest System Routes	40.8	28.4	10
Maintain and/or mitigate current Forest System Routes, or consider decommission	8.9	4.0	3
TOTAL	**49.7**	**32.5**	**13**
Convert Undetermined Route to System Route with Admin. Only Access	10.0		15
Decommission Undetermined Route	22.2		49
TOTAL	**32.3**		**64**

* Mileages presented are *total road lengths* (irrespective of jurisdiction or System). Typically, jurisdiction is not reported in Infra for Unauthorized/undetermined routes.

** Mileages presented are Forest Service jurisdiction as recorded in Infra at the time of this analysis

In Table 1, three Forest System road segments totaling 4.0 miles have been identified as not necessary for forest management and may possibly be considered for decommissioning. These segments cross private land but currently there are no access authorizations in place.

As reflected in the above table, it is recommended that all way routes and other unauthorized routes on Forest Service lands be considered for decommissioning unless the road is authorized for use under a permit or other legal instrument. It is anticipated that some of these routes that are currently used by private landowners will be identified during the public scoping period for the Cherokee Park project. Newly inventoried or currently unknown unauthorized routes not reflected in the analysis will also be decommissioned.

Recommendations are for the Forest Service portion of the road only.

Step 5 of this analysis, Describing Opportunities and Setting Priorities, and the map in Appendix B display the TA recommendations. A complete list of the individual rankings for each road can be found on the Analysis Results Tables located in Appendix A.

How the Report will be Used

The Travel Analysis Report for the Cherokee Park Fuels Project Area of the Canyon Lakes Ranger District will assist in addressing issues related to the road system. It will be used to inform site specific analyses, decisions, and specific actions as part of the Cherokee Park Fuels

Project EA. Travel analysis is an ongoing process and it is anticipated that the recommendations in this document could be updated.

INTRODUCTION

The Travel Analysis Process, as described in the Forest Service Handbook FSH 7709.55, chapter 20, 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.

This TA does not address nonmotorized or motorized trail opportunities, it is focused only on National Forest System Roads (NFSR).

Travel analysis neither produces decisions nor allocates NFS lands for specific purposes. Rather, responsible officials, with public involvement, make travel management decisions that are informed by travel analysis.

STEP 1: SETTING UP THE ANALYSIS

Purpose

The purpose of this step is to:

- State objectives
- Identify the analysis area
- Develop an analysis plan
- Scope of analysis
- Identify information needs

Objectives

The objective of this science-based analysis is to provide information for managing roads while being responsive to public needs and desires while conforming to the Forest Plan.
All existing system roads and inventoried unauthorized routes within the analysis area are included in this Travel Analysis Report. This TA does not address nonmotorized or motorized trail opportunities.

The Travel Analysis Report for the Cherokee Park Fuels Project will assist in identifying and addressing issues related to the road system in subsequent project level National Environmental Policy Act (NEPA) processes.

Analysis Area

The analysis area is the Cherokee Park Fuels Project Area which is approximately 33,547 acres in size. Approximately 14,150 acres of the analysis area (42%) are on National Forest System lands. The remaining 19,398 acres are private and state lands within the boundaries of the National Forest. The roads analysis, however, is for entire road lengths, not just the portion in the project boundary.

An inventory of roads is located in Appendix A. A map of the road system is located in Appendix B. The maps and inventory include all existing Maintenance Level 1-5 roads and inventoried unauthorized routes in the Cherokee Park Fuels Project Area.

Analysis Plan

The IDT followed these steps while conducting the analysis:

- The Cherokee Park Fuels Project Travel Analysis follows the same criteria and process that was developed for the ARP to satisfy the travel analysis requirements of Subpart A of the 2005 Travel Management Rule (refer to Step 2 for more information). This travel analysis has been refined for the Cherokee Park Fuels Project Area to provide recommendations for the Cherokee Park Fuels Project EA.

- Added sub- criteria, as needed, to the criteria extracted from the ARP travel analysis process developed to satisfy of Subpart A of the 2005 Travel Management Rule (see bullet above).

- Verified accuracy of road locations on maps

Scope of Analysis

The range of potential actions that could be taken forward into the NEPA from this Travel Analysis can include:

- Changing Jurisdiction
- Closing to Motorized Use
- Converting to Another Use
- Decommissioning
- Removing from System
- Adding to System
- Mitigating

Descriptions of potential actions are described further in Step 5.

Information Needs

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

- A complete inventory of System Roads and inventoried unauthorized roads.
- Maps of Roads
- Criteria developed by the ARP to satisfy the travel analysis requirements of Subpart A of the 2005 Travel Management Rule (refer to Step 2 for more information).
- Past NEPA decisions

STEP 2: DESCRIBING THE SITUATION

Purpose

The purpose of this step is to:

- Describe the existing Road Management Direction
- Describe Forest Plan Direction
- Describe the existing road system data bases
- Describe existing road system

Road Management Direction

The transportation system on the Arapaho and Roosevelt National Forests and Pawnee National Grasslands (ARP) serves a variety of resource management and access needs. Many roads on the ARP 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 and Grassland.

The following is a brief summary of relevant management direction.

Travel Management Rule, Travel Analysis, Subpart A

In 2005, the U.S. Forest Service adopted the Travel Management Rule. The travel management regulations (36 CFR 212.5(b)) requires as part of "Subpart A – Administration of the Forest Transportation System" that the Forest Service "responsible official must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands" and "identify the roads on lands under Forest Service jurisdiction 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." In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale and, to the degree practicable, involve a broad spectrum of interested and affected citizens, other state and federal agencies, and tribal governments

Forest Service Manual FSM 7712 states "to use travel analysis (FSH 7709.55, ch. 20) to inform decisions related to identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of NFS lands per 36 CFR 212.5(b)(1) and to inform decisions related to the designation of roads, trails, and areas for motor vehicle use per 36 CFR 212.51, provided that travel analysis is not required to inform decisions related to the designation of roads, trails, and areas for those administrative units and ranger districts that have issued a proposed action as of January 8, 2009." A roads analysis conducted at the scale of an administrative unit that was completed in accordance with Publication FS-643, "Roads Analysis: Informing Decisions About Managing the

National Forest Transportation System," satisfies the requirement to use travel analysis relative to roads. More information on Publication FS-643 is described further below.

FSM 7712.3 states that "travel analysis is not a decision-making process. Travel management decisions are site-specific decisions." FSM 7715 states that "travel management decisions include adding a route to or removing a route from the forest transportation system, constructing an NFS road or NFS trail, acquiring an NFS route through a land purchase or exchange, decommissioning a route, approving an area for motor vehicle use, or changing allowed motor vehicle classes or time of year for motor vehicle use." FSM 7712.3 states that "travel analysis is not required to advise decisions to decommission unauthorized routes, including those discovered through monitoring."

On November 10, 2010 Deputy Chief Joel Holtrop issued a letter:

> "directing the use of the travel analysis process (TAP) described in Forest Service Manual 7712 and Forest Service Handbook (FSH) 7709.55, Chapter 20, to complete the applicable sections of Subpart A. The TAP is a science-based process that will ensure future travel-management decisions are based on the consideration of environmental, social, and economic impacts. All NFS roads, maintenance levels 1-5, must be included in the analysis.
>
> For units that have previously conducted travel analysis or roads analyses (RAPs), the appropriate line officer should review the prior report to: 1) assess the adequacy of the analysis and the relevance of any recommendations to the process for complying with Subpart A; 2) help determine the appropriate scope and scale for any new analysis; and 3) build on previous work. A RAP completed in accordance with publication FS-643, "Roads Analysis: Informing Decisions about Managing the National Forest Transportation System," will also satisfy the roads analysis requirement of Subpart A."

On March 29, 2012 Deputy Chief Leslie A.C. Weldon issued a letter to:

> "reaffirm agency commitment to completing a travel analysis report for Subpart A of the travel management rule by 2015 and update and clarify Agency guidance."

The letter further states:

> "Forest Service regulations at 36 CFR 212.5(b)(1) require the Forest Service to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands. In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale. Forest Service regulations at 36 CFR 212.5(b)(2) require the Forest Service to identify NFS roads that are no longer needed to meet forest resource management objectives."
>
> "Units should seek to integrate the steps contained in the Watershed Condition Framework (WCF) with the six TAP steps contained in FSH 7709.55, Chapter 20, to eliminate redundancy and ensure an iterative and adaptive approach for both processes."
>
> "The next step in identification of the MRS is to use the travel analysis report to develop proposed actions to identify the MRS. These proposed actions generally should be

developed at the scale of a 6th code subwatershed or larger. Proposed actions and alternatives are subject to environmental analysis under NEPA. Travel analysis should be used to inform the environmental analysis."

Utilizing a GIS and Infra (database) query that modelled Resource Criteria developed by the respective ARP Forest Interdisciplinary Team (IDT) Resource Area experts (as part of the ARP Travel Analysis conducted to satisfy Subpart A of the 2005 Travel Management Rule), a route-by-route risk-benefit assessment was used to rank system roads and unauthorized routes in the Canyon Lakes Ranger District, including roads in the Cherokee Park Fuels Project Area. Each road was further evaluated by the Cherokee Park Fuels Project IDT to refine modelled results. Numerical ranking results were combined and averaged in order to provide a recommendation on whether a road was needed as part of the District transportation network.

Travel Management Rule, Subpart B

The travel management regulations (36 CFR 212.51(a) and 212.56) requires as part of "Subpart B – Designation of Roads, Trails, and Areas for Motor Vehicle Use", that "Motor vehicle use on National Forest System roads, on National Forest System trails, and in areas on National Forest System lands shall be designated by vehicle class and, if appropriate, by time of year by the responsible official on administrative units or Ranger Districts of the National Forest System" and that "Designated roads, trails, and areas shall be identified on a motor vehicle use map".

Motor Vehicle Use Maps (MVUM) have been published for all Districts on the ARP. The initial MVUM was published for the Canyon Lakes Ranger District in 2009 . This map contains the existing direction for motor vehicle use open to the public on the district. Motor vehicle use (excluding snowmobiles operating on snow) is allowed on designated roads and trails shown on the MVUM. The MVUM's for the ARP, including Canyon Lakes Ranger District are available on the web (under "Maps and Publications") at: http://www.fs.usda.gov/main/arp/home States, counties, other Federal agencies, and private entities may control roads that cross Forest land by obtaining easements from the Forest Service. A road is on the MVUM if it meets the following criteria: System is Forest Service, Status is Existing, and Maintenance Level is equal or greater than 2

Report FS-643 – Roads Analysis

In August 1999, the Washington Office of the USDA Forest Service published Miscellaneous Report FS-643 titled "Roads Analysis: Informing Decisions about Managing the National Forest Transportation System." The objective of roads analysis is to provide decision makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions.

Roads analysis is an integrated ecological, social, and economic approach to transportation planning, addressing both existing and future roads. Roads analysis is intended to be based on science. Analysts should locate, correctly interpret, and use relevant existing scientific literature in the analysis, disclose any assumptions made during the analysis, and reveal the limitations of the information on which the analysis is based.

Roads analysis neither makes decisions nor allocates lands for specific purposes. Line officers, with public participation, make decisions. Technical analysts inform the decision maker about effects, consequences, options, and priorities. Roads analysis provides information for decision making by examining important ecological, social, and economic issues. Roads analysis helps implement forest plans by identifying management opportunities that can lead to site-specific projects. It can also identify needed changes in forest plans to be addressed in amendments or revisions.

A Roads Analysis Report, as described in publication FS-643, *Roads Analysis: Informing Decisions about Managing the Transportation System*, analyzing maintenance level 3, 4, and 5 roads across the Arapaho and Roosevelt National Forests and Pawnee National Grasslands was produced in October 2003. This Travel Analysis Report revises and updates the Arapaho and Roosevelt National Forests and Pawnee National Grasslands 2003 Report, including adding maintenance level 1 and 2 roads managed by the Canyon Lakes Ranger District. Maintenance levels are described further below.

Road Management Objectives

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.

According to FSM 7714, road management objectives (RMOs) and trail management objectives (TMOs) document the intended purpose, design criteria (FSM 2353.26 and 7720), and operation and maintenance criteria (FSM 2353.25 and 7730.3) for each NFS road and NFS trail. RMOs and TMOs require written approval by the responsible official and are included in the applicable forest transportation atlas (FSM 7711.2, para. 2a).

Road Maintenance Level

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 (operational maintenance level) and planned to be maintained at a different level (objective maintenance level) at some future date. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. For the Canyon Lakes Ranger District, the operational and objective maintenance levels are typically the same. Maintenance level (ML) definitions, as described further in Forest Service Handbook (FSH) 7709.59, Section 62.32, are summarized below:

- **ML 1 Basic Custodial Care (closed to all travel but not decommissioned)** - These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate" all traffic. These roads are not shown on motor vehicle use maps.

  Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they

are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic but may be available and suitable for nonmotorized uses.

- **ML 2 High Clearance Vehicles -** Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are not provided with the exception that some signing, such as W-18-1 "No Traffic Signs," may be posted at intersections. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to:

    a. Discourage or prohibit passenger cars, or
    b. Accept or discourage high clearance vehicles.

- **ML 3 Suitable for Passenger Cars -** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. The Manual on Uniform Traffic Control Devices (MUTCD) is applicable. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations.

  Roads in this maintenance level are typically low speed with single lanes and turnouts. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

- **ML 4 Moderate Degree of User Comfort -** Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. Manual on Uniform Traffic Control Devices is applicable. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.

- **ML 5 High Degree of User Support -** Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated. Manual on Uniform Traffic Control Devices is applicable. The appropriate traffic management strategy is "encourage."

Administrative Road

An Administrative National Forest System road is any National Forest System road that is not a public road. (FSH 7709.56 Chapter 40)

Forest Roads

Forest Road or Trail. A road or trail wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

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

Unauthorized Road

An Unauthorized Road is a road or trail that is not a forest road, or a temporary road and is not included in a forest transportation atlas. (36 CFR 212.1, FSM 2353.05, FSM 7705). Unauthorized roads are categorized into two types. "Undetermined" roads are those where long term purpose and need has yet to be determined, and "Not Needed" roads are those not needed for long-term management of national forest resources as determined through an appropriate planning document. Typically, most user created routes are not part of the forest road system and are considered to be unauthorized.

Adding roads to the system

FSM 7703.12 requires that the addition of new roads to the system should occur only where resource management objectives and benefits are clearly demonstrated and where long-term funding obligations have been carefully considered. FSM 7703.12, 7703.26 requires that addition of new roads to the forest transportation system must be informed by a travel analysis conducted at an appropriate scale, as well as appropriate site-specific environmental analysis and public involvement. FSM 7703.26 requires that long-term road funding opportunities and obligations must be considered in the decision to add roads to the system.

Decommissioning of temporary and other roads

FSM 7703.24 states that temporary roads are maintained as provided in the contract, permit, lease, or other written authorization for those roads and must be decommissioned at the conclusion of the authorized activity. FSM 7703.25 states that unauthorized roads, temporary roads, and any NFS roads no longer needed for the use and management of NFS lands should be decommissioned. FSM 7734.01 states that vegetative cover be reestablished on the road within 10 years after it is determined that a road is no longer needed.

Highway Safety Act

Roads open to travel for passenger cars (low clearance vehicles) are subject to the Highway Safety Act. These are objective maintenance Level 3-5 roads. Signs on roads subject to the Highway Safety Act must comply with the Manual on Uniform Traffic Control Devices (MUTCD). For the safety of the public, contractors, and Forest Service employees and to reduce Forest Service liability, the latest MUTCD guidelines for permanent and temporary signing and the use of certified flaggers on all roads in the project would be followed. According to Forest Service policy, all signs shall comply with the latest version of EM-7100-15.

Forest Plan Direction

The 1997 Revision of the Land and Resource Management Plan for the Arapaho Roosevelt National Forests and Pawnee National Grassland establishes programmatic direction for the management of National Forest System lands.

The Arapaho Roosevelt National Forests and Pawnee National Grassland are broken into discrete Management Areas which are guided by the Forest Plan. Management Areas provide management direction by emphasizing a particular resource and identifying associated guidelines (prescriptions) for management activities. The Forest Plan also provides guidance by Geographic Area (GA) which informs how travel management should be accomplished in these areas.

The Forest Plan provides guidance to minimize the impacts of roads and trails on natural resources such as soil, water, and wildlife. The following are some of the guidance found in the Forest Plan (and which chapter it is located) related to roads:

- Based on site-specific environmental decisions, all "ways" will either be reclassified as FDRs or FDTs (Forest Development Roads and Forest Development Trails) or will be scheduled for obliteration *(Introduction – Travel Management).*
- Provide an integrated travel system that considers various modes of motorized and nonmotorized use consistent with the resource capacity of the area *(Chapter 1 – Human Uses).*
- Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate *(Chapter 1 – Erosion and Sediment).*
- Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands *(Chapter 1 – Erosion and Sediment).*
- Stabilize and maintain roads, trails, and disturbed sites during and after construction to control erosion *(Chapter 1 – Erosion and Sediment).*
- Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage *(Chapter 1 – Erosion and Sediment).*
- System travelways determined to be no longer needed to achieve proposed management activities or located where resource damage cannot be mitigated shall be obliterated, revegetated, and sloped to drain *(Chapter 1 – Infrastructure).*
- Maintain all roads at the minimum maintenance level to meet the management objectives for the area *(Chapter 1 – Infrastructure).*
- Manage road use by season restriction if it use causes unacceptable damage to soil and water resources due to weather or seasonal conditions *(Chapter 1 – Infrastructure).*
- Decisions about which roads and trails to keep open or to close will be implemented under formalized travel management plans *(Chapter 2 – Travel Management Strategy).*

Existing Road System Databases

The two major tools used to catalog information about roads are geographic information system (GIS) and the corporate database known as Infra. Each of these computer-based tools contains slightly different information.

Infra Data Base

The Infra database lists all the system roads 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 Infra database also stores Access and Travel Management (ATM) data that contains the information on if and when a road is open to the public.

Geographic Data Base

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. GIS integrates the information from Infra (such as in the production of the Motor Vehicle Use Map) and other resource databases. Models can be created in GIS to query different attributes about roads, such has how many stream crossings it has, what management areas it crosses, etc.

How Criteria was Modeled

Following recommendations in the FSH 7709.55 Chapter 20, the objective of the larger ARP Travel Analysis (to satisfy the travel analysis requirement of the Subpart A of the 2005 Travel Management Rule) was to create a science/resource-based examination of each road on a road-by-road basis that can be applied across the entire Arapaho and Roosevelt National Forests and Pawnee National Grassland. The analysis was designed to be reproducible and objective. This was done by creating criteria at the Forest Resource level that could be converted into GIS models. Utilizing Infra data, the modeling output global results that ranked roads as a high, medium, or low risk and as a high, medium, or low benefit based on a distribution of scores (explained in Step 4). A set of generalized recommendations based on the overall risk and overall benefit scores were then developed to be applied to each road (explained in Step 5).

Each criterion was different and utilized a different set of resource data which was compared against the road routes using a multitude of GIS analysis tools and techniques. The data used in the analysis was a combination of data generated from the Forest Plan analysis, national databases, or data generated on the ARP. No new data was collected or created for this analysis. Each road was scored for each item specified in the criteria then given a final average or weighted average depending on the directions in the resource criteria. These scores for each resource were then aggregated so that each road had a risk or benefit score for each resource. These individual resource scores were reviewed by District Resource specialists on the Cherokee Park Fuels Project IDT and adjusted based on location specific issues or ground knowledge.

The Cherokee Park Fuels Project Travel Analysis follows the same criteria and process that was developed for the ARP to satisfy the travel analysis requirements of Subpart A of the 2005 Travel Management Rule. This travel analysis has been refined for the Cherokee Park Fuels Project.

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. Infra and GIS-derived information within this report was based on the

information contained in these two systems at the time of the analysis. Although the best information at the time of this study, it is approximate and may change.

Existing Road System

Table 2 below lists the number of miles of system (NFSR) roads by operational maintenance level in the Cherokee Park Fuels Project Area per data recorded in Infra. Mileages presented in the Analysis Results Table are *total road lengths* (irrespective of jurisdiction or System) in Infra at the time of this analysis.

Appendix B displays a map of the Cherokee Park Fuels Project Area road system.

Table 2: Roads within the Cherokee Park Fuels Project Area, by Maintenance Level

System	Maintenance Level	Total Miles*	
National Forest System (NFSR)	5	0	49.7
	4	0	
	3	38.6	
	2	11.1	
	1	0	

* The mileages in Table 2 represent entire road length, irrespective of jurisdiction.

STEP 3: IDENTIFYING ISSUES

Purpose

The purpose of this step is to:

- Identify key issues related to management of the existing road system
- Determine Data needed to analyze key issues
- Existing Travel Management

Key Issues

The key issues were identified using 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 maintenance is not adequate to maintain the existing system.

2. **Access needs**

   Motorized vehicle access of various types is needed in order to provide recreational opportunities, efficiently manage the Forest, provide access for emergency response, and provide access for permittee holders as described further below:

   a. **Administrative Access:** Roads provide access to Forest Service administrative sites including offices, housing, and fire caches.

   b. **Motorized Recreation Use / Recreation Access:** Roads are used for various types of motorized recreation including driving for pleasure, scenic viewing, 4-wheel driving, ATV and motorcycle riding, and winter motorized recreation. Roads provide motor vehicle access to recreational activities occurring off roads, such as hiking, camping, hunting, firewood gathering, rock collecting, etc.

   c. **Forest Management:** Roads provide access for forest management activities such as fuels reduction, timber harvest, grazing, mining, noxious weed treatment, etc.

   d. **Emergency:** Roads provide access to facilitate responding to emergencies such as fire suppression and search and rescue.

   e. **Permittee:** Roads access lands with special use permits, grazing permits, road use permits, etc.

   f. **Cultural:** Roads that access high public value cultural resource sites

3. **Environmental impacts**

   There are concerns about damage from motor vehicle use, including:

   a. **Fisheries:** When road networks bisect stream networks, fragmentation of the linear habitat network occurs and often habitat conditions become degraded.

   b. **Impacts to water and soil 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.

   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 noxious weeds by dispersing seed sources or, alternatively, negatively impact native and rare plant species.

   e. **Impacts to cultural resources:** Motorized routes and use of these routes may impact cultural resources by allowing users to access these sensitive sites more easily.

Data Needed

All data needed is already included in the GIS/Infra databases.

The roads included in the analysis included those roads with at least some of its length recorded as NFSR System and/or Forest Service jurisdiction in Infra at the time of this analysis (except Forest Service jurisdiction roads with system of "Undetermined" or "Not Needed"). Road lengths reported on the Analysis Results Table include total road length, irrespective of System and jurisdiction.

Existing Travel Management

The district was encouraged to provide past NEPA decisions that included travel management recommendations, however, none were noted.

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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 listed in Table 3 were developed by the ARP during its effort to conduct a Travel Analysis to satisfy travel analysis requirements of Subpart A of the 2005 Travel Management Rule. A route-by-route risk-benefit assessment was used to rank system roads and unauthorized routes in the Canyon Lakes Ranger District, including roads in the Cherokee Park Fuels Project Area.

Criteria and Rankings Used in the Risk and Benefit Analysis

Roads on the Canyon Lakes Ranger 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. Further, maintenance and repair costs for these roads are in excess of recent budgetary allocations. The Forest identified the following risks and benefits of roads as the most important resource issues for managing the transportation system on the Arapaho and Roosevelt National Forest and Pawnee National Grasslands.

Table 3: Road Risks and Benefits Summary

Roads are considered a **Risk** to the following Resources	Roads are considered a **Benefit** to the following Resources
Botany	Engineering
Weeds	Lands and Minerals
Watershed Condition	Scenery
Water Resources	Recreation
Soils	Forest/Veg Management
Fisheries	Emergency Access
Wildlife	Range
Cultural Resources	

The IDT evaluated each road for each of these risks and benefits and assigned a numerical value for each category. This was based on data contained in existing (at the time of this report) GIS layers and within the Infra database first followed with 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). The following criteria affect all NFSR's including those on the MVUM and Admin Roads. However, it was recommended that all way routes and other unauthorized routes be automatically considered for decommissioning unless the District wished to include specific routes in the analysis.

Utilizing the criteria, a table was automatically created via GIS/Infra with ratings for each road included. Therefore, this portion of the exercise was mechanical and consistent. Because actual field conditions can differ from those in the databases, the tables were then provided to the District resources to apply professional knowledge to the analysis and update the ratings as needed. Justification was provided in these situations and included in the Analysis Results Table in Appendix A.

There are several reasons for "NULL" ratings. "NULL" does not affect the rating of a road, it simply is not averaged in with the other scores. The resources that utilized "NULL" are:

- Cultural Resources – NULL values apply to those areas of unknown effect. "NULL" category was used to not artificially lower the benefit of the other roads.
- Engineering – Engineering criteria applied to very few roads. "NULL" category was used to not artificially lower the benefit of the other roads.
- Lands - All Lands and Minerals results are automatically given a "NULL" rating as the information is not currently recorded in GIS and/or Infra. District Lands resources are responsible for providing rating information.
- Range – Applies to roads with no allotment status.

