

Roads Analysis Report



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Roads Analysis Report

Modoc National Forest Forest Scale Analysis

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Executive Summary

The purpose of this Forest-scale roads analysis is to identify the “backbone” road system necessary to meet public and resource needs on the Modoc National Forest (MDF). This Forest-scale analysis is limited to roads which are suitable for use by passenger cars and which provide access to large land areas across the Forest or to significant recreational destinations such as campgrounds, picnic sites, and trailheads. The team analyzed the environmental risks and benefits of each of these roads and developed priorities and recommendations for changes to the road system.

This report documents the analysis process and provides the following products:

- ❖ A summary of the risks and benefits associated with each road
- ❖ A summary of recommendations with priorities and effects on resources
- ❖ An identification of Rights-of-Way (ROW) needs
- ❖ Maps showing existing roads, classified roads, and road recommendations and project priorities.

The roads analysis process is a series of increasingly finer focused, science-based analyses, beginning with Forest-scale analysis, then moving to watershed-scale analysis, and finally project-level analysis. These analyses are intended to focus and prioritize the more detailed levels of analyses planned for the future. Watershed- and project-scale roads analyses will tier to the Forest-scale roads analysis report, but will address all roads within the watershed or project area boundary. Like Forest-scale roads analysis, watershed-scale roads analyses are not decision documents but rather analysis documents identifying issues, problems, risks and opportunities. Project-level roads analyses are intended to be performed as an integral part of Environmental Assessments or Environmental Impact Statements leading to decision documents and will follow the requirements of the National Environmental Policy Act (NEPA) including full opportunities for public involvement.

Introduction to Roads Analysis

Background and Directives

In recent years, roads have become a focus of controversy on National Forest Lands. The estimated 380,000 miles of classified¹ Forest Service roads are diverse -- this road network facilitates the management of the national forests, provides access to diverse recreational opportunities, and contributes to the rural transportation infrastructure of surrounding private lands. At the same time, agency and public awareness of the maintenance costs and environmental risks associated with forest roads are increasing. As the agency's priority has shifted from an emphasis on commodity production to sustainable ecosystems, the current configuration of the road system may not meet the management objectives and public needs for forest roads.

An Interim Directive (*USDA Forest Service, 2001a*) issued by the Forest Service's National Headquarters, effective December 12, 2001, requires each Forest Supervisor to complete a Forest-level roads analysis by January 13, 2003. The directive also requires that an authorized science-based roads analysis process be used. The Modoc National Forest followed the process as outlined in Forest Service Publication *FS-643: Roads Analysis – Informing Decisions About Managing the National Forest Roads System*, dated August 1999 (*USDA Forest Service, 1999*).

¹ Classified roads are wholly or partially within or adjacent to NFS lands that are determined to be needed for long-term motor vehicle use, including state roads, privately owned roads, NFS roads, and other roads authorized by the Forest Service.

Step 1 – Setting up the Analysis

The purpose of Step 1 is to establish the level and type of decision-making that the analysis will inform: for example, projects, forest planning, plan implementation, or program of work.

Objectives of the Analysis

The objective of roads analysis is to provide decision-makers with critical information to manage road systems that are safe and responsive to public needs and desires, meet the agency's need for access to effectively manage National Forest System lands, are affordable and efficiently managed, have minimal negative environmental effects, and are in balance with available funding for road maintenance.

The scale of this analysis is Forest-wide, considering only those roads inventoried with an objective maintenance level (ML) of 3, 4 or 5. Maintenance level, the level to which a given road is intended to be maintained given sufficient funds, is defined in more detail in Step 2, as well as in Appendix D. During the course of the analysis, two maintenance level 2 roads, which for specific reasons were felt to warrant immediate attention, were brought in to the analysis. The balance of maintenance level 2 roads, along with level 1 roads and unclassified roads, will be included in roads analyses conducted at the watershed and/or project scale. Some of the roads included in the analysis are County-managed roads over which the Forest Service does not have jurisdiction. These roads were included because they are a part of the Forest's road system and there are opportunities for interagency projects to accomplish changes to these roads if necessary.

Although the *FS643: Roads Analysis* document includes a discussion of various issues regarding roadless areas, roadless area policy is still being debated at the national level and thus roadless issues were not considered during this analysis. All inventoried objective maintenance level 3, 4 or 5 roads were included in this analysis. None of these roads are located within identified roadless areas.

The roads analysis report is required to be completed by January 12, 2003.

Plan for the Analysis

After the interdisciplinary team was established in February 2002, a deadline of February 15, 2002 was set for the continuously updated corporate GIS road information to be "frozen in time" in order to permit meaningful and orderly roads analysis. The Forest Supervisor, as decision-maker, was involved in assigning the interdisciplinary team, as well as setting the scope and scale of the analysis. Arrangements were made with the Regional Office to provide the peer review of the roads analysis report prior to the January 12, 2003 due date.

Public Involvement

The Modoc began formal public involvement activities with the issuance of a March 26, 2002 press release, requesting comments containing public issues and concerns by May 28, 2002.

The public involvement strategy for this analysis was low-key and informative. This strategy was deemed appropriate because of recent intense public involvement in initiatives undertaken from 1998 to 2000. Over the past few years the Forest Service has worked extensively on three major road-related policy initiatives – the Road Policy, the Roadless Policy and new National Forest Management Act (NFMA) Planning Regulations. There has been a great deal of effort to coordinate the three policy initiatives. The Modoc National Forest sought comments on these national initiatives, along with one regional effort, the Sierra Nevada Framework (*USDA Forest Service 2001c*), which now amends the Forest Plan (*USDA Forest Service, 1991*). During outreach for those initiatives, the Forest held informational meetings and closely collaborated with County partners, permittees and other interested parties. Public comments from these initiatives specific to road management are well understood. The Communications Plan and Strategy for this analysis can be found in Appendix A.

List of Information Needs

The interdisciplinary team used the 71 questions found in *FS-643: Roads Analysis* to assist in the identification of existing information and data gaps (where current information is lacking). The team found that many of the 71 questions suggested by the *FS-643* document were not applicable to the Modoc National Forest at the forest scale of analysis, since they addressed situations that occur only sporadically, if at all, across the Forest. Most of these questions will be useful for subsequent, smaller-scale analyses, but they were not used to develop Forest-wide issues for this analysis. In addition, a number of questions triggered the identification of total or partial data gaps. In some instances, no information had been gathered about the specific topics presented by the question. In other cases, the cause-and-effect mechanisms are clearly understood but no recent inventory has taken place that would allow site-specific analysis or identification of issues.

The team identified many different existing data sources needed during the course of the analysis, including GIS coverages (data as of Spring 2002) for maintenance level 3/4/5 roads, streams, lakes, slopes, slope stability hazard, springs, vegetation, watershed boundaries, range allotment boundaries, threatened, endangered and sensitive plants and animals, and noxious weeds. Other useful information identified was INFRA (Infrastructure Database) roads data, State Water Quality Control Board's lists of beneficial uses of water (*State of California, 1994, 1998, 2001*), aquatic species maps, local demographic data, visitor demographic data, road maintenance costs and funding data, right-of-way atlas, accident map, IMPLAN (economic analysis model) data, and on-the-ground knowledge of Forest employees.

Complete or partial data gaps were identified for the following topics, relative to the Modoc's maintenance level 3/4/5 road system: airborne dust emissions; passive use value; Native American cultural/traditional uses; effects of shading, litterfall, riparian vegetation; surface erosion; hydrologic connectivity; wetlands; ecology of roading unroaded areas; ecological disturbance regimes; archaeological sites; historic sites; legal/illegal activity; and unique or special ecologic features.

Step 2 – Describing the Situation

The purpose of the second step is to describe the existing road system in relation to Forest Plan direction, and to the geographic, biological, and social components of the affected environment.

The Affected Environment

Geography/Geology of the Area

The geology of the Modoc National Forest is strongly influenced by faulting, by volcanic activity and erosional activity. Tremendous volcanic activity has occurred here during the past 60 million years. Vast quantities of lava, mainly basalt and associated pyroclastic materials, flowed or were deposited over the landscape in almost continuous interbedded masses. Three major geomorphic provinces evolved from these activities across the Forest: The Cascade Range, The Great Basin, and The Modoc Plateau geomorphic provinces.

The Forest is characterized by several landforms consisting of northwest-to north-trending, block-faulted mountain ranges on the east and southwest areas of the Forest; broad basalt lava flow plateau throughout the center and most of the northern part; and the Medicine Lake Highlands, which is a shield volcano on the northwest edge of the Forest. Land areas of gentle slopes include lava plains that were formed by extensive basalt outflows; alluvial plains consisting of nearly level intermittent lake basins, sloping alluvial fans, and high alluvial terraces. Steeper areas include the dissected mountain ranges and the fault- or erosion-formed slopes. Numerous steep slopes drop from the Modoc plateau level to the Alturas area alluvial valley floor below, an elevation difference of about 600 feet (*USDA Forest Service & USDA Soil Conservation Service, c. 1994*).

The sensitivity of an area to mass wasting depends on the interaction of the soils and underlying bedrock, slope steepness, and the subsurface hydrology. Mass wasting is not a widespread concern on the Modoc National Forest, but it does occur in localized areas. According to the Forest Plan, eighty-five percent of the Modoc National Forest has a low risk of slope movement, because of gentle slopes (less than 30%), stable parent material (volcanic bedrock), and a preponderance of cohesive soils. The remaining fifteen percent has a high risk of slope movement. Significant areas that have a high risk of mass soil movement are located on the eastern slopes of the Warner Mountain Range, and in the Hayden Hill vicinity as well as on the Hoskins Springs road 40N12 (sometimes called the 5500' road) on the Big Valley Ranger District.

Biology of the Area

The Modoc National Forest is home to more than 350 species of wildlife that live in a wide variety of habitats. Each requires a particular combination of food, water, and shelter to exist. Some wildlife species occur in all vegetation types on the Forest, while others are very limited in their habitat needs. Each species plays a role in the balance, persistence, and evolution of the ecosystem of which it is a part.

Species of special interest and management needs are known as Management Indicator Species. Three categories of Management Indicator Species have been developed: Threatened and Endangered (T&E) species, sensitive species, and other Management Indicator Species.

T&E species are federally designated because low population levels and loss of habitat may eventually render them extinct. The Forest Service must manage habitat to achieve recovery levels of T&E species. The Forest is required to consult with US Fish & Wildlife Service whenever the Forest initiates any activity that may affect a federal T&E species. The Modoc National Forest's T&E wildlife species are: Bald Eagle, Northern Spotted Owl, Modoc Sucker, Shortnose Sucker, Lost River Sucker, Shasta Crayfish, Cowhead Lake Tui Chub (proposed), Yellow-billed Cuckoo (Candidate), and Oregon Spotted Frog (Candidate). No federally endangered plants are known or suspected to occur on the Modoc; however, one federally threatened plant, *Orcuttia tenuis* (Orcutt's slendergrass), is suspected to occur here.