Assignment of a High (3), Medium (2), or Low (1), or NULL rating for each risk and benefit category generally followed the guidelines presented below. As a note, "Medium" is used interchangeably with "Moderate."

	Risk Rating	Criteria Guidelines
Botany	High (3)	Road segment known or estimated to have potentially negative effects, or threats of future negative effects, to rare plants or communities. Road is rated High if any of the following apply: • If the road has a rating of "3" in either criteria (1) or (4) below. • If the segment had a "sum of scores" in the four criteria below of 8 or higher
	Med. (2)	Road segment estimated to have some potentially negative effects, or threats of some future negative effects, to rare plants or communities. Road is rated Medium if any of the following apply: • If the segment had a "sum of scores" in the four criteria between 6 and 8
	Low (1)	Road segment estimated to have little or no potentially negative effect, now or in the future, to rare plants or communities. Includes all roads not considered "High" or "Medium"
	Roads ranked "low" includes roads in areas that have not been surveyed for botanical resources. In such cases, roads should not be considered "low concern," but "unknown concern," since data for rare plants are lacking. Criteria: **(1) TES** High (3) - segment < 80 feet from TES species points or polygons Med (2) - segment > 80 feet and < 1/4 mile from TES species points or polygons Low (1) - segment > 1/4 mile from TES species points or polygons **(2) Rare Plants and Communities** High (3) - segment < 80 feet from rare species points or polygons Med (2) - segment > 80 feet and < 1/4 mile from rare species points or polygons Low (1) - segment > 1/4 mile from rare species points or polygons **(3) Road Level** High (3) - segment is a Level 3, 4, or 5 road; inferred higher use level Med (2) - segment is a Level 2 road; inferred lesser use level Low (1) - segment is a Level 1 road; inferred lowest use level **(4) Known adverse impacts** High (3) - TES plants or fens known to be receiving adverse impacts in area associated with segment Med (2) - plants of local concern or sensitive plant communities other than fens known to be receiving adverse impacts in area associated with segment Low (1) - plants or communities not known to be receiving adverse impacts in area associated with segment	

Rational for Criteria – Botany

Methods are lifted and modified from the 2003 *Arapaho and Roosevelt National Forests and Pawnee National Grassland Forest Level Roads Analysis, Appendix B*. Four criteria, listed below, were used to analyze road segments using GIS and botany staff knowledge when data were not entered into GIS. It is believed that these criteria are most useful for assessing rare plant species and communities known to occur on the ARP, whether or not the plants and communities were identified in the 1997 revised *Forest Plan* (Forest Plan lists are outdated).

1) **Presence of Threatened, Endangered or Sensitive Plant Species (TES)** – initially used Colorado Natural Heritage Program (CNHP) data for locations of federally endangered, threatened or proposed and FS sensitive species occurrences. Additionally, used NRIS TESP database as well as personal knowledge and botany crew field record books for plants known to occur in the analysis area that are not in the CNHP database. Eighty feet was determined to be the tallest height of the dominant trees, including riparian species that occur along the road corridors in the analysis area. Eighty feet each side left and right of roadway edge is the corridor width in which roadside hazard tree or other vegetation management or road

maintenance activities are most likely to occur. The following activities are also most likely to occur within 80 feet of roadway edge: incidental trampling, picking, digging, or whole plant mortality/removal by roadside visitors, illegal harvesting, and mud-bogging. Therefore, this corridor width carries the greatest probability of impacting rare plants. Beyond 80 feet adverse impacts would be less likely to occur, and would mostly be attributable to timber sales, vegetation management activities, and off-road vehicle use. Beyond 1/4 mile of the road, impacts to rare plants are greatly reduced and would most likely be from USFS activities such as timber or fuels management, and such activities are not necessarily tied to road proximity.

2) **Presence of Rare Plants and Communities**, including fens and species of local concern (SOLC) – used the above process for the remainder of rare plant occurrences after TES were considered (above).

3) **Road Level** – The road system facilitates human activities that affect rare plants. More use (assumed maintenance level infers use) promotes a greater probability of adverse impacts to plants.

4) **Uses causing Known Adverse Impacts** – used locations accessed by the roadway segment where the USFS is aware of known authorized or unauthorized activities that have been documented to be causing adverse impacts to rare plants or communities, such as from heavy localized plant collecting or wildflower picking at a campground or day-use area, heavily trampled visitor use areas, illegal plant harvesting, or unauthorized mud-bogging in riparian areas containing sensitive plants or ecosystems. The area known to be adversely impacted was tied to the corresponding access road segment. If the road were not present, access to the area would become more difficult, and the adverse impacts would be anticipated to be reduced or could cease.

Databases used were comprised of the following: 1) NRIS TESP, 2) CNHP (including PCA's or communities of concern), 3) TEAMS botany crews, ARP SO botany crews, and botany contractor data resulting from roadside hazard tree project rare plant surveys in 2010 and 2011, 4) proactive fen survey data from around 2005, and 5) knowledge of rare plant or community data not entered into any of the aforementioned data bases. Roughly 1/5 to 1/4 of the road segments assessed in this analysis have been surveyed for rare plants to varying degrees, mostly associated with roadside hazard tree removal planning efforts conducted in 2010 and 2011 or with special use permits that involved road easements. Most surveyed roads are Levels 3-5.

It is unlikely that there exist any TE plants along any Forest road segment because there is very little suitable habitat in the road corridor, and most suitable corridor habitat has been adequately surveyed. Similarly, there is a low likelihood of any Sensitive plants occurring within 1/4 mile of assessed road segments, except for the following: *Potentilla rupincola*, which has a moderate probability of occurrence, *Cypripedium parviflorum*, which is known to occur within 1/4 mile of a road, *Botrychium lineare* and *Botrychium ascendens*, both of which are known to occur along roadsides in the Guanella Pass area, and *Rubus arcticus* ssp. *acualis*, which occurs in wetlands along roadsides in two locations on the Forest.

There are numerous roadside occurrences of other rare plants, such as various ferns, *Calypso bulbosa*, *Cypripedium fasciculatum*, *Lycopodium annotinum*, *Corallorhiza trifida*, and *Listera* spp. There is high confidence that there exist additional undetected populations of rare plants. There are several occurrences of PCA's or noteworthy plant communities as identified by CNHP that overlap with roads.

	Risk Rating	Criteria Guidelines
Weeds	High (3)	Road segment known or estimated to have potentially negative effects, or threats of future negative effects, to NFS lands by spread and/or persistence of invasive weeds. Road is rated High if one or more of the following apply: • Vegetation Type is montane/mixed conifer forests, shrublands, or is located on the PNG (FSVeg) AND road segment contains at least one known weed presence within 80 feet left or right of road edge (NRIS and/or knowledge by District Weed Coordinator) • Rating is deemed appropriate by District Weed Coordinator to accommodate high District weed management priorities
	Med. (2)	Road segment estimated to have some potentially negative effects, or threats of some future negative effects, to NFS lands by spread and/or persistence of invasive weeds. Road is rated Medium if one or more of the following apply: • Vegetation Type is lodgepole or spruce-fir forests AND road segment contains at least one known weed presence within 80 feet left or right of road edge (NRIS and/or knowledge by District Weed Coordinator) • Rating is deemed appropriate by District Weed Coordinator to accommodate medium District weed management priorities
	Low (1)	Road segment estimated to have little or no potentially negative effect, now or in the future, to NFS lands by spread and/or persistence of invasive weeds. Road is rated Low if one or more of the following apply: • Vegetation Type is Alpine vegetation AND road segment contains at least one known weed presence within 80 feet left or right of road edge (NRIS and/or knowledge by District Weed Coordinator) • Roads with no known weed infestations. In such cases, it is more accurate to think of risk as "unknown" rather than "low" when the roads have not been adequately inventoried for weeds • Rating is deemed appropriate by District Weed Coordinator to accommodate low District weed management priorities • Road does not fit into the definition of "High" or "Medium"

Rational for Criteria – Weeds

Motor vehicle use has the potential to spread invasive plant species by dispersing the seed source or less likely by dispersing propagative plant parts (e.g., rhizomes). The three risk ratings identified for invasive plant species are low, moderate, or high, with a single risk rating to be provided for each road segment analyzed (unless District Weed Coordinators break segments into proportions and provide rationale). Risk ratings are tied to whether or not existing noxious weed populations are known within a segment as derived from the NRIS invasives database and/or knowledge by District weed staff of populations not in the database, combined with the life zone in which the weeds occur. Different life zones have different probabilities of weeds spreading and differing priorities for control. Generally across the forest, the lower in elevation and dryer the life zone, the more a weed effectively invades and increases. Invasive species considered for this analysis are the plant species listed on the most current Colorado Noxious Weed List (including Watch List) as well as any others that occur in the NRIS invasives species database or Weed Action Plan. Aquatic non-plant invasive species such as zebra mussels were not considered because mere presence of roads that access bodies of water does not infer that spread of aquatic species to other bodies of water will occur.

Rational for Criteria – Weeds (continued)

Ratings are not further modified on a species-by-species basis at a Forest level because there is substantial variation within a species between Districts and/or Counties in terms of management priority. It is intended that the product of the Forest-level rating exercise be adjusted as appropriate by District staff during the district-level exercise to accommodate district priorities based upon 1) species, 2) impending disturbance activities that would be anticipated to release weeds, 3) geographic locations or special management areas, or 4) any other reason that prioritizes weed management for a certain road segment. At that time, each district can adjust road segments of concern upward or downward based on such considerations. If adjustments occur, rationale for weighting by consideration should be provided by each District.

Roads fit into three life zones – grasslands and montane, subalpine, and alpine – that are accurately reflected by vegetation type using FSVeg data:

- Montane/mixed conifer forests, shrublands, and PNG: Risk level 3 (high) is assigned to the lowest elevation (montane) forests, all shrublands, and PNG grasslands for roads with known weed populations. Such forests are dominated by ponderosa pine, Douglas-fir, or a mixture of ponderosa pine with Douglas-fir, lodgepole and/or aspen. Shrublands are dominated by bitterbrush, mountain mahogany, sagebrush, or mixed mountain shrubs.
- Lodgepole or spruce-fir forests: Risk level 2 (moderate) is assigned to roads with mid-elevation (subalpine) forests containing known weed populations.
- Alpine vegetation: Risk level 1 (low) is assigned to roads with high-elevation alpine settings with known weed populations. Alpine vegetation is any vegetation above upper treeline.

Rating (vegetation type reflecting life zone)

Montane/mixed conifer forests, shrublands, and PNG = High Risk (3)
Lodgepole or spruce-fir forests = Moderate Risk (2)
Alpine vegetation = Low Risk (1)

Known Population = any population occurring within 80 feet left and right of edges of roadway. Eighty feet is the average height of hazard trees that may be removed or corridor width of general roadside vegetation management, as well as the approximate width of most off-road corridor use, which can result in plants or seed being transported to roadways and spread.

Ratings are to be completed for each road segment by assigning a Risk level of 3, 2, or 1 for Vegetation Type if a road segment contains at least one known weed presence within 80 feet left or right of road edge. For segments with no known weed infestations, a default value of 1 (Low Risk) is to be assigned. In such cases, it is more accurate to think of risk as "unknown" rather than "low" when the roads have not been adequately inventoried for weeds. Also, any segment rated as "low" could be invaded by weeds in the future, necessitating a reassignment to a higher risk rating. Each road segment has only one rating, and the highest rating prevails (unless broken into proportions by District weed staff). The only elevational break used in the GIS vegetation typing is as follows: the "meadows" veg type above 11,000 feet is assigned as alpine. The vegetation map produced by GIS of Vegetation Types is manually revised slightly by the Botanist to reflect improved accuracy for some small areas of the Forest. Each district can adjust road segments of concern upward or downward or into proportions by segment.