The Forest Service lists as "sensitive" those species needing special management to prevent federal listing as T&E. There are 40 sensitive species (21 animal species, 19 plant species) that may affect management activities on the Modoc National Forest. Other Management Indicator Species include harvest species (game and fish), ecological indicator species, and special interest species. There are 21 species included in this category found on the Modoc NF.

Noxious weeds include species that have been inadvertently introduced and grow out of their natural habitat. Since they have little or no food value for wild or domestic animals, they can reduce site productivity of rangelands, farmland, and pastures. Many are allelopathic, that is, they can inhibit growth of other plants in their area of influence through a build-up of toxins in the soil. In the past, the Forest and counties have cooperated in treating noxious weeds. The Forest considers as noxious all weeds listed as such by the State of California, a list of over 150 plants. Fifteen of these species are known to occur on the Modoc NF, with the biggest concern to the Modoc being Mediterranean Sage, Dyer's Woad, Dalmatian Toadflax, Scotch Thistle, several varieties of Knapweeds, and Yellow Starthistle.

Social Attributes of the Area

Forest management activities can influence individuals and groups on a local, regional, and national basis. People living within the analysis area experience the effects of Forest Service policy and programs directly. Various groups participate in the planning process at the local, regional, or national level. These groups often have both local voices and affiliation with national organizations.

People in northeastern California are used to driving to their destinations because people and places are so far apart. Highways 299, 395 and 139 are important routes into and out of northeastern Lassen County and Modoc County.

Traveling east from Interstate 5 at Redding, California, State Highway 299 approaches the Modoc National Forest through Big Valley, passes over Adin Pass at an elevation of 5200 feet, through the Upper Pit River valley, then up to an elevation of about 6000 feet over Cedar Pass in the Warner Mountains to Surprise Valley and on to the Nevada border. Traveling north from Interstate 80 at Reno, Nevada, US Highway 395 moves onto the Modoc Plateau, across the Madeline Plains, and into the Upper Pit River valley, then proceeds along the east shore of Goose Lake to the Oregon border. State Highway 139 is an important cut-off route from Highway 299 to Klamath Falls,

Oregon – the closest large town. These highways are important to local citizens and tourists, in both summer and winter. Local citizens use these routes as a means to reach amenities not available in the small rural communities. As truck routes used for import and export of goods and services, these highways are essential to the economic well-being of the area. They also connect to the Forest and County roads that provide access to the National Forest as well as other places favored by tourists and local residents.

The County road system within the interior of the National Forest provides public access and is valued for travel to recreation sites, mining and livestock. These roads are gravel and most are safe for passenger cars when the road surface is dry. Most prominent of these County roads are: Crowder Flat through Devil's Garden, Fandango Pass from the west side of the Warner Mountains east to Fort Bidwell, Tionesta Road from Highway 139 to Medicine Lake, and the Jess Valley road from Likely to Blue Lake. Other County roads that are not maintained for passenger car travel include a spur road from the west side of the Warner Mountains east to Lake City. Many Forest Service roads are tributary to the County road system.

Many forest roads were constructed to permit access for fire suppression and to facilitate timber harvesting. These roads also provide access for resource protection and for commercial activities or public uses such as grazing, mining, and recreation outfitting and guiding. In addition, the system provides access for recreation activities such as hunting, fishing, skiing, bird watching, camping, hiking, and driving for pleasure. Roads provide access for local residents and tribes, as well as a "sense of place" connected with areas such as spiritual and cultural sites, scenic vistas, hunting camps, gathering locations and historic sites. Roads also provide access for traditional rural activities such as woodcutting and hunting. Changes in road management can disrupt the social and economic value of an area. Altering road systems can also disrupt long-established access and use patterns and, at least in the short run, result in not meeting visitor expectations. These concerns are best addressed at watershed and project level planning.

Cultural patterns are important characteristics of communities. "Culture" generally refers to ways of thought and life, and to the social identities people develop in certain communities. Social associations and organizations are an important part of community and cultural life in this area, particularly in the rural areas. Important formal and informal associations tie together people of diverse backgrounds, occupations, and cultures. Tribal governments, area businesses, schools, local government, the media and entertainment centers mix and mingle the area residents. Agricultural organizations, like the Farm Bureau, Agricultural suppliers, Cattlemen's Association, 4-H clubs, rodeos, etc. still influence much of the cultural life of the area. Other civic organizations like the Boy & Girl Scouts and the Elks Club contribute to area residents' sense of identity.

In the Analysis of the Management Situation for the 1991 Modoc Forest Plan, the population of the area was grouped into several social groups: ranching-farming, timber operators-wood products manufacturing, retail trade-services, retirees, government employees, non-local recreationists, and Native Americans.

The MDF Transportation System

This roads analysis considers the Modoc National Forest's backbone transportation system, which is comprised of the Forest's highest quality roads, along with Modoc, Lassen, and Siskiyou County roads that are within or provide public access to the Modoc National Forest. The roads included in

the analysis are shown as maintenance level 3/4/5 roads on the accompanying map titled Existing Roads. This map shows the location of all objective maintenance level 3/4/5 roads on the Modoc National Forest along with all other inventoried roads on the Forest. These roads provide seasonal (dry season) access to and within the Modoc National Forest. A second map titled Classified Roads shows all of the classified roads, including State and County Roads, on the Forest.

Forest Plan Direction

The Standards and Guidelines for the transportation system from the 1991 Modoc Forest Land and Resource Management Plan include:

1. Provide and manage a Forest transportation system to achieve resource management objectives while protecting resource values.
 - ❖ Plan, design, and construct local roads to the lowest standard commensurate with intended use.
 - ❖ Plan and construct arterial (connects highways to collector roads) and collector (connects arterial roads to local roads) roads to the standard appropriate for safe and economical use, and commensurate with the road development, and multiple resource management.
 - ❖ Maintain all Forest roads to their objective maintenance levels.
 - ❖ Provide for signing in accordance with road management objectives and Manual on Uniform Traffic Control Devices (MUTCD) (*Federal Highway Administration, 2001*) standards.
2. Cooperate with Federal, State, and County agencies, and private companies, to construct, reconstruct, and maintain roads under their jurisdictions, if needed. Review location and design specifications for roads built under permit or license, and require protection of all resources. Coordinate road management and closures with local agencies.
3. Manage and maintain the transportation system to protect soil, water, and all other resource values. Close local roads as needed to meet these objectives. Develop road closure and off highway vehicle (OHV) plans.

The Development Histories of Roads on MDF

Few roads existed on the Modoc National Forest through the 1940s. Much of the current road system was constructed in the 1950s and 1960s as a part of the Timber Sale Program, which required a reliable transportation system.

During this period roads accessed all the capable, available, and suitable timber growing areas on the forest. Timber sale purchasers built roads through “purchaser credit” – they were credited with an amount of timber equal to the cost of constructing the roads. Many of the roads constructed were high standard with an aggregate surface (maintenance levels 3/4/5). The timber being sold at this time was high value, easily supporting the construction of a good all weather transportation system. In the 1970s, those roads most heavily used were surfaced with crushed rock or cinders.

Road Surface Types and Maintenance Levels

National Forest System roads are constructed and maintained to varying standards depending on the level of use and management objectives. These roads are classified into five “objective maintenance levels” (ML) used by the Forest Service to identify the intended use level and to determine the work needed to preserve the investment in the road. These maintenance levels are described in *Forest Service Handbook 7709.58-Transportation System Maintenance Handbook (USDA Forest Service, 1992)*. ML 1 are closed roads, ML 2 roads are maintained for high-clearance vehicles. ML 3/4/5 roads provide access for passenger car traffic and make up the backbone of the Forest transportation system. Table 2-3 shows the Modoc NF’s miles of road and associated maintenance costs for each maintenance level. As the name implies, objective maintenance level is the level to which the Forest would maintain the road, given sufficient funding. Since funding does not always allow roads to be maintained to their objective maintenance level, the Forest also tracks the “operating maintenance level”, the level to which the road has been maintained. Unless reserved by the Forest Supervisor, the District Ranger has authority to change the road maintenance levels (*USDA Forest Service, 2001a*).

Other roads have been identified within the Forest boundary and added to the Forest transportation inventory. There are approximately 700 miles of these unclassified² roads identified as of summer 2002. The majority of these roads have been created either by off-road vehicle traffic, by historic timber harvest activity, or to access private land. These roads are awaiting management decisions on whether or not to include them as part of the transportation system or to decommission them, either fully or partially.

There are approximately 3,250 total miles of classified roads on the Modoc National Forest. About 470 miles of these roads, most in maintenance levels 3/4/5, are within the Forest boundary but maintained by others (County, National Park Service, etc.). Of the roads under Forest Service jurisdiction, 712 miles are maintenance levels 3/4/5. The balance, about 2070 miles of maintenance level 1/2 roads, and roughly 700 miles of unclassified roads, will be analyzed later during watershed or project planning.

Federally Designated Forest Highways and Scenic Byways

The analysis area contains five Forest Highways designated under the Public Lands Highways program of the Transportation Equity Act for the 21st Century. These roads are forest roads, both outside and inside the Forest boundaries that are under the jurisdiction of Modoc County. They qualify for federal funding from the Federal Highway Administration for improvement or enhancement. These roads are depicted in Table 2-1:

² Unclassified roads are roads on NFS lands that are not managed as part of the Forest transportation system (unplanned roads, abandoned travelways, unauthorized roads, off-road vehicle tracks that have not been designated and managed as a trail, and those roads that were once under permit or other authorization and were not decommissioned upon termination of the authorization).

Table 2-1. Federally Designated Forest Highways.

Forest Hwy #	Route Name	Fed/State Hwy # Terminus	MDF Road # Terminus	County	Length (miles)
156	Crowder Flat	SH 299	47NO9	Modoc	30.8
157	Jess Valley	FH 395	40N46A	Modoc	14.1
227	Blue Lake	FH 157	38N30	Modoc	8.1
226	Tionesta	SH 139	44N75	Modoc - Siskiyou	23.2
228	Parker Creek	FH 395	42N05	Modoc	20.3

Forest Highway funding can be used for planning, design, and construction or reconstruction of these designated routes. Other authorized activities can include construction or maintenance of parking areas, interpretive signing, acquisitions of scenic easements or sites, sanitary and water facilities, and pedestrian and bicycle paths. Addition of Forest Service roads to the Public Lands Highways program is an opportunity to relieve some of the pressure on the Forest's road program funding.