Rational for Criteria – Weeds (continued)

The listing of Colorado noxious and watch list weeds as of January 15, 2013, is as follows:

Colorado List A Species
African rue (Peganum harmala) A
Bohemian knotweed (Polygonum x bohemicum) A
Camelthorn (Alhagi pseudalhagi) A
Common crupina (Crupina vulgaris) A
Cypress spurge (Euphorbia cyparissias) A
Dyer's woad (Isatis tinctoria) A
Elongated mustard (Brassica elongata) A
Giant knotweed (Polygonum sachalinense) A
Giant reed (Arundo donax) A
Giant salvinia (Salvinia molesta) A
Hydrilla (Hydrilla verticillata) A
Japanese knotweed (Polygonum cuspidatum) A
Meadow knapweed (Centaurea pratensis) A
Mediterranean sage (Salvia aethiopis) A
Medusahead (Taeniatherum caput-medusae) A
Myrtle spurge (Euphorbia myrsinites) A
Oange hawkweed (Hieracium aurantiacum) A
Purple loosestrife (Lythrum salicaria) A
Rush skeletonweed (Chondrilla juncea) A
Squarrose knapweed (Centaurea virgata) A
Tansy ragwort (Senecio jacobaea) A
Yellow starthistle (Centaurea solstitialis) A

Colorado List B Species
Absinth wormwood (Artemisia absinthium) B
Black henbane (Hyoscyamus niger) B
Bouncingbet (Saponaria officinalis) B
Bull thistle (Cirsium vulgare) B
Canada thistle (Cirsium arvense) B
Chinese clematis (Clematis orientalis) B
Common tansy (Tanacetum vulgare) B
Common teasel (Dipsacus fullonum) B
Corn chamomile (Anthemis arvensis) B
Cutleaf teasel (Dipsacus laciniatus) B
Dalmatian toadflax, broad-leaved (Linaria dalmatica) B
Dalmatian toadflax, narrow-leaved (Linaria genistifolia) B
Dame's rocket (Hesperis matronalis) B
Diffuse knapweed (Centaurea diffusa) B
Eurasian watermilfoil (Myriophyllum spicatum) B
Hoary cress (Cardaria draba) B
Houndstongue (Cynoglossum officinale) B
Jointed goatgrass (Aegilops cylindrica) B
Leafy spurge (Euphorbia esula) B
Mayweed chamomile (Anthemis cotula) B
Moth mullein (Verbascum blattaria) B
Musk thistle (Carduus nutans) B
Oxeye daisy (Chrysanthemum leucanthemum) B
Perennial pepperweed (Lepidium latifolium) B
Plumeless thistle (Carduus acanthoides) B
Quackgrass (Elytrigia repens) B
Russian knapweed (Acroptilon repens) B
Russian-olive (Elaeagnus angustifolia) B

Colorado List B Species (continued)
Salt cedar (Tamarix chinensis, T. parviflora, and T. ramosissima) B
Scentless chamomile (Matricaria perforata) B
Scotch thistle (Onopordum acanthium, O. tauricum) B
Spotted knapweed (Centaurea maculosa) B
Spurred anoda (Anoda cristata) B
Sulfur cinquefoil (Potentilla recta) B
Venice mallow (Hibiscus trionum) B
Wild caraway (Carum carvi) B
Yellow nutsedge (Cyperus esculentus) B
Yellow toadflax (Linaria vulgaris) B

Colorado List C Species
Bulbous bluegrass (Poa bulbosa) C
Chicory (Cichorium intybus) C
Common burdock (Arctium minus) C
Common mullein (Verbascum thapsus) C
Common St. Johnswort (Hypericum perforatum) C
Downy brome (Bromus tectorum) C
Field bindweed (Convolvulus arvensis) C
Halogeton (Halogeton glomeratus) C
Johnsongrass (Sorghum halepense) C
Perennial sowthistle (Sonchus arvensis) C
Poison hemlock (Conium maculatum) C
Puncturevine (Tribulus terrestris) C
Redstem filaree (Erodium cicutarium) C
Velvetleaf (Abutilon theophrasti) C
Wild proso millet (Panicum miliaceum) C

Colorado Watch List
Asian mustard (Brassica tournefortii) W
Baby's breath (Gypsophila paniculata) W
Bathurst burr, Spiny cocklebur (Xanthium spinosum) W
Common bugloss (Anchusa officinalis) W
Common reed (Phragmites australis) W
Flowering rush (Butomus umbellatus) W
Hairy willow-herb (Epilobium hirsutum) W
Himalayan blackberry (Rubus armeniacus) W
Japanese bloodgrass/cogongrass(Imperata cylindrica) W
Meadow hawkweed (Hieracium caespitosum) W
Onionweed (Asphodelus fistulosus) W
Pampas grass (Cortideria jubata) W
Scotch broom (Cytisus scoparius) W
Sericea lespedeza (Lespedeza cuneata) W
Swainsonpea (Sphaerophysa salsula) W
Syrian beancaper (Zygophyllum fabago) W
Water hyacinth (Eichhornia crassipes) W
Water lettuce (Pistia stratiotes) W
White bryony (Bryonia alba) W
Woolly distaff thistle (Carthamus lanatus) W
Yellow flag iris (Iris pseudacorus) W

Watershed Condition (Criteria 1)	Risk Rating	Criteria Guidelines
	High (3)	Weighted average of Roads Indicator score is greater than 2.33
	Med. (2)	Weighted average of Roads Indicator score is greater than 1.66 and less than or equal to 2.33
	Low (1)	Weighted average of Roads Indicator score is less than or equal to 1.66
	Each road should be rated based on the weighted average of the Roads Indicator score for the watersheds that the road passes through, based on the proportion of road length within each watershed.	

Refer to Rational for Criteria next page.

Water Resources (Criteria 2)	Risk Rating	Criteria Guidelines
	High (3)	Average of Sub-Criteria A and Sub-Criteria B is greater than 2.33. Example: Both Sub-Criteria rate High (3 and 3) or one Sub-Criteria rates High and one rates Medium (3 and 2)
	Med. (2)	Average of Sub-Criteria A and Sub-Criteria B is greater than 1.66 and less than or equal to 2.33. Example: Both Sub-Criteria rate Med (2 and 2) or one Sub-Criteria rates High and one rates Low (3 and 1)
	Low (1)	Average of Sub-Criteria A and Sub-Criteria B is less than or equal to 1.66. Example: Both Sub-Criteria rate Low (1 and 1) or one Sub-Criteria rates Med and one rates Low (2 and 1)
	Each road should be rated based on the average of scores for the following sub-criteria: **Sub-Criteria A: Proximity to Water** High (3) – >35 % of road within 100 feet of a perennial stream course Mod (2) – 20-35% of road within 100 feet of a perennial stream course Low (1) – <20% of road within 100 feet of a perennial stream course **Sub-Criteria B: Stream Crossings** High (3) – >5 stream crossing (perennial and intermittent) Mod (2) – 1-5 stream crossing (perennial and intermittent) Low (1) – No stream crossings (perennial and intermittent)	

Refer to Rational for Criteria next page.

Rational for Criteria – Watershed Condition, Watershed Resources, and Soils

Criteria used to estimate risk to soil and water resources for the minimum roads analysis included:

- Watershed Condition Class Road Indicator
- Road Proximity to Stream Channels
- Stream Crossings
- Road Adjacent Terrain Slope
- Road Gradient

The RO provided direction to include results of the Watershed Condition Classification (WCC) in the analysis. The Roads Indicator is one of the indicators in the WCC, and ties watershed condition directly to road impacts. Road proximity and stream crossings are good predictors of the direct impacts of roads on streams and riparian areas, and estimate risk that road drainage and sediment will be deposited directly into streams. Road adjacent terrain slope and road gradient are predictors of the risks that roads pose to soil erosion. While other factors certainly influence roads-watershed interactions (e.g. road condition, road drainage, and surfacing, site specific soils), the selected criteria lend themselves to GIS analysis, which is appropriate for large scale assessments.

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. Proximity to stream channels and number of stream crossings will be the primary data utilized in the ratings. Soil erosion/runoff/geologic hazards (mass wasting) will also be considered. Class breaks are guidelines, ratings will be adjusted based on knowledge of specific roads. In addition, we will be considering information collected by the field crews to assist with our ratings.

Criteria 1: Watershed Condition Classification (WCC) Roads Indicator - Each road should be rated based on the weighted average of the Roads Indicator score for the watersheds that the road passes through, based on the proportion of road length within each watershed.

High (3) – Weighted average of Roads Indicator score is greater than 2.33
Mod (2) – Weighted average of Roads Indicator score is greater than 1.66 and less than or equal to 2.33
Low (1) – Weighted average of Roads Indicator score is less than or equal to 1.66

Criteria 2: Water - Each road should be rated based on the average of scores for the following sub-criteria. Ratings should be reviewed by District water and soils professionals and adjusted upward or downward based on professional judgment or local knowledge regarding road condition or other mitigating or exacerbating factors.

Sub-Criteria A: Proximity to Water

High (3) – >35 % of road within 100 feet of a perennial stream course
Mod (2) – 20-35% of road within 100 feet of a perennial stream course
Low (1) – <20% of road within 100 feet of a perennial stream course

Sub-Criteria B: Stream Crossings

High (3) – >5 stream crossing (perennial and intermittent)
Mod (2) – 1-5 stream crossing (perennial and intermittent)
Low (1) – No stream crossings (perennial and intermittent)

	Risk Rating	Criteria Guidelines
Soils (Criteria 3)	High (3)	Average of Sub-Criteria C and Sub-Criteria D is greater than 2.33. Example: Both Sub-Criteria rate High (3 and 3) or one Sub-Criteria rates High and one rates Medium (3 and 2)
	Med. (2)	Average of Sub-Criteria C and Sub-Criteria D is greater than 1.66 and less than or equal to 2.33. Example: Both Sub-Criteria rate Med (2 and 2) or one Sub-Criteria rates High and one rates Low (3 and 1)
	Low (1)	Average of Sub-Criteria C and Sub-Criteria D is less than or equal to 1.66. Example: Both Sub-Criteria rate Low (1 and 1) or one Sub-Criteria rates Med and one rates Low (2 and 1)
	Each road should be rated based on the average of scores for the following sub-criteria: **Sub-Criteria C: Road-adjacent Terrain Slope** High (3) – Greatest proportion of road on slopes greater than 40%. Mod (2) – Greatest proportion of road on slopes from 20 to 40%. Low (1) – Greatest proportion of road on slopes lower than 20 %. **Sub-Criteria D: Road Gradient** High (3) – Greater than 25% of road length has slope greater than 6% Mod (2) – 10-25% of road length has slope greater than 6% Low (1) – Less than 10% of road length has slope greater than 6%	

Rational for Criteria – Watershed Condition, Watershed Resources, and Soils

Refer to above for Rational for Criteria – Watershed Condition, Watershed Resources, and Soils

Criteria 3: Soil - Each road should be rated based on the average of scores for the following sub-criteria. Ratings should be reviewed by District water and soils professionals and adjusted upward or downward based on professional judgment or local knowledge regarding road condition or other mitigating or exacerbating factors.

Sub-Criteria C: Road-adjacent Terrain Slope

For GIS exercise, hill slopes directly adjacent to road should be analyzed. Buffer roads layer to 300 feet (on both sides) to account for hill-slope run-on (up-slope from road) and run-off (downslope from road). Derive a slope polygon layer using the slope breaks described below (0-20%-low risk, 20-40%-moderate risk, and 40% high risk). Intersect the buffered road layer with the slope layer to calculate miles and percentages of each road by risk.

High (3) – Greatest proportion of road on slopes greater than 40%.
Mod (2) – Greatest proportion of road on slopes from 20 to 40%.
Low (1) – Greatest proportion of road on slopes lower than 20 %.

Sub-Criteria D: Road Gradient

Road Gradient should be calculated for 100 meter segments.

High (3) – Greater than 25% of road length has slope greater than 6%
Mod (2) – 10-25% of road length has slope greater than 6%
Low (1) – Less than 10% of road length has slope greater than 6%

	Risk Rating	Criteria Guidelines
Fisheries	High (3)	Road is rated High if one or more of the following apply: • The road segment contains a fish passage barrier to adult fish as based on survey data or local knowledge. Percent of flow passable to adult fish is less than 100% (Fish Xing computation in ARP Culvert geodatabase). • The road crosses a perennial stream channel more than twice OR more than a third of the road occurs within 100 ft. of a perennial stream.
	Med. (2)	Road is rated Medium if one or more of the following apply: • The road segment contains a fish passage barrier to juvenile fish as based on survey data or local knowledge. Percent of flow passable to juvenile fish is less than 100% (Fish Xing computation in ARP Culvert geodatabase). • The road crosses a perennial stream channel once or twice OR at least a third of the road occurs within 100 ft. of a perennial stream.
	Low (1)	Road is rated Low for all other roads including those if one or more of the following apply: • The road segment does not contain a fish passage barrier. If road crossings occur within segment, percent of flows passable to adult and juvenile fish is 100% (Fish Xing computation in ARP Culvert geodatabase). • The road does not cross any perennial stream channel OR less a tenth of the road occurs within 100 ft. of a perennial stream.

Rational for Criteria – Fisheries

Fish and other aquatic species live within linear habitat networks, akin to road networks. When road networks bisect stream networks, fragmentation of the linear habitat network occurs and often habitat conditions become degraded. Stream habitat fragmentation ranks among the leading causes of habitat degradation for mobile aquatic species that use multiple areas of the linear habitat network (e.g., spawning areas, juvenile rearing areas, and adult habitat) to complete their life cycle. Data from the forest-wide fish passage assessment will serve as the primary source for evaluation. The presence of fish passage barriers and the life cycles impeded by the barriers will be used to place road segments into High, Moderate, or Low risk categories. Road-stream and road-riparian interactions also have a strong influence on the quality of fish habitat in a stream due as a result of reducing stream length, reducing pool depths, and reducing the amount of shading and wood inputs provided by riparian forests. The degree to which roads intersect and interact with fish habitat will be based on GIS calculations of numbers of stream intersections on and proximity to perennial, fish-bearing streams. Class breaks are guidelines, ratings will be adjusted based on knowledge of specific roads. In addition, biologists will consider information available in files and data collected by field crews.

The above criteria in the table above were based on:

(1) To what degree does the Road Segment fragment aquatic habitat?
(2) To what degree does the road interact hydrologically with fish habitat?

	Risk Rating	Criteria Guidelines
Wildlife	High (3)	If any of the following apply: • Geographical Area road density > 2 mi/mi sq. • Road segment intersects a Lynx Linkage Area • Road segment ≤ 300 feet from Preble's Meadow Jumping Mouse Habitat • Road is in Management Area 3.5, 3.55, 1.42, or 1.41 with a polygon road density > 2 mi/mi sq. • Road segment ≤ 500 feet from interior forest on each side of segment • Road segment is in mapped Effective Habitat • Road segment within ¼ mile of known Raptor Nest • Road segment is ≤ ½ mile from Reproduction Area (Calving, Kidding, Lambing) • Road segment intersects with mapped or identified Migration Corridor or Wildlife Crossing
	Med. (2)	If any of the following apply: • Geographical Area road density between 1.1 and 1.9 mi/mi sq. • Road is in Management Area 3.5, 3.55, 1.42, or 1.41 with a polygon road density between 1.1 and 1.9 mi/mi sq. • Road segment ≤ 500 feet from interior forest on one side of segment • Road segment > ¼ - ½ mile of known Raptor Nest • Road segment is > ½ mile from Reproduction Area (Calving, Kidding, Lambing)
	Low (1)	All other roads, including if any of the following apply: • Geographical Area road density between < 1 mi/mi sq. • Road segment is not within a Lynx Linkage Area • Road segment > 300 feet from Preble's Meadow Jumping Mouse Habitat • Road is in Management Area 3.5, 3.55, 1.42, or 1.41 with a polygon road density < 1 mi/mi sq. • Road segment > 500 feet from interior forest • Road segment is not mapped in Effective Habitat • Road segment > ½ mile of known Raptor Nest • Road segment is > 1 mile from Reproduction Area (Calving, Kidding, Lambing, etc.) • Road segment does not intersect with mapped or identified migration corridor or wildlife crossing
	If only a portion of the road bisects one of the above, it will be assumed the whole road bisects one of the above for the purpose of this exercise. At the time of project level NEPA, the road should be further broken out if a recommendation could potentially affect its existing status.	

Refer to Rational for Criteria next page.

Rational for Criteria – Wildlife

Wildlife Risk Criteria were developed considering current literature, peer reviewed recommendations and accepted practices, species life history requirements, and Forest Plan direction. Below is a summary of sources consulted; expanded documentation is available.

- **General:** *Applicable terrestrial wildlife direction not listed elsewhere in this document*
- **Road Density Literature**
- **Threatened & Endangered Species**
  - Refer to Southern Rockies Lynx Amendment (2008)
  - Refer to DRAFT Preble's Meadow Jumping Mouse Recovery Plan
  - Refer to Recovery Plan for Mexican Spotted Owl (1995)
- **Forest Plan Direction:** Goals 44, 45, 94; ST 97
- **Management Area 3.5: (Forested Flora & Fauna Habitats)** ST 2-5
- **Management Area 3.55 (Connecting Corridors):** ST 1-4
- **Management Area 1.41 Core Habitats – Existing:** ST 1-2, GL 3-4
- **Management Area 1.42 Core Habitats** – **Restoration:** ST 1-4, GL 5-6
- **Known Raptor Nests:** ST 101. Also, Colorado Parks & Wildlife Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors
- **Interior Forest:** GO 39, GL 40-41
- **Habitat Effectiveness:** GO 95, 116; GL 107- 109, 120
- **Production Areas and Migration:** ST 50-51, 96, 101-102: GL 103, 106

Ratings should be reviewed by District wildlife professionals and adjusted upward or downward based on professional judgment or local knowledge regarding road condition or other mitigating or exacerbating factors.

Cultural Resources	Risk Rating	Criteria Guidelines
	High (3)	Roads that intersect or contain an NRHP eligible unevaluated cultural resource that may be adversely affected by travel (including erosion). This Includes roads that are 50 years old or older that have engineered features such as bridges, stone culverts or stone retaining walls and have not been recorded or evaluated.
	Med. (2)	Roads where there is a presence of any National Register of Historic Places (NRHP) eligible or "needs data" cultural resources that may be affected by looting/ vandalism/ erosion located within ¼ mile of the road. Areas with high cultural resource potential located within ¼ mile of the road.
	Low (1)	Roads with no potentially NRHP eligible cultural resources located within ¼ mile of the road.
	NULL	Roads with unknown potentially NRHP eligible cultural resources located within ¼ mile of the road.

Rational for Criteria – Cultural Resources

The Forest Service has a responsibility to protect significant cultural resources. Cultural resources may be prehistoric or historic archeological sites (Indian campsites, mining or homestead sites, etc.), historic architectural sites (cabins, bridges or roads, etc.) or sacred or traditional use sites (a sacred peak or area where plant resources are collected, etc.). Roads allow the public to access these resources. Public access is a benefit because it allows people to enjoy and experience diversity in history and in cultures. Public access may be a problem if it allows or encourages access to sensitive sites or allows easy access to vandals or theft of artifacts. Roads may also present a risk to archaeological resources if the road is causing erosion to sites that bisect or are near the road bed. Road maintenance may also pose a risk to archeological sites, and if the road itself is a significant site maintenance or replacement of historic elements may cause damage to a cultural resource.

Refer also to Rational for Criteria – Recreation.

	Benefit Rating	Criteria Guidelines
Engineering	High (3)	If any of the following apply: • On a County Schedule A • Roads that access Forest Service Facilities that are ranked high on the Facilities Master Plan
	Med. (2)	
	Low (1)	
	NULL	All roads that don't fit into the definition of "High Benefit"

Rational for Criteria – Engineering

Roads do not provide a benefit to engineering, instead roads are typically a benefit to other resources such as recreation, fire management, vegetation management, access to other interests such as range, minerals, communication sites, etc. Most criteria that would be considered a benefit, such as arterial/collector designation, access to high recreational use sites, higher maintenance levels, etc. are included in other resource criteria and are not repeated here. However, there are two considerations not included elsewhere that makes roads a high benefit:

- Roads on a Schedule A agreement with the counties
- Roads that access Forest Service Facilities that are ranked high on the ARP Facilities Master Plan.

Because roads will either be on a re-occurring Schedule A agreement or not, and because the Facilities Master Plan has only facilities ranked as "high" or "low", all other roads will be given a "not applicable" designation and not included in the average benefit score.

Due to limited funding at the time of this study for annual road maintenance, an annual road maintenance plan and costs were not available to determine those roads that constitute a lower or higher maintained cost per mile. Therefore, maintenance costs were not included in the above criteria.

Lands and Minerals	Benefit Rating	Criteria Guidelines
	High (3)	If any of the following apply: • The road use is authorized under a special use permit • The ARP has a SU application on file that hasn't been processed • The road use provides reasonable access to an in-holding and should be authorized • The ARP has a current Plans of Operations (POO) for the road • A road is being used by a claimant without a POO or without any approval
	Med. (2)	If any of the following apply: • The use of the road would affect or be affected by a Land Adjustment project. • Roads likely to be applied for given the nature of the claim.
	Low (1)	If any of the following apply: • The road was illegally constructed
	NULL	All roads that don't fit into the definitions of High, Medium, or Low Benefit.
	Districts to review ratings for final determination. All Lands and Minerals results are automatically given a "NULL" rating as the information is not currently recorded in GIS and/or Infra. District Lands resources are responsible for providing rating information.	

Note: At this level of analysis, lands did not consider alternative existing roads or new access roads, only ones currently used or likely to be applied for.

Refer to Rational for Criteria next page.

Rational for Criteria – Lands and Minerals

Basic Questions to ask during the screening process for eliminating, abandoning or otherwise closing roads and trails.

Because both the Lands and Minerals Programs are 'reactive' to the needs of the public, the program doesn't have an inherent interest in seeing roads either left open or closed. Our clients dictate to the agency whether a road is needed or if access is required to be provided by a law or statute. The program cannot make a determination on any given road per se – we can only react to a road with regards to a client's needs.

LANDS and SPECIAL USES

- **Inholdings**: the agency is required to allow access under ANICLA (Alaska National Interest Lands Conservation Act) to all 'inholdings' (lands within Forest Service boundaries), if the land owner requests it and all other options are exhausted. The agency determines 'reasonable' access. Therefore, we do have some control over the extent of the use or the adequacy of the access. The agency cannot force an adjacent 'inholding' landowner to offer access across their private property in lieu of NFS lands.
- **FLPMA (Individual) and FRTA** (**County)** Roads Easement are property rights and cannot be taken back without the permission of the holder. Permits can be taken back but only if the agency finds a 'higher need'. The agency can choose not to renew a permit at the end of its term.
- Rights granted prior to FLPMA (Federal Land Policy and Management Act) and National Forest Designation: The Forest has a large number of users who were granted rights of use and occupation prior to the designation of the National Forest –Department of Interior (DOI) easements for reservoirs, diversions, other impoundments, power lines, pipelines, as well as the designations made under U-11 authority. It is assumed that these rights were granted allowing for access to the facilities. There is very little in writing and the access is almost never accounted for in the paperwork.

MINERALS

- The 1872 Mining Laws allow for prospecting, exploration and extraction/production of minerals on all NFS lands not withdrawn from entry. The BLM has administration over mining claims and does not inform the USFS when a claim has been filed; therefore the USFS may never know that a claimant is utilizing a road until we try to shut it down. In addition, the 'pre-claimant' has a right to explore-for minerals prior to filing a claim. Before shutting a road down, a records search with the BLM needs to be done to screen for claimants and to determine if access would be denied.
- If claimants wish to use mechanized equipment on their claims, they should be submitting Plans of Operations (POO) to the USFS to review and determine whether we need to do NEPA or not – However it is up to the claimant to determine whether they need a POO or not. If the claimant decides that they don't – the USFS may never know about the claim or the disturbance.

OIL/GAS

- A lease allows a holder access to the surface above the lease to drill for fluid minerals, unless our Management Plan has an NSO (No Surface Occupancy) attached to that surface. The NSO doesn't allow for any surface occupancy and the lease is sold with that condition. The holder can, however, require access and drill pads on a non-NSO parcel to directionally drill to the reservoir below the NSO parcel to access the minerals. All newly constructed roads will either be authorized under the APD (Application for Permit to Drill) or under a Special Use Permit – depending on the land ownership, lease ownership or other factors. In nearly all cases, stipulations attached to the authorization allow for full rehabilitation of the road after it's no longer needed.

The ARPNG does not have sale-able minerals at this time.

	Benefit Rating	Criteria Guidelines
Scenery	High (3)	If any of the following apply: • Roads with special designations (e.g. Scenic Byways, the Bird Tour, etc.) • Primary roads/M.L. 3, 4, or 5 that travel through Management Areas whose management is directly associated with scenery (e.g. M.A. 4.2 and 4.4) • Primary roads/ M.L. 3, 4, or 5 roads that pass through or pass within 0.5 miles of an area with a designated SIO of Very High or High
	Med. (2)	If any of the following apply: • Secondary roads/M.L. 2 that travel through Management Areas whose management is directly associated with scenery (e.g. M.A. 4.2 and 4.4) • Secondary roads/M.L. 2 that pass through or pass within 0.5 miles of an area with a designated SIO of Very High or High". • Primary roads/M.L. 3, 4, or 5 roads that pass through or pass within 0.5 miles of an area with a designated SIO of Moderate
	Low (1)	All other roads, including if any of the following apply: • Secondary roads/M.L. 2 that are completely within areas with a designated SIO of Very Low or Low
	A road that travels through more than one SIO (Scenic Integrity Objective) will be given the rating of the highest SIO Benefit Ratings should be reviewed and confirmed by District personnel familiar with the land base to confirm the GIS-derived ratings. Benefit Ratings can be adjusted up or down based on local knowledge. This review process may be particularly pertinent to ML2 roads that are assigned a GIS-derived Benefit Rating of 1 or 2. These may be roads that provide a scenic experience for the people in the cars, but do not detract from the scenery of the surrounding landscape as viewed from elsewhere in the area (e.g. trails, recreation sites, etc.)	