The Modoc Volcanic Scenic Byway (Road number 44N75) crosses the Klamath, Modoc and Shasta-Trinity National Forests, from the Oregon border on the north, through the Lava Beds National Monument, to McCloud, CA on the south. No special sources of funding are available for Forest Service Scenic Byways.

Road Management Objectives

Road Management Objectives (RMO) describe various attributes of roads or road segments. Maintenance levels are one example of an RMO. There are several other RMO categories tracked in the INFRA database, including Traffic Service Level, Function Class, Service Life, Design Vehicle and others.

Road/Stream Interactions

According to the Forest Plan, there are 33 bridges and/or major culverts on maintenance level 3/4/5 roads on the Forest. Information regarding smaller culverts and other crossings on these roads is kept in hardcopy road logs, but was not used in this analysis.

Individual road-stream problems such as plugged culverts or washed out road fills are generally repaired on the ground as soon after they are identified as funding permits; therefore, there were no known site-specific road/stream problems to include in this analysis.

More commonly, however, road-stream interactions pose a concern of cumulative effects. For example, several small chronic erosion sites in a watershed can have a cumulatively significant effect at a downstream location. Similarly, insufficiently drained roadside ditches can function as an extension of the stream network by allowing concentrated flow to reach the stream channel, thereby functioning as a cumulative extension of the stream network. These kinds of issues do not reveal themselves in a "backbone" system analysis such as this where only a small portion of the total road system in the analysis area is being assessed.

Therefore, issues that require a cumulative consideration that goes beyond just the maintenance level 3/4/5 roads analyzed here, such as road density or road-stream connectivity, were not addressed during this analysis. These issues will be addressed during watershed- and project-scale analyses, where it will be essential that all roads within the assessment area be included.

Primary Destinations of Road System Users

The primary destinations of road system users on the Modoc National Forest are major recreational sites such as campgrounds and reservoirs, as well as various dispersed sites such as an individual's favorite fishing spot or woodcutting area. The road system is also used to access private land. Many vehicle trips into the Forest are without specific destination, with the travelers "just going for a drive". Additionally, a significant proportion of Forest traffic is comprised of on-duty Forest Service employees in the course of forest management activities. The destinations of these users vary greatly, and include timber stands, range allotments, recreation sites, etc. While road-use counts were performed in the 1970s, that data is not considered to be representative of current Forest road use and was not used in this analysis.

Road Use Patterns and Trends

The transportation system on the Modoc National Forest serves a variety of resource management and access needs, including timber harvest, livestock grazing, private land access, developed and dispersed recreation activities such as hunting, fishing, off-roading, snowmobiling, hiking, and camping, fuelwood collection, and monitoring of wildlife and other resources. Many of the roads on the Forest were originally built to permit access for fire suppression or for timber operations, and have been left open for future timber operations along with other resource activities.

Historically, traffic patterns tended to focus on the local roads within specific timber project areas, range allotment turnout/gathering locations, and the arterial and collector roads that connect those local roads to the county roads and highways. While range management activities occur each year during the grazing season, timber traffic focuses on one area for a few years and then reduces rapidly when the project is completed. Follow-up traffic related to silvicultural or fuels treatments would be considered resource management activities rather than a continuation of the timber sale traffic.

The long term trend of forest use is moving from commodity production to recreation and resource management (including fuels reduction, surveys, inventories, and ongoing activities such as management of recreation sites), the priorities for available road maintenance funds are shifting from user comfort and maintenance of travel speed to traffic safety and resource protection. If current funding levels continue, it is anticipated that little work will be done to maintain road surfaces for travel speed and user comfort. Most of the effort will be directed toward safety improvements (brushing/tree trimming for sight distance, signs, hazard tree removal, etc.), and resource protection activities (maintaining ditches, cleaning culverts, etc.). Over time, safe driving speeds will be reduced and roads will become rougher.

Compared to timber and range management traffic, both resource management traffic and recreation traffic would be expected to be considerably more dispersed spatially, with traffic concentrated on roads that access developed recreation sites such as trailheads, campgrounds, and reservoirs, and the balance of traffic spread across a wide area. Recreation traffic would tend to have its highest concentrations during summer weekends and holidays, whereas resource

management activities would be almost entirely limited to weekdays but would be fairly evenly spread throughout the spring (if snow or mud does not prohibit field access), summer and fall.

Road Construction and Improvements Funding

During the past 5 years there has been very little new road construction or road improvement projects on the Modoc National Forest. Since harvest levels have declined and purchaser credit for road construction has been eliminated, only a small amount of road construction and reconstruction has been included in timber sales in recent years.

Between 1990 and 2002, the Forest budget allocation for planning, construction, and maintenance of roads has averaged just over \$550,000 per year. In recent years, the Modoc National Forest has received increases in funding for road maintenance, as shown in Table 2-2. The Forest has also received funding through the “10% Fund” to surface some critical roads to reduce sediment to streams, and improve road surface conditions. Funding for new road construction or for road improvements has been on a project-by-project basis. The Forest competes for these funds against the other Forests in the region. However, the annual cost to maintain the entire road system to standard is considerably higher than the amount received, as indicated in Table 2-3.

Currently, future funding projections are not possible for new road construction or road improvement projects. Funding through partnerships such as the Modoc Resource Advisory Committee are possible sources of supplemental funds for road improvement projects.

Road Maintenance Funding

Road maintenance is accomplished on the Modoc National Forest by a combination of timber sale operators, contractors, and Forest Service and County road maintenance crews. The Forest Service crews and contracts are funded primarily by appropriated dollars and collection accounts. The collection accounts are made up largely of surface rock replacement (SRR) funds collected from commercial users of the road system. These commercial users are mostly timber sale operators (from both private lands as well as from Forest lands) who are responsible to maintain roads they use during timber harvest.

Timber sales typically have provisions for pre-haul, during-haul, and post-haul maintenance. The provisions may require activities such as brush removal, drainage cleaning, and surface blading. Additionally, timber sale operators are required to make any improvements needed to existing roads to accommodate their haul. As timber harvest levels have dropped over the past 10 years, road maintenance performed by timber sale operators has also dropped, along with SRR collections from timber sales. Appropriated funds for road maintenance decreased between 1990 and 1994, and then have returned to near 1990 levels since the low point in 1994.

The following table shows an estimate of the amount spent on actual road maintenance from appropriated funds and the amount spent each year from the SRR collections. Since the Forest is not required to maintain accounting data from previous years, much of this information is extrapolated from Regional data provided by the R-5 Public Use and Facilities Staff dated 12/2001 (*USDA Forest Service, 2001b*).

Table 2-2. Historical Road Maintenance Funding

Fiscal Year	Appropriated Funds available to project	Surface Replacement Collections	Total Road Maintenance in Nominal Year Dollars ³	Total Road Maintenance in 2002 Dollars
1990	\$735,000	No Record		
1991	\$680,000	No Record		
1992	\$607,000	No Record	\$607,000	\$739,279
1993	\$397,000	No Record	\$397,000	\$470,965
1994	\$258,000	\$47,091	\$305,019	\$354,192
1995	\$329,000	\$50,000	\$379,000	\$430,763
1996	\$332,000	\$194,602	\$526,602	\$586,793
1997	\$367,000	\$30,000	\$397,000	\$433,916
1998	\$460,000	\$40,000	\$500,000	\$538,830
1999	\$649,000	\$17,641	\$666,641	\$708,477
2000	\$586,000	\$2,912	\$588,912	\$614,040
2001	\$531,425	\$69,419	\$600,844	\$613,451
2002	\$580,328	\$133,090	\$713,418	\$698,757

Appropriated funds are expected to remain fairly constant. The surface replacement collections available will depend upon on biomass removal as well as commercial sawtimber harvest.

Identified Funding Needs for Road Construction and Improvements

From 1998 through 2000, the Forest conducted road condition surveys to determine the actual cost of maintaining the road system to standard. Work that has been deferred was also recorded to determine the cost of road maintenance work deferred in previous years due to lack of funding. Finally, road improvement work necessary to bring the roads up to the desired objective was identified and documented. The cost of the annual maintenance and the deferred maintenance backlog was calculated using nationwide average Forest Service costs. These average costs were developed for use on all National Forests for accuracy and national consistency. Costs for identified capital improvements were calculated using local costs.

Comparing the Modoc National Forest to other National Forests, road maintenance costs are generally lower due to terrain and climate conditions. The Modoc is relatively flat and the average annual rainfall is lower than most other Forests. Because of these characteristics, the road system on the Modoc has few drainage crossings (13 road bridges, 20 major culverts), and few drainage problems compared to other Forests. The Modoc also has relatively few problems with landslides, debris flows and mass wasting or geologic instability. Mobilization costs are low on the Modoc,

³ Nominal Year Dollars are dollars in the year the expense occurred.

relative to other Forests, because the Modoc is geographically compact with good highway access -- almost all of the Forest is within a 2-hour drive of the Supervisor's Office.

Based on the above factors it is estimated that the nationwide costs can be reduced by approximately 40% to more accurately reflect local costs for the Modoc NF.

Analysis of all the data reveals the Forest is substantially under-funded for the size of the road system it manages. Table 2-3 displays estimated costs for maintenance using the nation wide average costs and estimated local costs. Costs shown in the table for capital improvements reflect local costs.

Table 2-3. Summary of Funds Needed for Road Maintenance and Operations

Maintenance Level	Miles on Inventory	Identified Annual Maintenance		Identified Deferred Maintenance		Identified Capital Improvements
		Nation Wide Average Cost	Local Costs	Nation Wide Average Costs	Local Cost	
1 – Closed	133.3	\$12,815	\$7,689	\$76,588	\$45,952	\$0
2- High-Clearance Vehicles	1936.8	\$462,178	\$277,306	\$1,358,998	\$815,399	\$31,208,885
3- Passenger Cars	681	\$2,786,122	\$1,671,673	\$11,894,302	\$7,136,581	\$8,862,472
4- Improved Surface	12.8	\$433,549	\$260,129	\$558,661	\$335,196	\$4,900,122
5- Usually Paved	18.3	\$58,391	\$35,034	\$143,096	\$85,857	\$1,740,431
County maintained	330	N/A--MDF does not maintain		N/A--MDF does not maintain		N/A--MDF does not maintain
Forest Highway	96.5	N/A--MDF does not maintain		N/A--MDF does not maintain		N/A--MDF does not maintain
Other – DOD, NPS, private, state	44	N/A—MDF does not maintain		N/A—MDF does not maintain		N/A—MDF does not maintain
Totals	3252.7	\$3,753,055	\$2,251,831	\$14,031,645	\$8,418,987	\$43,124,096

Analysis of Current Funding Versus Needs

Current funding levels described above are realistic. An optimistic estimate of the funds available would be in the range of \$700,000 annually. This would include the work done by timber sale operators at a value of approximately \$75,000 per year.