Rational for Criteria – Scenery

For the purposes of this analysis, roads were considered to be a potential benefit to the forest visitors' experience of the Scenery resource. Forest system roads that are most heavily travelled which pass through areas of the forest which are specifically managed to give preferentiality to the scenery resource receive the highest Benefit Rating. Conversely, roads that are travelled by lower numbers of visitors and that pass through areas whose management direction does not necessarily promote the scenery resource receive the lowest Benefit Ratings.

	Benefit Rating	Criteria Guidelines
Recreation	High (3)	If any of the following apply: • All ML 3-5 roads • ML 2 roads that satisfy the following: - Provides direct access to a developed recreation site or is part of a Christmas tree cutting area. - Designated on the MVUM as a road open to all motor vehicles AND is part of an established Named OHV road/trail riding system. - Listed as an authorized travel route in a recreation special use permit.
		• A road that is considered a cultural resource that is potentially eligible or eligible for the NRHP. Roads that are potentially used by Native American Tribes to access sites or resources of traditional cultural value. Roads that are potentially used by the public to access high public value cultural resource sites
	Med. (2)	ML 2 roads when any of the following apply: • Provides direct access to designated dispersed campsites. • Designated on the MVUM as open to highway legal vehicles only but does not access any developed recreation site.
	Low (1)	All other roads including the following: • Designated on the MVUM as a road open to all motor vehicles but is not part of an established Named OHV road/trail riding system. • Provides access to dispersed day-use and camping sites only or not at all. • ML 1 roads

Rational for Criteria – Recreation

A road was given a High (3) benefit rating if it exhibited one or more of the following attributes:

- All ML 3-5 roads are High Priority. Any local deviations from this assumption should be documented as to why a particular ML3-5 road is not a high priority from a recreational access/use perspective.
- A road that is considered a cultural resource that is potentially eligible or eligible for the NRHP. Roads that are potentially used by Native American Tribes to access sites or resources of traditional cultural value. Roads that are potentially used by the public to access high public value cultural resource sites. The criteria was the only Cultural Resources benefit and was moved to a Recreation Benefit for simplification.
- ML 2 roads should be High Priority if any of the following conditions apply:
  - It provides direct access to a developed recreation site (campground, trailhead, picnic area, interpretive site, boat launch, lookout/cabin rental, recreation residence, etc.) or is part of a Christmas tree cutting area. A 100 foot buffer search via GIS will flag these roads and connection roads will be subjective
  - It is designated on the Motor Vehicle Use Map (MVUM) as a road open to all motor vehicles and is part of an established OHV road/trail riding system (as designated by a map separate from the MVUM and with the road/trail riding system having a unique name).
  - It is listed as an authorized travel route in a recreation special use permit. Spur roads that serve rec residences should consider a driveway permit. There may be some unauthorized or undetermined routes that access rec residences and should be considered to be added to the system as an NFSR with admin access or put under permit.

ML 2 roads not considered a High Priority should be considered a Moderate Priority (2) or a Low Priority (1) based on the criteria in the table above. Assume all ML 1 roads are Low Priority. Any local deviations from this assumption should be documented as to why a particular ML 1 road is not a low priority from a recreational access/use perspective.

	Benefit Rating	Criteria Guidelines
Forest / Veg Management	High (3)	If any of the following apply: • Roads that provide treatment unit access to areas that are receiving or planned to receive vegetation management treatments, regardless of the purpose i.e. timber production, fuel reduction, or forest health. • Roads that provide treatment unit access to vegetation management project areas that may require stand maintenance or follow-up treatments such as planting, timber stand improvement activities, pile burning, or restoration. • Roads that provide access to Suitable and Available timber lands. – These are roads to areas where timber harvest is planned and scheduled in the Forest Plan and in areas that would not violate any statute, Executive Order, or regulation. Also, lands that have not been withdrawn from timber harvest availability by the Secretary or the Chief. – Lands where technology is available to harvest timber that would not cause irreversible resource damage or permanent loss of productivity. – Lands that can be adequately stocked within 5 years after harvest.
	Med. (2)	If any of the following apply: • Roads that provide access to Tentatively Suitable - Unavailable timber lands.
	Low (1)	All other roads including the following: • Roads that provide access to unsuited timber lands. • Roads that are not needed or scheduled for vegetation management projects based on resource concerns, feasibility, or other constraints.

Rational for Criteria – Forest / Vegetation Management

This criteria is needed to ensure long-term access to suitable lands for timber management, even under changing forest conditions such as fire, wind damage or insect epidemic. Suitable land designation is not affected by the immediate availability of live timber. It is based on the management emphasis and political approval to harvest at the current time, the technical ability to harvest, and the ability to re-grow trees. If the suitability changes as a result of a change in any of the above criteria, then the need for a road could change.

Forest management rating criteria were developed to address roads needed for access to current vegetation management project areas, areas that will be treated in the next 5 years, and areas that have already been treated but may need maintenance in order to support Forest Plan goals and objectives. Timber Suitability was also considered in determining the rating for a given road.

Important Considerations
Any route that is not an NFSR (Ways or other routes) will automatically be recommended for decommissioning unless the district specifically needs to keep a road network as part of the system. Therefore, any way routes that are needed for vegetation management should be identified and proposed for NFSR status at the appropriate maintenance level.

	Benefit Rating	Criteria Guidelines
Emergency Access	High (3)	If any of the following apply: • Any road greater than 3 miles • Arterials and collectors • Roads greater than 1 mile that run on ridgelines or drainages (50% of road or more) • Roads greater than 1 mile that are adjacent to private property (within ¼ mile) • As determined by District Fire Management: - Provides primary access to large areas. - Topographic situation favorable for fire control operations. - Provides means for substantive logistical support
	Med. (2)	If any of the following apply: • Roads between 1 and 3 miles that do not meet "high" • As determined by District Fire Management: - Extends access from primary routes but to smaller areas - May have favorable topographic situation - Suitable for logistical support or primary travel route
	Low (1)	All other roads including the following: • Any road less than 1 mile • Provides only limited access to small areas • Not suitable for substantive logistical support • Provides little benefit as a fire control

Rational for Criteria – Emergency Access

A road was given a High (3) benefit rating if it exhibited one or more of the following attributes:

- Primary Forest roads in good condition, longer than 3 miles, passable by common emergency (fire) vehicles.
- Includes arterials. An arterial is a NFS road that provides service to large land areas and usually connects with other arterial roads or public highways.
- Includes collectors. A collector is a NFS road that serves smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities. Provides service to smaller land areas than an arterial road. It usually connects forest arterial roads to local forest roads or terminal facilities.
- Roads close or adjacent to private property – defined as all ML roads greater than 1 mile long within ¼ mile of private land
- Include roads that provide primary access to large areas, are located in areas with topographic situation favorable for fire control operations, and provide means for substantive logistical support (support rating with explanation).

A road was given a Medium (2) benefit rating if it exhibited one or more of the following attributes:

- Secondary Forest roads in good condition, between 1 and 3 miles, passable by common emergency (fire) vehicles.
- Include roads that extend access from primary routes but to smaller areas, are located in areas with favorable topographic situation , and are suitable for logistical support or primary travel route (support rating with explanation).

A road was given a Low (1) benefit rating if it exhibited one or more of the following attributes:

- Short, dead-end spur roads (less than one mile) and roads that typically exist as "4WD only" or not drivable by typical emergency vehicles. A local NFS road is one that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use.
- Provides only limited access to small areas, not suitable for substantive logistical support, or provides little benefit as a fire control feature (midslope or poor topographic situation)

	Benefit Rating	Criteria Guidelines
Range	High (3)	Active Allotments
	Med. (2)	Vacant Allotments
	Low (1)	Closed Allotments
	NULL	All roads that do not have an Allotment status

Rational for Criteria – Range

Livestock grazing permit holders are required to maintain range improvements (e.g. fences and water developments), use proper salting practices to help distribute livestock, and ride/check cattle on at least a weekly basis per the terms and conditions of their term grazing permit. Access by roads helps facilitate this work, and in some cases is the only or best way to get supplies into areas otherwise inaccessible to permittees.

Rangeland Management Unit (RMU)_ (Allotments) - Depicts the gross grazing management area (allotment) boundaries, range general resource area boundaries.

RMU_SubUnit (Pastures) - Depicts grazing implementation monitoring area boundaries within each Pasture.

Cross reference this data with INFRA Billings to determine Active, Vacant, and Closed allotments and prioritize road closures or other actions associated with transportation. Active allotments would be the highest priority, vacant allotments would be a medium priority and closed allotments would be a lower priority.

In addition to the above, unauthorized/undetermined routes that were being used by grazing permittees as part of their permit, were given a "high" benefit rating.

Criteria and Rankings Used in the Risk and Benefit Analysis (continued)

The same risk and benefit categories were used for all roads, regardless of maintenance level. This was done for simplicity and consistency.

All resources were weighted equally (scores averaged) except for Botany ,Weeds, and Cultural Resources as explained further below. Table 4 summarizes the risk weightings. The benefit weightings were averaged for equal weighting. As mentioned above, a "NULL" score was not averaged.

Table 4: Road Risks Weighting

Weight	Risks
8.3%	Botany
8.3%	Weeds
16.7%	Watershed Condition
16.7%	Water Resources
16.7%	Soils
16.7%	Fisheries
16.7%	Wildlife
0%	Cultural Resources
100%	**TOTAL**

Rare Plants and Weeds (Risk)

Overall, in the absence of additional surveys, the botany resources are of low risk. It was recommended that for the purposes of risk assessment, that botany resources receive a lesser weighting (half) relative to other resource concerns. This is with the caveat that individual areas containing rare plants or fens, if found, could be addressed for conservation if desired on a case by case or project basis. In addition, the presence of rare plants would likely not affect or change a recommendation of a road, just mitigated to avoid the impacts.

Likewise, the presence of weeds would likely not affect or change a recommendation of a road, just mitigated to avoid the impacts. Therefore, the weighting of weeds is also half relative to the other resource concerns.

Cultural Resources

Heritage information was captured for this process. Because Heritage would not recommend the closing of specific roads, the weighting factor was set to zero.

This risk and benefit analysis used for this TAP was based on GIS layers and Infra data available at the time this analysis was conducted. A matrix was created displaying each road and each risk and benefit category and is presented in the Analysis Results Table in Appendix A. Once a numerical value was assigned to each matrix category, a weighted average was calculated for each road that is represented by the overall "Risk Rating" and overall "Benefit Rating". The following is a breakdown of the overall rating.

High - Those rankings with a value of 2.33+ or greater

Medium - Those rankings between 1.670 and 2.330

Low – Those rankings with a value of 1.67- or less

These categories were calculated mathematically and did not consider the severity of the impact beyond the guidelines listed above.

After the initial matrix was produced, it was given to the District for input. If a score was changed for a resource, it was recorded in the "Comments" column to note additional information about the road.

Results of the Risk and Benefit Analysis

Appendix A contains the Risk/Benefit Analysis matrices (the Analysis Results Table), which lists the risks and benefit ratings associated with each road in the Cherokee Park Fuels Project Area.

Refer to Step 5 below for the summarized results of the Risk and Benefit Analysis.

STEP 5: DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

Purpose

The purpose of this step is to:

- Describe opportunities for roads
- List recommendations for roads
- Describe future actions

Opportunities for Roads

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 or emergency access. 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 non-motorized 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 no legal access. This is not the same as decommissioning because the roads may continue to be used by the private landowner.

Add to System

Opportunities may exist to add some roads to the system. In some situations it may be beneficial to add an unauthorized route that may have minimal potential risks but significant benefits in conjunction with removing other high risks/low or medium benefit roads.

Mitigation

Opportunities may exist to prioritize the high and medium benefit roads that require mitigation owing to their high potential risks. Mitigation may include moving roadways out of stream beds, installing drainage features including aquatic organism passages, or installing erosion control measures. The benefits of expending maintenance funds to do this should be compared with the potential economic and social costs of keeping the road open or temporarily closing it until funding is available to mitigate the risks.

Recommendations for Roads

General recommended actions for roads that fall within each of the risk/benefit categories are described below. These are general considerations and are not necessarily applicable to all roads that fall within each category.

		Benefit*		
		High	**Medium**	**Low**
Risk	**High**	Maintain & Mitigate	Convert, Close, or Decommission, or Maintain & Mitigate	Close or Decommission
	Medium	Maintain & Mitigate	Maintain & Mitigate or Convert, Close or Decommission	Close or Decommission
	Low	Maintain	Maintain	Convert, Close or Decommission

*Exceptions:

- If all benefit resources ranked a road low (all scores were a "1"), the road was automatically recommended for decommissioning.
- If Lands ranked a road as high (3), it was automatically recommended for "maintain" for risks rated as low and "maintain and mitigate" for risks rated as medium or high.