With an estimated \$2,250,000 annual maintenance requirement and only \$700,000 in expected available funding, it is obvious much needed work will not be done in maintaining the road system. Consequently, at these funding levels, the road system will gradually deteriorate. The priorities for spending available funds are user safety and resource protection with surface maintenance for travel speed and user comfort lower in priority. At this funding level, the forest anticipates that very little work will be done to maintain the road surface for travel speed and user comfort.

During the last few years, there has been an increase in traffic related to silvicultural activities. The forest has been thinning approximately 4,000 to 5,000 acres a year and removing the cut stems. Most of this material is removed as chips and hauled to co-generation plants to produce electricity. This work has resulted in about 2000 chip-trucks of material removed annually. The chip trucks generally utilize existing roads. They are responsible for maintenance during haul in addition to making deposits for surface replacement.

Assumptions and Information Limitations in Step 2

- ❖ **It is assumed that the MDF will gather essential information before proceeding with finer-scale analyses.** The MDF doesn't have a complete inventory of its unclassified roads, or a complete inventory of culverts and other drainage structures in a spatial format such as GIS. While this information was not needed for the Forest level analysis, it will be important when watershed-and/or project-level roads analyses are started.
- ❖ **National average costs were assumed, with an estimation of how that would translate to local costs.** The MDF does not collect historical data on miles of road maintained, the cost of maintenance performed by timber sale operators, or actual Forest maintenance expenditures.
- ❖ **Generalized assumptions were made about current and future traffic patterns.** The MDF doesn't have actual data on road users' destinations or traffic patterns.
- ❖ **Information regarding future road obliteration needs, costs, and funding is not included in this analysis.** The MDF doesn't know what the upcoming program of work might be with regard to road obliteration, what costs might be incurred for those activities, or what funding might be made available for them.
- ❖ **Information regarding future biomass operations and associated potential for surface replacement funds is not included in this analysis.** Future surface replacement funds available from biomass operations are unknown.
- ❖ **Estimated road maintenance costs in this analysis do not include costs related to treatment or prevention of noxious weeds.** Noxious weeds tend to spread along roads, due to seed transport by vehicles. Related road maintenance costs, including not only direct treatment of weeds but also the establishment of wash stations and other preventative measures, are unknown.

Step 3 – Identifying the Issues

The purpose of the third step of roads analysis is to identify the most important road-related issues in the analysis area, determine the information needed to address these issues, and describe how the issues arose and how they have been dealt with in the past.

The interdisciplinary team generated a list of road-related issues from well-understood public issues and known management concerns.

Issues were separated into “Forest-scale” issues, appropriate to consider in this analysis, and “sub-Forest-scale” issues, which are most appropriately addressed in a watershed- or project- scale analysis. Forest-scale issues are those that occur on maintenance level 3/4/5 roads in many locations across the Forest. Concerns that focus on just a few locations or mainly on maintenance level 1/2 roads are considered sub-Forest-scale issues.

Forest-Scale Issues

Safety has been recognized as a concern for as long as roads have been constructed and maintained on the landscape. Some issues, such as adverse environmental effects or noxious weeds, may have existed for many years but have only recently been identified as a concern. Yet other issues, such as insufficient funding, right-of-way needs or concerns over public involvement, did not exist until recent years. These issues were dealt with as they arose in the past, using the Forest planning process and road maintenance procedures in place at the time.

Environmental Issues:

Roads may have an adverse effect on environmental resources.

Although roads have existed ever since the first settlements and trails appeared, it is only in recent decades that the true impacts of roads on natural resources and the ecosystem have begun to be understood. The state of this knowledge continues to expand, but has now become a well-recognized concern. Potential effect of roads on environmental resources include:

- ❖ drainage or erosion problems that affect water quality
- ❖ constraint of proper hydrologic function (e.g. restriction of stream meanders)
- ❖ restriction of fish passage
- ❖ lowered water tables affecting streamflow, soil moisture, and plant communities
- ❖ reduced air quality due to dust
- ❖ roadkill of wildlife

Noxious weeds are spreading along road corridors.

As with the adverse effects of roads listed above, the perception of noxious weeds as a serious problem is recent. Although noxious weeds have been appearing and slowly increasing their territory for many years, it is only in recent times that the extent of the problem and the potential for future adverse impacts has been fully recognized. In the past, site-specific occurrences of weeds have frequently been treated with herbicides as the initial response. Now, with the adverse effects of herbicides becoming a widespread concern, alternative methods of treating weeds are being considered and the issue of weeds is becoming much more of a focus.

Social/Economic Issues:

The Modoc NF is not receiving sufficient funds to properly maintain and sign its road system.

This issue has arisen in the past decade, as the funds available for road maintenance have diminished. Before that time, this was not an issue as roads were maintained to the level that was deemed appropriate using funds that included appropriated dollars as well as surface replacement funds from commercial users such as timber sale purchasers.

Specific road conditions may pose a safety risk to travelers or damage to vehicles.

Road safety is recognized as a concern. Forest roads can pose risks to drivers from steep slopes, sharp curves, or unstable surfaces. Even roads that are properly constructed can have safety risks such as erosion from storm damage that changes the road surface, signs that are missing or damaged, or if traffic levels or other characteristics change from the original design of the road.

Not all appropriate Right-of-Way agreements are in place for Modoc NF roads.

When roads cross property boundaries, Right-of-Way agreements or easements are sometimes used to provide needed access across specific road segments. The Modoc National Forest has many Right-of-Way agreements and easements. Some of these existing agreements need to be updated. The MDF also has roads that need new Right-of-Way agreements or easements.

There is a public perception that road removal or closure may occur without public involvement; a perception that road removal is a political act to deny access.

In recent years, there has been a public perception that decisions on access and use of the Modoc National Forest have been made without public involvement, often at the regional or national level rather than at the local level. These decisions are often seen as detrimental to the local way of life. Consequently, some members of the general public, including local elected officials, find it hard to understand what the agency is planning and what the true intent of many actions undertaken by the agency might be.

Road access may not be adequate for future economic/recreation development needs (for example, juniper management, woodcutting, tourist loops, and other economic opportunities).

This issue arises as the Forest and the local economy begin to expand public use of National Forest System lands for economic stability. The current road system may not be sufficient to meet these other needs, whether recreation-oriented or commodity-focused, that have yet to be fully developed. There may be a need to expand the forest road system in the future.

There is a general recognition that the Modoc NF does not have all the inventory data necessary to effectively conduct watershed- and project- level roads analyses. Limited resources prevent data collection or transfer of existing data to GIS or other electronic formats.

There are limitations in the amount and quality of data available to conduct watershed and project level roads analyses. Some of the data layers in GIS are incomplete. As a minimum it is generally expected that all of the unclassified roads within the project area will be inventoried and incorporated into GIS layers as part of project level roads analysis, if it has not already been done. It may be necessary to collect or enter other inventory data as well. Collecting inventory data and entering this data into the corporate databases is an ongoing process. As science progresses – both the state of understanding with regard to the ecology of roads as well as computer technologies such as Geographic Information Systems – the level of inventory or complexity of databases that is considered “sufficient” changes. Because of the limited resources available, both in funding and in people to do the work, it is the responsible official’s responsibility to determine the sufficiency of the existing data and to determine what additional data may be needed.

Sub-Forest-Scale Issues

Sub-Forest-scale issues will not be addressed in detail in this document – the following list is illustrative of the types of issues expected during analysis at watershed or project scales. This is not a complete list of all issues. In general, issues addressed at these smaller scales would be either issues that occur Forest-wide but primarily on roads of lower maintenance levels; or issues that only occur in specific instances rather than Forest-wide.

- ❖ High road densities (all road levels) may be causing adverse impacts to resources and uses.
- ❖ Hydrologic connectivity of roads (all road levels) may be altering the hydrology of some watersheds and/or causing adverse impacts to resources.
- ❖ Portuguese Sheep Camp Road – goes through meadow on private land, landowner wants to relocate road out of meadow bottom into NFS lands.
- ❖ “Spring Hill” road – level 2 road -- right-of-way issue

- ❖ Site security for heritage and traditional cultural resources – site-specific concerns on all road levels.

Primary Legal Constraints on Roads and Roads Management

The primary legal constraints on roads and roads management are the Forest Service Directives and the Modoc National Forest Plan as amended by the Sierra Nevada Framework and Northwest Forest Plan.

Additional Information Needed to Better Understand/Define Key Issues

At the Forest scale, the interdisciplinary team believes no additional information is necessary to more sharply define issues.

At the watershed or project scale, quantitative data would be of great use in better understanding issues that relate to:

- ❖ recreation activities and use through all seasons, including data about road use by people who might consider their access limited if roads are closed (such as those with physical disabilities)
- ❖ the gathering of miscellaneous forest products such as non-commercial wood-cutting, mushrooms and herbs, and Christmas trees
- ❖ the vectors, incidence, patterns, and extent of noxious weeds
- ❖ road density and its effects on hydrology, water quality, stream channel conditions, and wildlife
- ❖ effects of all roads, including unclassified roads, on hydrology, water quality, and stream channel conditions
- ❖ hydrologic connectivity between roads and streams, and its effects on hydrology and aquatic habitat
- ❖ disturbance to TES species
- ❖ fuel loads

In general the forest needs to better understand reference, existing, and desired conditions for all components of ecosystem management.

Assumptions and Information Limitations in Step 3

- ❖ Some issues were identified that occur Forest-wide but are concentrated on maintenance level 1 and 2 roads, therefore, became sub-Forest-scale issues.

Step 4 – Assessing Benefits, Problems, and Risks

The purpose of the fourth step is to examine the major uses and effects of the road system, to generate the information baseline against which the existing and future road systems can be compared. The main element of this step is to assess the various benefits, problems, and risks associated with the current road system, and whether the objectives of Forest Service policy reform and the Forest Plan are being met.

Benefits are defined as potential uses and beneficial effects provided by the road system. Problems are conditions, situations, or effects of concern. Risks are likely consequences to environmental, social, or economic elements should problems remain uncorrected.

In January 2001, the Forest Service adopted a new road management policy, which directs the agency to maintain a safe, environmentally sound road network that is responsive to public needs and affordable to manage. The policy includes a science-based roads analysis process designed to help managers make better decisions about roads.

This step sets the stage for identifying management opportunities and priorities that may achieve a better balance between public access needs and the capability of the land, moving the road system towards the desired condition.

Introduction

In preparation for assessing the benefits, problems and risks of the current road system, the ID team considered the 71 questions provided by *FS 643: Roads Analysis* as guidance for more in-depth assessment and as a link to the science base for each of the identified benefits, problems and risks.

The questions served as guidelines to Step 4, which is assessing the benefits, problems and risks of the current road system. To accomplish this, the ID team, together with other Forest staff with extensive knowledge of on-the-ground conditions, analyzed the 71 questions with respect to the current maintenance level 3/4/5 road system on the Modoc NF.

Some of the questions were determined to be not applicable to a Forest-scale analysis of the Modoc NF's road system. Some questions were answered by rating each road to indicate the relevance of the question road by road; other questions were answered with a narrative. Ratings ranged from 1 (least benefit or risk) to 5 (highest benefit or risk). The ID team's answers to the questions are located in the Roads Analysis project file located at the Modoc National Forest Supervisor's Office.

Table 4-1, Benefit and Risk Ratings, displays a summary of the ratings that were made. For display purposes, questions of the same category (for example, all the "AQ" questions) are combined into one column, and the highest rating from among those questions is displayed. Questions addressing the values and benefits received by the current road system are listed on the left, with questions that address the risks posed by the road system on the right. See Appendix C, Questions and Criteria for Forest Level Road Analysis, for the rating systems used to address each question.

Table 4-1. Benefit and Risk Ratings

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
36N15	WILLOW SPRING	1	1	1	5	5		5	5	5	3	1	1	1	3	1	1
37N07	WILLOW CREEK CG	1	1	1	3	3	5	1	1	5	1	1	3	5	3	1	1
37N11	WILLIAMS RES	1	1	3	5	3		5	5	5	3	1	1	1	3	1	3
37N42	HAYDEN HILL	1	1	1	5	3	5	5	5	5	3	1	3	1	3	1	1
38N02	ANDERSON RANCH	1	1	1	5	5		5	5	5	1	1	1	1	3	1	3
38N04	HUNSINGER FLAT	1	1	1	5	3		5	5	5	5	1	1	1	3	1	1
38N07	MOSQUITO CREEK	1	1	1	5	3		5	5	5	1	1	1	5	3	1	1
38N30	BLUE LAKE	1	1	1	1	3	5	5	5	5	1	1	5	5	3	1	1
38N30A	BLUE LAKE BOAT LAU	1	1	1	1	1	5	1	1	5	1	1	5	5	3	1	1
38N30B	BLUE LAKE CG	1	1	1	1	1	5	1	1	5	1	1	5	5	3	1	1
38N32	YOUTH CAMP	1	1	1	1	1	5	5	5	5	3	3	5	5	3	1	1
38N36	LIKELY MTN LOOKOUT	5	1	1	5	1		5	5	5	1	1	1	1	3	1	1
38N46	FOSTER SPRING	1	1	1	5	3		5	5	5	5	1	1	1	3	1	1
38N47	ASH CREEK C G	1	1	1	3	1	5	1	1	5	3	1	3	5	3	1	1
38N54	CARY SPRING	1	1	1	5	5		5	5	5	5	1	1	1	3	1	1
38N54E	SNAG HILL L.O.	5	1	1	5	1		5	5	5	1	1	3	1	3	1	1
38N60	CLARK VALLEY	1	1	1	5	3		5	5	5	3	1	1	5	3	1	1
39N01	SOUTH WARNER	1	1	1	5	5	5	5	5	5	5	1	1	5	3	1	1
39N01C	EAST CRK TRAILHEAD	1	1	1	1	3	5	5	5	5	1	1	5	5	3	5	1
39N06	MAHOGANY RIDGE	1	1	1	5	5		5	5	5	1	1	1	1	3	1	1
39N08	ASH VALLEY	1	1	5	5	5	5	5	5	5	3	1	1	5	3	1	1
39N11	BEAR CAMP FLAT	1	1	1	5	3		5	5	5	1	1	1	1	3	1	1
39N12	LONG VALLEY RIDGE	1	1	1	5	5		5	5	5	1	1	1	1	3	1	1
39N15	LONG VALLEY	1	1	1	5	5		5	5	5	1	1	1	5	3	5	1
39N17	DUTCH FLAT	1	1	1	5	3		5	5	5	1	1	1	1	3	1	3
39N18	COLD SPRING	1	1	1	5	5		5	5	5	1	1	1	1	3	1	1
39N18	OLD CAMP ONE	1	1	1	1	3		5	5	5	1	1	5	1	3	1	1

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
39N28	PATTERSON G S	5	1	1	3	1		1	1	5	1	1	5	5	3	1	1
39N28A	PATTERSON C G	1	1	1	3	1	5	1	1	5	1	1	5	5	3	1	1
39N50	KNOX FLAT	1	1	1	5	3		5	5	5	3	1	3	1	3	1	5
39N97	ADIN OFFICE	5	1	1	5	1		1	1	5	1	1	1	1	3	1	1
40N01	SOUTH CANYON	1	1	1	5	1		5	5	5	3	1	3	1	5	1	1
40N03	SHASTA TIE	1	1	5	5	1		5	5	5	1	1	3	1	5	1	5
40N05	RUSH CREEK	1	1	1	5	3	5	5	5	5	1	1	1	5	3	1	1
40N05A	RUSH CREEK CG LOWER	1	1	1	5	3	5	1	1	5	1	1	3	5	3	1	1
40N05B	RUSH CREEK CG UPPER	1	1	1	5	1	5	1	1	5	1	1	3	5	3	1	1
40N06	BIG JOHN SPRING	1	1	3	5	3		5	5	5	3	3	3	1	1	1	1
40N06A	CLARK RESVR	1	1	3	5	1		5	5	5	1	3	3	1	1	1	1
40N06B	SPUR SEC 3	1	1	3	5	1		5	5	5	1	3	3	1	1	1	1
40N11	FOX MOUNTAIN	1	1	1	5	3		5	5	5	5	1	3	1	3	1	3
40N12	HOSKINS SPRING	1	1	1	5	3		5	5	5	1	1	3	1	3	1	3
40N13	NILES SPRING	1	1	1	5	3		5	5	5	1	1	3	1	3	1	1
40N22	HUNTERS RIDGE	1	1	3	5	3		5	5	5	5	3	1	1	3	1	1
40N24	CHERRY CREEK	1	1	1	5	3		5	5	5	1	1	3	5	1	5	1
40N25	SOUP SPRING	1	1	1	3	3	5	5	5	5	1	1	5	5	3	1	1
40N25A	SOUP SPRING CG	1	1	1	3	1	5	1	1	5	1	1	5	5	3	1	1
40N25A	SOUP CG CORRALS	1	1	1	3	1	5	1	1	5	1	1	5	5	3	1	1
40N29	JOHNSON CREEK	1	1	1	5	3		5	5	5	1	1	3	1	3	1	1
40N32	GROUSE MOUNTAIN	1	1	1	5	3		5	5	5	5	1	1	1	3	1	1
40N33	MESSENGER GULCH	1	1	1	5	3		5	5	5	5	1	1	1	3	1	1
40N37	RATTLESNAKE BUTTE	1	1	1	5	3		5	5	5	3	1	3	1	3	1	1
40N41	MAZ-CAL TIE	1	1	3	5	3		5	5	5	5	3	3	1	5	1	1
40N41B	CAL TIE SPUR	1	1	3	5	1		5	5	5	1	3	3	1	5	1	1
40N43	EMERSON CANYON CG	1	1	1	5	1	5	5	1	5	5	3	5	1	1	1	1

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
40N46	MILL CRK FALLS	1	1	1	5	1	5	1	1	5	1	1	5	1	3	1	1
40N46A	MILL CR CG	1	1	1	5	1	5	1	1	5	1	1	5	1	3	1	1
41N04	COOLEY GULCH	1	1	3	5	3		5	5	5	1	3	1	1	5	1	3
41N07	LAVA CAMPGROUND	1	1	1	5	1	5	1	1	1	1	1	1	1	5	1	1
41N10	STONE COAL	1	1	5	5	3		5	5	5	3	1	1	1	3	1	3
41N11	RONEY FLAT	1	1	1	5	3		5	5	5	5	5	1	1	1	3	1
41N12	MCHENRY	1	1	1	5	3		5	5	5	1	1	3	1	3	1	1
41N34	CANYON CREEK	1	1	3	5	1		5	5	5	1	3	1	1	1	1	3
41N44	PIT RIVER	5	1	1	5	5		5	5	5	5	5	1	1	5	5	1
41N47	HARRIS SPRING	1	1	1	5	3		5	5	5	3	1	1	1	3	1	1
42N03	LONG BELL	1	1	5	3	3		5	5	5	5	5	1	1	5	5	1
42N05	WEST WARNER	1	1	1	5	3	5	5	5	5	1	1	1	5	3	5	5
42N05B	PINE CR BASIN	1	1	1	5	3		5	5	5	1	1	5	1	1	1	1
42N06	OLD LOVENESS RD	1	1	1	1	3		5	5	5	5	5	1	5	5	5	1
42N06A	DUNCAN RESVR	1	1	1	1	3	5	5	5	5	1	1	5	5	5	1	1
42N10A	ROUND MTN. MAIN	1	1	5	5	3		5	5	5	3	1	3	1	5	1	1
42N11	BEELER RESERVOIR	1	1	1	3	5		5	5	5	1	1	3	5	3	1	1
42N14	HOWARDS GULCH C G	1	1	1	3	1	5	1	1	5	1	1	5	5	5	1	1
42N19	AMBROSE	5	1	1	3	3		5	5	5	1	1	3	1	3	1	1
42N21	WASHINGTON CRK	1	1	1	5	3		5	5	5	1	1	1	1	3	1	1
42N23	MAC'S SOUTH MAIN	1	1	1	5	3		5	5	5	1	1	1	5	5	1	1
42N24	PAYNES	1	1	1	5	1		5	5	5	1	1	1	3	5	1	1
42N25	BUCK BUTTE S	1	1	1	5	1		5	5	5	1	1	1	3	1	1	1
42N31	DEEP CREEK-PARKER	1	1	1	5	3	5	5	5	5	5	5	1	1	5	3	5
42N35	HULBERT	1	1	1	5	5	5	5	5	5	1	1	3	5	3	1	1
42N46	HAPPY CAMP LO	5	1	1	5	3		5	5	5	1	1	5	5	5	1	1
42N56	MUD SPRING	5	1	1	5	3	5	5	5	5	3	1	1	5	5	1	3
42N56B	MUD SPRING WELL	1	1	1	5	3		1	1	1	1	1	5	5	5	1	1
42N60	LOVENESS	1	1	1	3	5	5	5	5	5	1	1	3	1	5	1	1
42N60J	MCKAY FLAT RES	1	1	1	5	3		1	1	1	1	1	1	1	3	1	1