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.

High Risk/Medium Benefit – Convert/Close/ Decommission or Maintain/Mitigate

High Risk/Medium Benefit roads should be considered for closure to motorized use, decommissioned, or converted to another use due to their high risk. If they are to be maintained due to their moderate benefit, they should be given a high priority for mitigation of resource impacts.

High Risk/Low Benefit – Close/ 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.

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.

Medium Risk/Medium Benefit – Mitigate/Maintain or Convert/Close/ Decommission

Medium Risk/Medium Benefit roads could be considered for maintenance and mitigation or be considered for conversion, closure, or decommissioning and will depend on the level of benefit versus risk in the overall project area.

Medium Risk/Low Benefit – Close/ Decommission

Medium Risk/Low Benefit roads should be considered for closure to motorized use (change maintenance level to 1) or decommissioning.

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 or mitigation, but should be maintained adequately to avoid deterioration.

Low Risk/Medium Benefit – Maintain

Low Risk/Medium Benefit roads should be retained in light of their importance to the public and/or forest management and their relatively low resource risk. Because the risks are low, they are not a priority for maintenance, but should be maintained adequately to avoid deterioration.

Low Risk/Low Benefit – Convert/Close/ Decommission

Low Risk/Low Benefit roads should be evaluated for converting to other uses, closing to motorized use (change maintenance level to 1), or decommissioning. Since the risks are low, they are not a priority for these activities.

The above nine categories do not address Changing Jurisdiction, Removing from System, or Adding to System as recommendations for the following reasons:

- **Adding to System** would apply to unauthorized routes that the District wishes to add to the System and would be selected as a recommendation for these types of individual situations.
- **Changing Jurisdiction** and **Removing from System** would require a more in depth analysis of ownership and maintenance of the road. If the District recognized opportunities to change the road jurisdiction or system, it was individually added as a recommendation.

Since every road was given a numerical value for both risk and benefit, priorities for action should consider the value these scores.

Recommendations for Roads based on the risk/benefit pair categories are summarized in Table 5 (and Table 1 in the Executive Summary).

Table 5: Recommendations to Roads within the Cherokee Park Fuels Project Area

Recommendations	Number of Miles*	FS Miles**	Number of Roads
Maintain and/or mitigate Current Forest System Routes	40.8	28.4	10
Maintain and/or mitigate current Forest System Routes, or consider decommission	8.9	4.0	3
TOTAL	**49.7**	**32.5**	**13**
Convert Undetermined Route to System Route with Admin. Only Access	10.0		15
Decommission Undetermined Route	22.2		49
TOTAL	**32.3**		**64**

* Mileages presented are *total road lengths* (irrespective of jurisdiction or System). Typically, jurisdiction is not reported in Infra for Unauthorized/undetermined routes.

** Mileages presented are Forest Service jurisdiction as recorded in Infra at the time of this analysis

A recommendation for an unauthorized route of something other than close or decommission does not automatically imply it should be added to the National Forest System. These routes typically have minimal resource risk, but also typically have minimal resource benefit. All unauthorized routes are recommended for decommissioning unless specifically needed for specific permittee access.

It is recommended that all way routes and other unauthorized routes on Forest Service lands not included in the analysis be automatically considered for decommissioning. Recommendations are for the Forest Service portion of the road only.

Future Actions

The recommendations for roads, as presented in the Cherokee Park Fuels Project Area Analysis Results Table in Appendix A, are recommendations only. As stated previously, site specific NEPA analyses that include public involvement and additional evaluation by the Forest or District Resources may carry forward for implementation, reject, or change the recommendations in this report, and provide the basis for making specific road related decisions.

Travel Analysis Report

Cherokee Park Fuels Project

Version 1.0

Date: April 28, 2014

Prepared by:	*/s/ Michele White* Michele White, Transportation Engineer	04/28/2014 Date
Reviewed by:	*/s/ Kevin W. Atchley* Ranger, District Ranger	04/28/2014 Date

Revisions

Document Version	Name	Date

APPENDIX A: CHEROKEE PARK FUELS PROJECT ANALYSIS RESULTS TABLE BY ROAD NUMBER

Route	Route Number	Road Name	EMP / Length	FS length	ML	Botany	Noxious Weeds	Watershed Condition	Water Resources	Soils	Fisheries	Wildlife	Cultural Res.	Risk Score	Risk Rating	Eng.	Lands	Scenery	Rec.	Veg Mgt	Emerg.Access	Range	Benefit Score	Benefit Rating	Recommendation
139010399	138.0	TURKEY ROOST	3.8	1.6	2	3	1	1	2	2	3	3	NULL	2.17	Medium	NULL	NULL	1	1	2	3	NULL	1.75	Medium	Convert, Close, or Decom., or Maintain & Mitigate
249010399	182.0	PRATT CREEK	11.1	10.6	3	1	2	1	2	2	3	2	2	1.92	Medium	NULL	3	3	3	3	3	3	3.00	High	Maintain & Mitigate
5580010399	182.A		1.9	1.9	2	1	3	1	2	1	2	3	NULL	1.83	Medium	NULL	NULL	1	3	3	3	1	2.20	Medium	Convert, Close, or Decom., or Maintain & Mitigate
251010399	184.0	MILL CREEK	7.0	3.0	2	1	1	2	2	2	3	2	NULL	2.00	Medium	NULL	NULL	1	1	3	3	3	2.20	Medium	Convert, Close, or Decom., or Maintain & Mitigate
714010399	184.A	MILL CREEK SPUR	0.7	0.7	2	1	1	2	2	3	3	3	NULL	2.33	High	NULL	3	1	1	1	1	3	1.67	Low	Maintain & Mitigate
391010399	304.0	KELSEY LAKE SPUR	2.5	1.0	2	1	1	1	1	2	1	2	NULL	1.33	Low	NULL	NULL	1	1	2	3	3	2.00	Medium	Maintain
392010399	308.0	BULL ROCK	5.1	4.1	2	1	1	2	3	2	3	3	NULL	2.33	High	NULL	3	1	1	3	3	3	2.33	High	Maintain & Mitigate
797010399	308.A	N. BULL ROCK	1.2	0.9	2	1	1	2	1	2	3	2	NULL	1.83	Medium	NULL	3	1	1	3	3	NULL	2.20	Medium	Maintain & Mitigate
394010399	310.0	KELSEY LAKE	3.0	2.1	2	1	1	1	2	1	2	2	NULL	1.50	Low	NULL	NULL	1	1	2	3	3	2.00	Medium	Maintain
399010399	316.0	DIAMOND PEAK	3.3	1.9	2	1	1	1	1	2	3	3	2	1.83	Medium	NULL	3	1	1	3	3	NULL	2.20	Medium	Maintain & Mitigate
3186010399	316.A		1.1	0.4	2	1	1	1	2	2	3	2	NULL	1.83	Medium	NULL	NULL	1	1	3	3	NULL	2.00	Medium	Convert, Close, or Decom., or Maintain & Mitigate
411010399	334.0	DEVILS GULCH	5.0	2.2	2	1	1	2	3	3	3	3	1	2.50	High	NULL	3	1	1	3	3	3	2.33	High	Maintain & Mitigate
1337010399	539.0		4.1	2.0	2	1	1	2	2	3	3	2	NULL	2.17	Medium	NULL	NULL	1	1	3	3	NULL	2.00	Medium	Convert, Close, or Decom., or Maintain & Mitigate
Total			**49.7**	**32.5**			**ML2**	**38.6**																	
Total minus 138.0, 316.A, 539.0			**40.8**	**28.4**			**ML3**	**11.1**																	
138.0, 316.A, 539.0			**8.9**	**4.0**																					
EX UND Routes																									
4000010399	10W184.0		0.5			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	3	NULL	1.50	Low	Convert, Close or Decomission
5529010399	10W184.1		1.0			1	1	1	2	1	2	3	NULL	1.67	Low	NULL	NULL	1	1	1	2	3	1.60	Low	Convert, Close or Decomission

Route	Route Number	Road Name	EMP / Length	FS length	ML	Botany	Noxious Weeds	Watershed Condition	Water Resources	Soils	Fisheries	Wildlife	Cultural Res.	Risk Score	Risk Rating	Eng.	Lands	Scenery	Rec.	Veg Mgt	Emerg.Access	Range	Benefit Score	Benefit Rating	Recommendation
4002010399	10W316.0		0.1			1	1	1	1	1	1	2	2	1.17	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
4001010399	11W334.0		0.2			1	1	2	3	3	2	3	NULL	2.33	High	NULL	NULL	1	1	1	1	3	1.40	Low	Close or Decomission
3997010399	12W308.0		0.1			1	1	2	1	1	1	3	NULL	1.50	Low	NULL	NULL	1	1	1	1	3	1.40	Low	Convert, Close or Decomission
786010399	12W334.0		3.1			1	1	2	2	2	3	3	2	2.17	Medium	NULL	NULL	1	1	2	3	NULL	1.75	Medium	Convert, Close, or Decom., or Maintain & Mitigate
1412010399	1W184.0		0.2			1	1	2	3	3	2	2	NULL	2.17	Medium	NULL	NULL	1	1	3	1	NULL	1.50	Low	Close or Decomission
1322010399	1W184.1		0.3			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
1462010399	1W304.0		0.1			1	1	2	1	1	1	3	NULL	1.50	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1309010399	1W308.0		0.4			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	3	1	NULL	1.50	Low	Close or Decomission
1465010399	1W310.0		0.2			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1457010399	1W316.0		0.2			1	1	1	1	2	1	3	NULL	1.50	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
5087010399	1W539.0		0.8			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission
4989010399	24W182.0		1.0			1	1	1	3	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	3	3	3	2.20	Medium	Convert, Close, or Decom., or Maintain & Mitigate
5086010399	2W138.0		1.0			1	1	2	2	3	2	3	NULL	2.17	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission
5102010399	2W184.0		0.2			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission
1321010399	2W184.1		0.4			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
1332010399	2W304.0		0.2			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
5080010399	2W308.0		1.4			1	1	2	2	2	3	3	NULL	2.17	Medium	NULL	NULL	1	1	3	3	3	2.20	Medium	Convert, Close, or Decom., or Maintain & Mitigate
1464010399	2W310.0		0.2			1	1	1	1	1	1	3	NULL	1.33	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1452010399	2W316.0		1.4			1	1	1	1	1	1	3	2	1.33	Low	NULL	NULL	1	1	2	3	NULL	1.75	Medium	Maintain
1459010399	2W316.1		0.3			1	1	1	1	2	1	3	1	1.50	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission

Route	Route Number	Road Name	EMP / Length	FS length	ML	Botany	Noxious Weeds	Watershed Condition	Water Resources	Soils	Fisheries	Wildlife	Cultural Res.	Risk Score	Risk Rating	Eng.	Lands	Scenery	Rec.	Veg Mgt	Emerg.Access	Range	Benefit Score	Benefit Rating	Recommendation
1335010399	2W539.0		0.7			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission
1403010399	3W184.0		0.2			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission
1319010399	3W184.1		0.2			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
1461010399	3W304.0		0.1			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission
5078010399	3W308.0		0.4			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
5113010399	3W316.0		0.0			1	1	1	1	1	1	3	NULL	1.33	Low	NULL	NULL	1	1	2	3	NULL	1.75	Medium	Maintain
4195010399	3W318.1		0.1			1	1	1	1	1	1	3	1	1.33	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
1440010399	3W334.0		0.6			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	3	1	1	1	1	3	1.67	Low	Maintain & Mitigate
3994010399	4W138.0		0.2			1	1	2	2	3	2	3	NULL	2.17	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission
5397010399	4W184.0		0.3			1	1	1	1	2	1	3	NULL	1.50	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission
5082010399	4W184.1		0.5			1	1	2	1	2	2	3	NULL	1.83	Medium	NULL	NULL	1	1	3	1	NULL	1.50	Low	Close or Decomission
1460010399	4W304.0		0.4			1	1	2	2	2	3	3	NULL	2.17	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission
1300010399	4W308.0		0.1			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
5116010399	4W310.0		1.1			1	1	1	1	1	1	3	NULL	1.33	Low	NULL	NULL	1	1	2	3	3	2.00	Medium	Maintain
1449010399	4W316.0		0.6			1	1	1	1	2	1	3	3	1.50	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
1421010399	5W184.0		0.3			1	1	2	1	1	1	3	NULL	1.50	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission
5085010399	5W304.0		0.4			1	1	2	1	1	1	3	NULL	1.50	Low	NULL	NULL	1	1	3	1	3	1.80	Medium	Maintain
1311010399	5W308.0		0.3			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
5115010399	5W310.0		0.5			1	1	1	2	1	2	3	NULL	1.67	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1448010399	5W316.0		0.5			1	1	1	2	2	2	3	2	1.83	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission

Route	Route Number	Road Name	EMP / Length	FS length	ML	Botany	Noxious Weeds	Watershed Condition	Water Resources	Soils	Fisheries	Wildlife	Cultural Res.	Risk Score	Risk Rating	Eng.	Lands	Scenery	Rec.	Veg Mgt	Emerg.Access	Range	Benefit Score	Benefit Rating	Recommendation
1444010399	5W334.0		1.0			1	1	1	2	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	2	3	3	2.00	Medium	Maintain
1315010399	6W184.0		0.3			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
5665010399	6W308.0		1.4			1	1	2	1	1	1	3	NULL	1.50	Low	NULL	NULL	1	1	1	1	3	1.40	Low	Convert, Close or Decomission
3998010399	6W310.0		1.5			1	1	1	2	2	2	3	NULL	1.83	Medium	NULL	NULL	1	1	2	3	3	2.00	Medium	Convert, Close, or Decom., or Maintain & Mitigate
1427010399	6W316.0		0.5			1	1	1	2	2	2	3	NULL	1.83	Medium	NULL	NULL	1	1	2	1	NULL	1.25	Low	Close or Decomission
1455010399	7W184.0		0.6			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission
4840010399	7W304.0		0.3			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission
1369010399	7W314.0		0.1			1	1	1	1	1	1	3	1	1.33	Low	NULL	NULL	1	1	3	1	3	1.80	Medium	Maintain
1425010399	7W316.0		0.6			1	1	1	1	1	1	3	NULL	1.33	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
1400010399	7W334.0		0.2			1	1	1	1	1	1	3	NULL	1.33	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1454010399	8W184.0		1.2			1	1	1	2	2	3	3	NULL	2.00	Medium	NULL	NULL	1	1	3	3	NULL	2.00	Medium	Convert, Close, or Decom., or Maintain & Mitigate
1324010399	8W184.1		0.4			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
3188010399	8W304.0		0.8			1	1	2	2	2	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission
3999010399	8W310.0		0.2			1	1	1	1	2	1	3	NULL	1.50	Low	NULL	NULL	1	1	2	1	3	1.60	Low	Convert, Close or Decomission
1423010399	8W316.0		0.2			1	1	1	1	2	1	3	3	1.50	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
5382010399	8W334.0		0.2			1	1	1	2	3	1	3	NULL	1.83	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission
3185010399	9W184.0		0.2			1	1	2	1	3	1	3	NULL	1.83	Medium	NULL	NULL	1	1	3	1	NULL	1.50	Low	Close or Decomission
3123010399	9W308.0		0.4			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	1	NULL	1.00	Low	Decomission
1422010399	9W316.0		0.5			1	1	1	1	1	1	3	2	1.33	Low	NULL	NULL	1	1	2	1	NULL	1.25	Low	Convert, Close or Decomission
3119010399	9W334.0		0.1			1	1	1	2	3	2	3	NULL	2.00	Medium	NULL	NULL	1	1	2	1	3	1.60	Low	Close or Decomission

Route	Route Number	Road Name	EMP / Length	FS length	ML	Botany	Noxious Weeds	Watershed Condition	Water Resources	Soils	Fisheries	Wildlife	Cultural Res.	Risk Score	Risk Rating	Eng.	Lands	Scenery	Rec.	Veg Mgt	Emerg.Access	Range	Benefit Score	Benefit Rating	Recommendation
1463010399	W304.0		0.1			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	1	1	3	1.40	Low	Convert, Close or Decomission
3995010399	W539.0		0.6			1	1	2	1	2	1	3	NULL	1.67	Low	NULL	NULL	1	1	3	1	NULL	1.50	Low	Convert, Close or Decomission

Total	**32.3**
Convert	**10.0**
Decomission	**22.2**

Overall Risk and Benefit Assessment Ratings

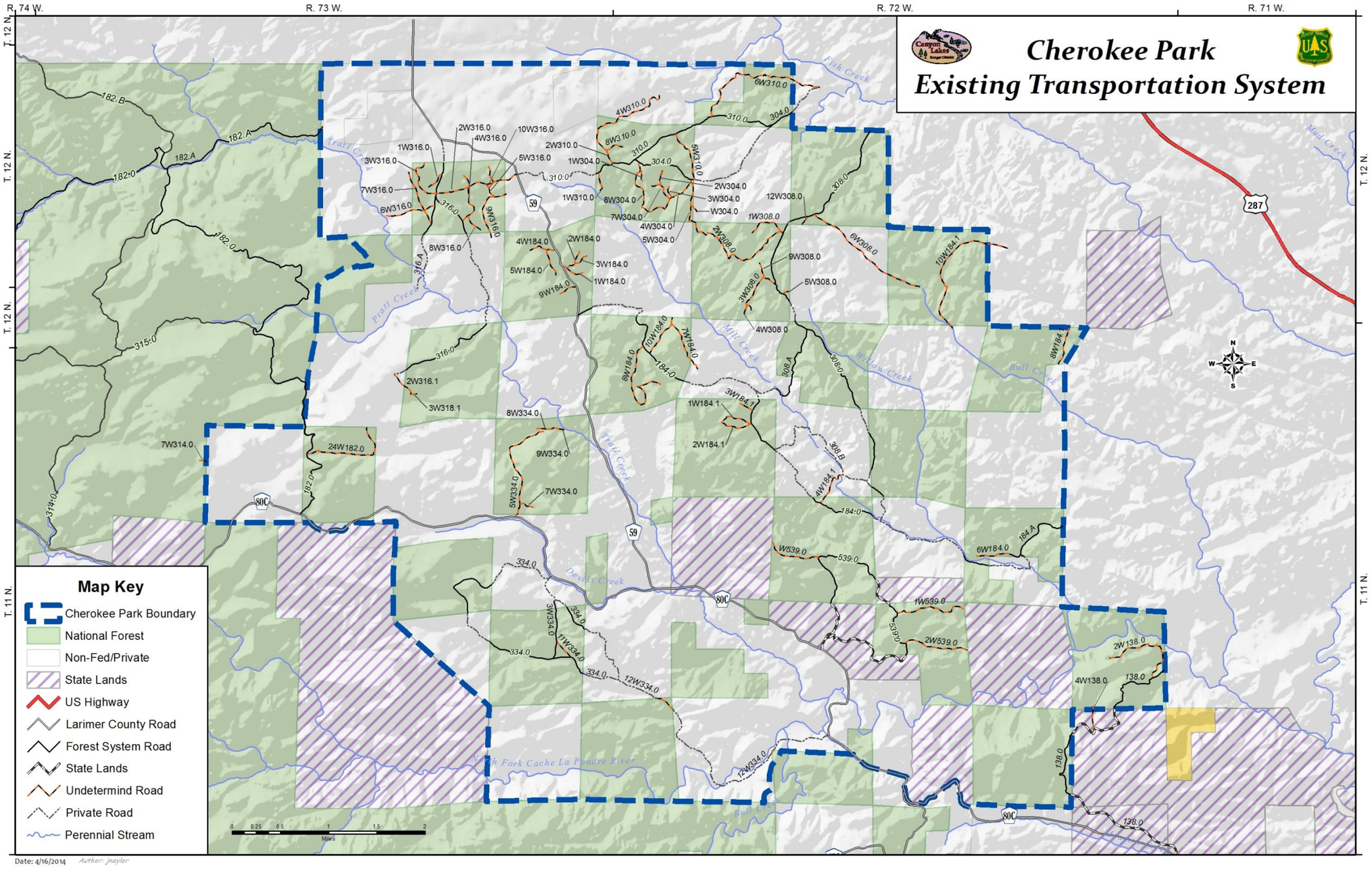
High - Those rankings with a value of 2.33+ or greater
Medium - Those rankings between 1.670 and 2.330
Low – Those rankings with a value of 1.67- or less

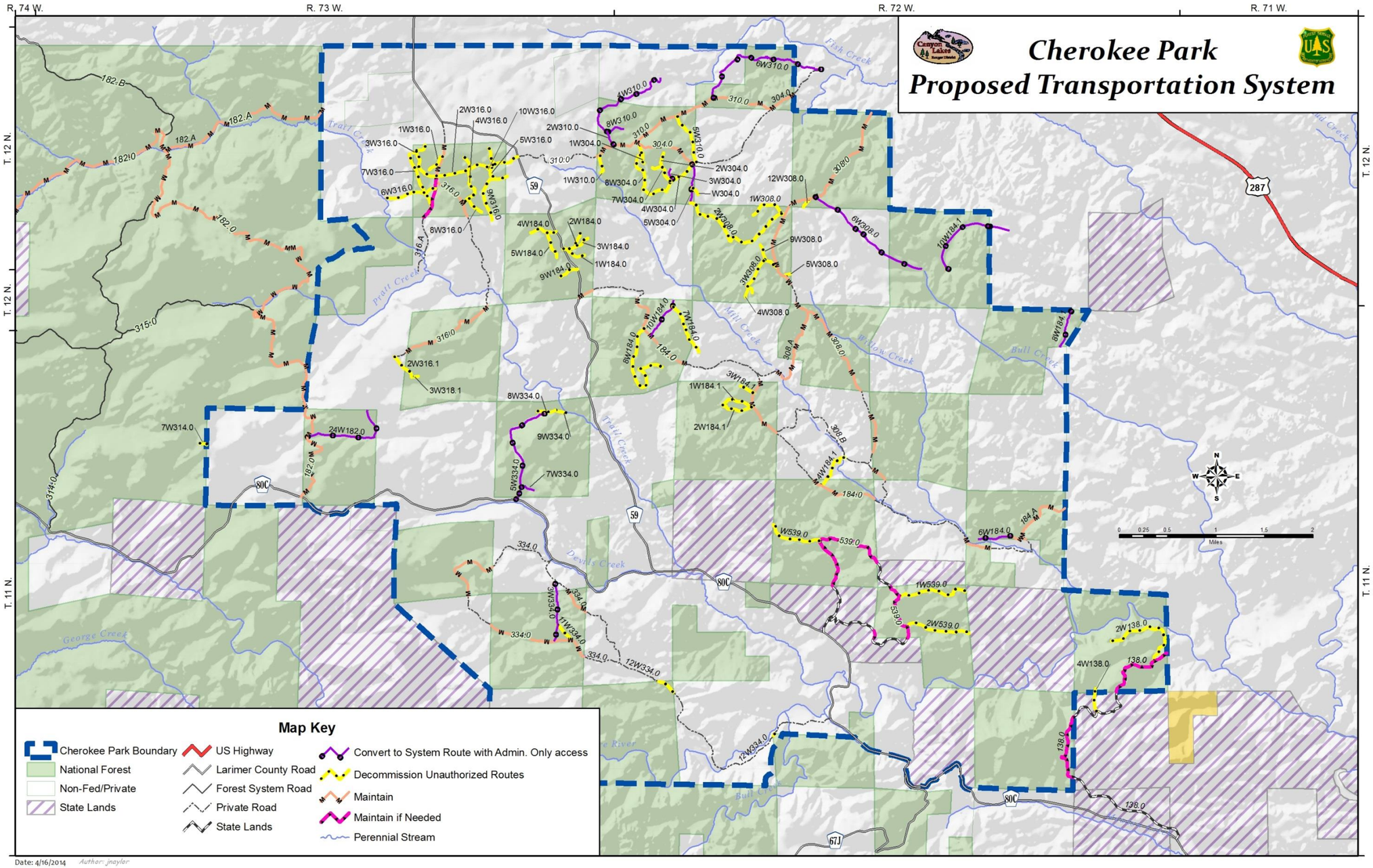
Notes regarding the Cherokee Park Fuels Project Analysis Results Table

Tabular and GIS data

The modeling results for this table were produced on May 4, 2013. Although the best information at the time of this study, it is approximate and may have changed. Refer to “Existing Road System Databases” in Step 2 above regarding limitations of data.

APPENDIX B: CHEROKEE PARK FUELS PROJECT ROAD SYSTEM MAPS




Cherokee Park
Proposed Transportation System
R. 74 W.
R. 73 W.
R. 72 W.
R. 71 W.
T. 12 N.
T. 11 N.
Trail Creek
Pratt Creek
Fish Creek
Mill Creek
Willow Creek
Bull Creek
Devils Creek
George Creek
Map Key
Cherokee Park Boundary
National Forest
Non-Fed/Private
State Lands
US Highway
Larimer County Road
Forest System Road
Private Road
State Lands
Convert to System Route with Admin. Only access
Decommission Unauthorized Routes
Maintain
Maintain if Needed
Perennial Stream
Miles
Date: 4/16/2014
Author: jnaylor