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
42N68	LONG BELL G.S.	5	1	1	5	1		1	1	1	5	1	1	1	5	1	1
42N79	PEPPERDINE CAMP	1	1	1	5	1	5	1	1	5	1	1	1	1	3	1	1
42N79A	PEPPERDINE CG	1	1	1	5	1	5	1	1	5	5	1	5	5	3	1	1
42N95	COTTONWOOD FLAT CG	1	1	1	1	1	5	1	1	5	1	1	5	5	3	1	1
42N98	D G RANGER STATION	5	1	1	1	1		1	1	5	1	1	1	1	5	1	1
43N04	CDC CAMP	5	1	1	5	3		5	1	5	1	1	5	1	5	1	1
43N07	STOUGH RESV	1	1	1	3	3	5	5	5	5	1	1	5	5	3	1	1
43N07A	STOUGH RESVR. CG	1	1	1	1	3	5	1	1	5	1	1	5	5	1	1	1
43N12	LOST LOOP	1	1	1	5	1		5	5	1	1	1	1	1	5	1	1
43N14	SOUTH CONNECTOR	5	1	1	5	1		5	5	1	1	1	1	1	5	1	1
43N16	TICHNOR ROAD	1	1	1	5	3		5	5	5	3	1	3	1	5	1	1
43N17	PAYNES CREEK	1	1	1	5	1	5	5	5	1	1	1	1	5	1	1	3
43N18	ROUND VALLEY	1	1	1	3	5	5	5	1	5	1	1	3	5	5	1	1
43N19	MEDICINE LK E. SIDE	5	1	1	5	1	5	5	5	3	1	3	3	5	1	1	1
43N19A	BOAT LAUNCH	1	1	1	5	1	5	1	1	5	1	1	3	5	1	1	1
43N19B	MEDICINE PICNIC	1	1	1	5	1	5	1	1	5	1	1	3	5	1	1	1
43N24	CEDAR PASS CG	1	1	1	5	1	5	1	1	5	1	1	3	5	3	1	1
43N35	SIX SHOOTER	1	1	1	3	3		5	5	5	1	1	5	5	5	1	1
43N35B	SIX SHOOTER SPUR B	1	1	1	1	3		5	5	5	1	1	5	5	5	1	1
43N36	RESERVOIR F	1	1	1	5	3	5	5	5	5	5	1	3	5	5	1	1
43N42	UNDERTAKER	1	1	1	5	1		5	5	1	1	1	3	5	1	1	1
43N44	MEDICINE TRAILER DUMP	1	1	1	5	1	5	1	1	1	1	1	5	5	1	1	1
43N46	HENSKI WILDLIFE	1	1	1	3	3		1	1	3	1	1	3	5	5	5	1
43N48	MEDICINE LAKE	5	1	1	5	1	5	5	5	3	1	1	3	5	1	1	1
43N54	SHOTGUN PEAK NORTH	1	1	1	5	1		5	5	1	1	1	3	5	1	1	1
43N58	HEMLOCK CG	1	1	1	5	1	5	1	1	5	1	1	5	5	1	1	1
43N59	HOGUE CG	1	1	1	5	1	5	1	1	5	1	1	5	5	1	1	1
43N60	MEDICINE CG	1	1	1	5	1	5	1	1	5	1	1	5	5	1	1	1

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
43N85	WART ON TREE	1	1	1	5	3		5	5	1	1	1	3	1	5	1	1
43N99	LYONS PEAK	5	1	1	5	1	5	5	5	1	1	1	3	5	5	1	1
44N01	COUGAR BUTTE	1	1	1	5	1	5	5	5	1	1	1	3	5	5	1	1
44N02	HACKAMORE RES	1	1	1	5	5		5	5	5	5	5	1	3	1	5	1
44N03	BIG SAGE RESERVOIR	1	1	1	3	3	5	5	1	1	1	1	5	5	5	1	1
44N03A	BIG SAGE CG	1	1	1	1	1	5	1	1	5	1	1	5	5	5	1	1
44N11	BOLES	1	1	1	3	5		5	5	5	5	5	1	3	1	5	1
44N17	MEDICINE LAKE HWY	5	1	1	5	3	5	5	5	3	5	3	1	5	5	1	1
44N19	TIMBER MTN LO	5	1	1	5	3	5	5	5	1	1	1	5	1	5	1	1
44N30	WARNER SUMMIT	1	1	1	5	3		5	5	5	1	1	1	1	3	1	1
44N32	RESERVOIR C	1	1	1	1	3	5	5	1	5	3	1	5	5	5	1	1
44N33	FAIRCHILD SWAMP	1	1	1	1	3		5	1	5	5	1	5	1	5	1	1
44N59	MOWITZ WELL	5	1	1	1	3		1	1	5	1	1	5	1	5	1	1
44N60	TIONESTA WELL	5	1	1	5	1		1	1	1	1	1	5	1	5	1	1
44N65	DRY LAKE STATION	5	1	1	3	1		1	1	1	1	1	5	1	5	1	1
44N69	CEDAR MTN	1	1	1	5	3		5	5	5	3	1	5	1	3	1	1
44N75	MEDICINE LAKE	5	1	5	5	1	5	5	5	5	1	1	1	5	1	1	1
44N75C	MEDICINE WELL	5	1	1	5	3		1	1	3	1	1	1	5	1	1	1
44N76	DOORKNOB SNOWPARK	1	1	1	5	1	5	1	1	1	1	1	5	1	1	1	1
44N77	BENCH	1	1	1	5	3		5	5	1	1	1	1	1	5	1	1
45N04	BENTON MEADOW	1	1	1	5	3		5	5	5	1	1	1	1	5	1	1
45N06	LOGAN SLOUGH	1	1	1	1	3	5	5	1	3	3	1	5	5	5	1	1
45N09	OTH RADAR	5	1	1	5	3		5	1	1	1	1	1	1	5	1	1
45N35	PLUM VALLEY	1	1	1	5	3	5	5	5	5	3	1	1	5	5	1	1
45N35A	PLUM VALLEY C G	1	1	1	5	1	5	1	1	5	1	1	5	5	5	1	1
46N06	COLD CREEK	5	1	1	5	3	5	5	5	5	3	1	1	1	5	1	1
46N06A	SUGAR HILL LO	5	1	1	5	1	5	5	5	5	1	3	5	1	5	1	1
46N09	BUCK CREEK G.S.	5	1	1	5	1		1	1	5	3	1	1	1	5	1	1
46N10	MOWITZ	1	1	1	5	5	5	5	5	5	3	1	1	1	5	1	1
46N13	STEELE SWAMP	1	1	1	3	5		5	5	5	1	1	1	1	5	1	1

ROAD #	ROAD NAME	BENEFIT QUESTIONS (SUMMARY BY CATEGORY)								RISK QUESTIONS (SUMMARY BY CATEGORY)							
		ADMIN USE	CIVIL RIGHTS	GENERAL TRANSPORTATION	PROTECTION	RANGE MANAGEMENT	SOCIAL/ RECREATION ISSUES	SPECIAL FOREST PRODUCTS	TIMBER MGT	AQUATICS	ECOSYSTEM FUNCTION	GENERAL TRANSPORTATION	PROTECTION	ROADED RECREATION	SOCIAL ISSUES	UNROADED RECREATION	WILDLIFE
46N25	MILL CREEK	1	1	1	5	3	5	5	5	5	3	3	5	1	3	1	1
46N29	CLEAR LAKE	1	1	1	5	5		5	1	5	5	1	3	1	5	1	1
46N30	LASSEN CREEK	1	1	1	5	5		5	5	5	5	1	1	1	5	1	1
47N02	FANDANGO	1	5	5	5	5	5	5	5	5	3	3	1	5	5	1	1
47N05	OLD US 395	1	1	1	5	5		5	5	5	3	1	1	1	5	1	1
47N06	CARR BUTTE	1	1	1	3	3		5	1	5	5	1	3	5	5	1	3
47N09	SOUTH MAIN	1	1	1	5	5		5	5	5	3	1	3	5	5	1	1
47N11	ENQUIST RESV.	1	1	3	5	5		5	5	5	1	1	1	1	3	1	1
47N16	CROWDER GS	5	1	1	3	1		1	1	5	1	1	5	1	5	1	1
47N28	MORRELL MINE	1	1	1	3	1		5	5	5	1	1	5	5	3	1	1
47N28A	LARRY FLAT CG	1	1	1	5	1		5	5	5	1	1	5	5	3	1	1
47N40	WEYERHAEUSER ROAD	1	1	3	5	3		5	5	5	3	1	3	1	5	1	1
47N72	BUCK CREEK	1	1	1	3	3		5	5	5	5	1	5	1	5	5	1
48N02	HIGHGRADE	1	1	5	5	3	5	5	5	5	5	1	3	5	5	1	1
48N04	MONUMENT	1	1	1	5	3		1	1	1	1	1	1	5	5	1	3
48N08	CROWDER FLAT	5	1	1	5	5	5	5	5	5	5	1	3	5	5	1	1
48N08E	JANES RESVR	1	1	1	5	1	5	5	1	5	1	3	5	5	5	1	1
48N11	OLD STATE LINE	1	1	1	5	3		5	5	5	1	1	3	5	1	1	1
48N19	WEST SIDE ROAD	1	1	5	5	5	5	5	5	5	1	1	1	5	3	1	1
48N21	DISMAL SWAMP	1	1	1	5	3	5	5	5	5	1	1	3	5	5	1	1
48N28	MULDOON	1	1	1	5	3		5	5	5	1	1	1	1	1	1	1
48N70	FOUR MILE	1	1	1	5	3		5	5	5	3	1	3	5	5	1	1
48N80	LILY LAKE CG	1	1	1	5	1	5	1	1	5	1	1	5	5	5	1	1
48N81	CAVE LAKE DAY USE AREA	1	1	1	5	1	5	1	1	5	1	1	5	5	5	1	1

1=least benefit or risk, 3=moderate benefit or risk, 5=highest benefit or risk

Analysis of the data in Table 4-1 shows that all of the roads included in the analysis are rated as having a high value by at least one of the benefit categories, with one exception, road 43N46 Henski Wildlife. This is intuitively correct, as this is the Forest's backbone road system. However, as the ID team analyzed each road individually, it was recognized that some roads (including 43N46 Henski Wildlife) could have their objective maintenance level reduced without lowering their value. These roads were thus recommended for reduction in maintenance level in Step 5 of the analysis.

Further analysis of the data in Table 4-1 shows that all of the roads included in the analysis are rated as having a high risk by at least one of the risk categories. This result was not anticipated. It does identify that almost all roads present some risk and that opportunities to eliminate or lower the risk should be pursued. As the ID team analyzed each road individually, opportunities to reduce risk were identified in some cases. These opportunities were carried forward as recommendations in Step 5 of the analysis.

Summary of Benefits, Problems, Risks, Opportunities

Benefits, which are defined as potential uses and beneficial effects provided by the road system, include:

- ❖ Access for recreation/tourism
- ❖ Access for commercial use – timber/range management, firewood cutting
- ❖ Access for administrative use (fire suppression, data collection, inventory, monitoring)

Problems, which are defined as conditions, situations, or effects of concern, include:

- ❖ Insufficient funding to maintain and sign existing road system
- ❖ Insufficient information to fully assess impacts of all roads on all resources

Risks, defined as likely consequences to environmental, social, or economic elements should problems remain uncorrected, include:

- ❖ Increased potential for vehicle damage or accidents on roads that are un-maintained or maintained to lower standard
- ❖ The occurrence or increased occurrence of adverse effects to natural resources.

Compliance with Forest Plan Direction

The Standards and Guidelines for the transportation system from the 1991 Modoc Forest Land and Resource Management Plan include:

1. Provide and manage a Forest transportation system to achieve resource management objectives while protecting resource values.

- ❖ Plan, design, and construct local roads to the lowest standard commensurate with intended use. *Very little new road construction is taking place on the Modoc National Forest. New roads are constructed to the lowest standard needed for the intended use.*
- ❖ Plan and construct arterial (connects highways to collector roads) and collector (connects arterial roads to local roads) roads to the standard appropriate for safe and economical use, and commensurate with the road development and multiple resource management. *Most of the arterial and collector road system has been in place for many years on the MDF. Changes to the arterial and collector road system are planned and implemented in compliance with this Standard.*
- ❖ Maintain all Forest roads to their objective maintenance levels. *Roads are maintained to their objective maintenance level as funds allow. Approximately 19% of the roads on the Modoc NF are maintained to their objective maintenance level, according to data in the Forest FY2002 Road Accomplishment Report (USDA Forest Service, 2002).*
- ❖ Provide for signing in accordance with road management objectives and MUTCD (Manual on Uniform Traffic Control Devices) standards. *Signing is done in accordance with RMOs and MUTCD Standards. Some additional signs are needed, and, many existing signs are in need of repair or replacement.*

2. Cooperate with federal, state, and county agencies, and private companies, to construct, reconstruct, and maintain roads under their jurisdictions, if needed. Review location and design specifications for roads built under permit or license, and require protection of all resources. Coordinate road management and closures with local agencies. *The Modoc National Forest has a roads agreement with Modoc County. Similar agreements may be needed with Lassen and Siskiyou Counties. The Forest has also cooperated with CalTrans and other state and county agencies on numerous occasions. Permitted road construction is reviewed for location and specifications as required.*

3. Manage and maintain the transportation system to protect soil, water, and all other resource values. Close local roads as needed to meet these objectives. Develop road closure and OHV plans. *The road system is managed and maintained to protect soil, water and other resource values to the extent funding is available. The Forest has closed some local roads and decommissioned others. The Forest OHV plan currently identifies over 80% of the lands and roads as open to unrestricted OHV use. OHV use on Forest roads will be evaluated in the future and will include all maintenance levels.*

Conducting the Forest-scale roads analysis is the Modoc National Forest's first step toward implementation of the Forest Service's new road management policy. Subsequent watershed-level or project-level roads analysis will be necessary to fully define the road network needed to meet the objectives of the new policy. Implementation of the recommendations identified in the Forest-scale roads analysis will also help the Forest meet the objectives of the new policy.

Assumptions and Information Limitations in Step 4

- ❖ The Modoc NF's Forest Plan is 12 years old and the knowledge of roads' potential impacts has increased dramatically since the plan was written.

- ❖ Every team member did not use the same rating system. The risk and benefit ratings were not combined into a single overall score or rating. The interdisciplinary team identified roads that were “sufficient” for existing uses rather than roads that are essential for such uses. This resulted in nearly all roads being rated “high benefit” and “high risk”, reducing the usefulness of such a rating effort. Future roads analyses performed at the sub-Forest level will include more detailed assessments of benefit and risk.
- ❖ The risk and benefit ratings were applied to each road as a whole, even though in some cases the benefit or risk only applies to a segment of that road.
- ❖ GIS data for some resources is not available.

Step 5 – Describing Opportunities and Setting Priorities

Forest-Scale Recommendations

The purpose of the fifth step is to identify management opportunities, establish priorities, and present recommendations for the existing and future road system that respond to the issues and concerns, benefits, problems, and risks identified in previous steps.

Some issues and concerns related to cumulative impacts of roads (such as road density) did not arise during this analysis because only the maintenance level 3/4/5 roads were addressed. As a result, opportunities driven by these concerns were not identified during this analysis. Potential projects and opportunities to address these issues will be assessed during smaller-scale analyses, where it will be essential that all roads within the analysis area be included in the analysis.

Management Opportunities

The primary management opportunities identified to assist the Forest in improving its ability to maintain an effective road system are:

- ❖ To identify and address data gaps of information needed (field inventories, GIS formats, etc) prior to watershed- and project-level roads analysis
- ❖ To establish a list of roads that are priority to receive full maintenance whenever funding shortages prevent the Forest from maintaining *all* roads to their standards (see “Priorities for Maintenance” below).
- ❖ Explore opportunities for developing cooperative road agreements with Lassen and Siskiyou Counties.

Recommendations

Recommended actions were identified by the ID team based on the risk/benefit ratings as described in Step 4, as well as local Forest employee knowledge and potential activities already identified and entered into the INFRA database. Right-of-way issues were also identified and included in the recommendations. These recommendations are found in Table 5-1, Recommendations, as well as the accompanying map, titled “Recommendations and Priorities.” Some very short roads, or those in areas of high road density such as the Blue Lake and Medicine Lake Campground areas, are not visible on a map scale that shows the whole Forest. These roads and their recommendations are listed in Tables 5-1 and 5-2 but not included in the map.

Table 5-1. Recommendations

ID	NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS
36N15	WILLOW SPRING	4.8	3	Lower ML	LOWER TO ML 2
37N07	WILLOW CREEK CG	0.2	3	Improve	LENGTHEN SPURS
37N11	WILLIAMS RES	6	3	Lower ML	LOWER TO ML 2
37N42	HAYDEN HILL	6	3	Improve	COUNTY ROAD, NEEDS ADDITIONAL CROSSDRAIN
38N02	ANDERSON RANCH	10.4	3	Improve	IMPROVE DRAINAGE AT CATTLEGUARDS
38N04	HUNSINGER FLAT	10.1	3	No Action	
38N07	MOSQUITO CREEK	4.6	3	No Action	
38N30	BLUE LAKE	1.5	5	No Action	
38N30A	BLUE LAKE BOAT LAU	0.2	3	No Action	
38N30B	BLUE LAKE CG	1.2	3	Improve	LENGTHEN SPURS
38N32	YOUTH CAMP	0.7	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
38N36	LIKELY MTN LOOKOUT	5.8	3	No Action	
38N46	FOSTER SPRING	11.7	3	No Action	
38N47	ASH CREEK C G	0.2	3	Improve	LENGTHEN SPURS
38N54	CARY SPRING	23.7	3	No Action	
38N54E	SNAG HILL L.O.	0.3	3	No Action	MAINTAINED BY CALIFORNIA DEPT OF FORESTRY
38N60	CLARK VALLEY	1.5	3	Lower ML	LOWER TO ML 2 AFTER YOUTH CAMP JCT
39N01	SOUTH WARNER	35.4	3	No Action	
39N01C	EAST CRK TRAILHEAD	0.4	3	No Action	
39N06	MAHOGANY RIDGE	6.6	3	Improve	SURFACING
39N08	ASH VALLEY	31.5	4	Improve	COUNTY ROAD, SURFACING
39N11	BEAR CAMP FLAT	1.8	3	Improve	IMPROVE 1.8 MILE SEGMENT
39N12	LONG VALLEY RIDGE	2.9	3	No Action	
39N15	LONG VALLEY	5.5	3	No Action	
39N17	DUTCH FLAT	8	3	No Action	
39N18	COLD SPRING	2.4	3	Improve	SURFACING
39N28	PATTERSON G S	0.2	3	No Action	
39N28A	PATTERSON C G	0.7	3	Improve	LENGTHEN SPURS
39N50	KNOX FLAT	13.7	3	No Action	
39N97	ADIN OFFICE	0.1	3	Improve	NEW OFFICE PARKING
40N01	SOUTH CANYON	2.7	3	No Action	
40N03	SHASTA TIE	31.2	3	Resolve	FS PART LOWER TO ML 2, SIGN FOR DEER, RESOLVE ROW
40N05	RUSH CREEK	2.1	3	Improve	GRAVEL SURFACE, IMPLEMENT WINTER CLOSURE
40N05A	RUSH CREEK CG LOWER	0.3	3	Improve	LENGTHEN SPURS, SURFACE ROAD
40N05B	RUSH CREEK CG UPPER	0.2	3	Improve	LENGTHEN SPURS, SURFACE ROAD
40N06	BIG JOHN SPRING	3.8	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
40N06A	CLARK RESVR	0.6	3	Lower ML	LOWER TO ML 2
40N06B	SPUR SEC 3	0.8	3	Lower ML	LOWER TO ML 2
40N11	FOX MOUNTAIN	10.9	3	Lower ML	LOWER TO ML 2 AFTER LOOKOUT JCT
40N12	HOSKINS SPRING	6.6	3	Improve	GRAVEL SURFACING
40N13	NILES SPRING	3	3	Lower ML	LOWER TO ML 2

ID	NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS
40N18A	MANZANITA LO	0.5	2	Raise ML	WORK IN PROGRESS, RAISE TO ML 3
40N22	HUNTERS RIDGE	21.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
40N24	CHERRY CREEK	8.3	3	No Action	
40N25	SOUP SPRING	0.34	3	No Action	
40N25A	SOUP SPRING CG	0.2	3	Improve	LENGTHEN SPURS
40N25AA	SOUP CG CORRALS	0.1	3	No Action	
40N29	JOHNSON CREEK	5.8	3	Improve	LOWER TO ML 2 AFTER GROUSE MTN JCT, GRAVEL SURFACING ON ML 3 SEGMENT
40N32	GROUSE MOUNTAIN	5.2	3	Lower ML	LOWER TO ML 2
40N33	MESSINGER GULCH	9.4	3	Lower ML	LOWER TO ML 2
40N37	RATTLESNAKE BUTTE	5.4	3	Lower ML	LOWER TO ML 2
40N41	MAZ-CAL TIE	4.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
40N41B	CAL TIE SPUR	0.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
40N43	EMERSON CANYON CG	3	3	Improve	SPURS, CROSSING, SURFACE (BOTH FS/COUNTY SEGMENTS)
40N46	MILL CRK FALLS	1.9	5	No Action	
40N46A	MILL CR CG	0.2	3	Improve	LENGTHEN SPURS
41N04	COOLEY GULCH	3.4	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
41N07	LAVA CAMPGROUND	0.3	3	No Action	
41N10	STONE COAL	14	3	Improve	COUNTY ROAD, GRAVEL SURFACING
41N11	RONEY FLAT	17.6	3	Improve	GRAVEL 1.5 MILES, REPAIR DRAINAGE PROBLEMS
41N12	MCHENRY	1.2	3	No Action	
41N34	CANYON CREEK	5.4	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE
41N44	PIT RIVER	15.4	3	No Action	
41N47	HARRIS SPRING	4.3	3	Lower ML	LOWER TO ML 2
42N03	LONG BELL	19	3	Resolve	RESOLVE ROW
42N05	WEST WARNER	32.5	3	No Action	
42N05B	PINE CR BASIN	1.4	3	No Action	
42N06	OLD LOVENESS RD	3.9	3	Lower ML	LOWER TO ML 2 AFTER DUNCAN RES JCT
42N06A	DUNCAN RESVR	1.1	3	No Action	
42N10	ROUND MTN. MAIN	6.9	3	No Action	
42N10A	ROUND MTN. MAIN	0.9	3	Resolve	RESOLVE ROW
42N11	BEELEER RESERVOIR	2.5	3	Lower ML	LOWER TO ML 2
42N14	HOWARDS GULCH C G	0.3	4	Improve	LENGTHEN SPURS, RESURFACE ROAD
42N19	AMBROSE	0.5	3	No Action	
42N21	WASHINGTON CRK	10	3	No Action	
42N23	MAC'S SOUTH MAIN	8.2	3	No Action	
42N24	PAYNES	1.7	3	Lower ML	LOWER TO ML 2
42N31	DEEP CREEK-PARKER	11	3	No Action	
42N35	HULBERT	5.2	3	Improve	SPOT GRAVEL SURFACE
42N46	HAPPY CAMP LO	3.3	3	No Action	
42N51	GRANGER CANYON	4	2	Resolve	EROSION, CHANNEL INFRINGEMENT, SAFETY
42N56	MUD SPRING	29.1	3	No Action	
42N56B	MUD SPRING WELL	0.1	3	No Action	
42N60	LOVENESS	10.4	3	No Action	

ID	NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS
42N60J	MCKAY FLAT RES	0.1	3	Lower ML	LOWER TO ML 2
42N68	LONG BELL G.S.	0.2	3	Improve	NEEDS SPEED SIGNS
42N69	CDVL WORK CENTER	0.1	3	Improve	REPAVE PARKING AREA
42N72	WARNER MTN R.S.	0.1	3	No Action	LEASED BUILDING
42N79	PEPPERDINE CAMP	0.6	3	Improve	WIDEN, TRAILHEAD PARKING
42N79A	PEPPERDINE CG	0.3	3	Improve	SPURS, CORNERS, WET AREA
42N98	DG RANGER STATION	0.2	3	No Action	
43N04	CDC CAMP	1.4	3	No Action	STATE MAINTAINED
43N07	STOUGH RESV	0.8	3	Improve	SURFACE, EROSION/WATER QUALITY, DUST ABATEMENT ISSUE
43N07A	STOUGH RESVR. CG	0.2	3	Improve	SPURS, SURFACE
43N12	LOST LOOP	3.4	3	No Action	
43N14	SOUTH CONNECTOR	3.6	3	Lower ML	LOWER TO ML 2
43N16	TICHNOR ROAD	7.7	3	Improve	SPEED SIGNS
43N17	PAYNES CREEK	4.7	3	Improve	GRAVEL SURFACING
43N18	ROUND VALLEY	11.5	3	Lower ML	LOWER TO ML 2 AFTER X-SECT WITH 44N33
43N19	MEDICINE LK E SIDE	0.8	3	Improve	DEVELOP PER MASTER PLAN
43N19A	BOAT LAUNCH	0.1	3	No Action	
43N19B	MEDICINE PICNIC	0.2	4	No Action	
43N24	CEDAR PASS CG	0.3	3	Improve	LENGTHEN CG SPURS, SURFACING, CULVERT, CAMPGROUND SITE PLAN
43N35	SIX SHOOTER	1.7	3	Improve	GRAVEL SURFACING
43N35B	SIX SHOOTER SPUR B	1	3	No Action	
43N36	RESERVOIR F	6.5	3	Improve	PAVE
43N42	UNDERTAKER	1.8	3	No Action	
43N44	MEDICINE TRAILER DUMP	0.1	3	Raise ML	RAISE TO ML 4 -- ROAD IS ALREADY AT THAT LEVEL
43N46	HENSKI WILDLIFE	0.3	4	Lower ML	LOWER BACK TO ML 2 --UP TO ML 4 NO LONGER PLANNED
43N48	MEDICINE LAKE	4.7	3	Improve	PAVE
43N54	SHOTGUN PEAK NORTH	4.7	3	Lower ML	LOWER TO ML 2
43N58	HEMLOCK CG	0.3	4	Improve	LENGTHEN SPURS
43N59	HOGUE CG	0.3	4	Improve	LENGTHEN SPURS
43N60	MEDICINE CG	0.3	4	Improve	LENGTHEN SPURS
43N85	WART ON TREE	3.4	3	Lower ML	LOWER TO ML 2
43N99	LYONS PEAK	8.9	3	No Action	
44N01	COUGAR BUTTE	13.8	3	No Action	
44N02	HACKAMORE RES	8.2	3	No Action	
44N03	BIG SAGE RESERVOIR	3.5	3	Improve	GRAVEL SURFACING
44N03A	BIG SAGE CG	0.2	3	Improve	DEVELOP PER MASTER PLAN
44N11	BOLES	14.8	3	No Action	
44N17	MEDICINE LAKE HWY	23.5	5	Improve	COUNTY ROAD, NEEDS SIGNS
44N19	TIMBER MTN LO	3.5	3	No Action	
44N30	WARNER SUMMIT	5.6	3	Lower ML	LOWER TO ML 2
44N32	RESERVOIR C	0.7	3	Improve	DEFINE SPURS, SURFACING
44N33	FAIRCHILD SWAMP	7	3	No Action	
44N59	MOWITZ WELL	0.3	3	No Action	

ID	NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS
44N60	TIONESTA WELL	0.2	3	No Action	
44N65	DRY LAKE STATION	1	4	No Action	
44N69	CEDAR MTN	3.9	3	Lower ML	LOWER TO ML 2
44N75	MEDICINE LAKE	8.9	3	Resolve	RESOLVE SCENIC BYWAY DEVELOPMENT ISSUES, RESOLVE ROW
44N75	MEDICINE LAKE	10.8	5	No Action	
44N75C	MEDICINE WELL	0.2	3	No Action	
44N76	DOORKNOB SNOWPARK	0.2	4	No Action	
45N04	BENTON MEADOW	7.5	3	Improve	COUNTY ROAD, SURFACING
45N06	LOGAN SLOUGH	2.9	3	Improve	GRAVEL SURFACING
45N09	OTH RADAR	7.7	3	No Action	DOD MAINTAINED
45N35	PLUM VALLEY	8.2	3	No Action	
45N35A	PLUM VALLEY C G	0.2	3	Improve	LENGTHEN SPURS, GRAVEL SURFACING
46N06	COLD CREEK	12.2	3	Improve	GRAVEL SURFACE
46N06A	SUGAR HILL LO	1.8	3	Improve	GRAVEL SURFACE
46N09	BUCK CREEK G.S.	0.7	3	No Action	
46N10	MOWITZ	30.7	3	No Action	
46N13	STEELE SWAMP	2.7	3	No Action	COUNTY ROAD
46N25	MILL CREEK	6.3	3	Improve	FS AND COUNTY PART BOTH NEED REPAIRS (BRIDGE, DRAINAGE, SURFACING), TREE TRIMMING FOR SIGHT DISTANCE
46N29	CLEAR LAKE	36.3	3	Improve	COUNTY ROAD, RESURFACING
46N30	LASSEN CREEK	35.3	3	Improve	RESURFACING BOTH FS AND COUNTY SEGMENTS
47N02	FANDANGO	15.2	3	No Action	COUNTY ROAD
47N05	OLD US 395	8.3	3	Improve	COUNTY ROAD, FISH PASSAGE CONCERNS
47N06	CARR BUTTE	17.7	3	No Action	
47N09	SOUTH MAIN	16.6	3	No Action	COUNTY ROAD
47N11	ENQUIST RESERVOIR	3.6	3	No Action	
47N16	CROWDER GS	0.2	3	No Action	
47N28	MORRELL MINE	1.1	3	Improve	COUNTY ROAD, NEEDS ADDITIONAL CROSSDRAINS
47N28A	LARRY FLAT CG	0.5	3	Improve	GRAVEL ROAD
47N40	WEYERHAEUSER ROAD	10.7	3	No Action	PRIVATE ROAD
47N72	BUCK CREEK	12.3	3	Improve	SURFACING
48N02	HIGHGRADE	16.5	3	Improve	COUNTY ROAD, SURFACING
48N04	MONUMENT	9.9	4	Resolve	RESOLVE SCENIC BYWAY DEVELOPMENT ISSUE, RRRING SIGNS, PROTECT BAT CAVES AND ARCH CONCERNS
48N08	CROWDER FLAT	40.4	3	Improve	COUNTY, SURFACING, SIGNS, DUST ABATEMENT
48N08E	JANES RESVR	0.3	3	No Action	
48N11	OLD STATE LINE	6.2	3	No Action	
48N19	WEST SIDE ROAD	23.1	3	No Action	COUNTY ROAD
48N21	DISMAL SWAMP	2.8	3	Improve	RELOCATE, CROSSINGS, SURFACING
48N70	FOUR MILE	12.2	3	Improve	SURFACING, SIGNS
48N80	LILY LAKE CG	0.2	3	Improve	SURFACING
48N81	CAVE LAKE DAY USE AREA	0.4	3	Improve	LENGTHEN SPURS, SURFACING

Each road included in the analysis received a recommendation of one (or two, in one instance) of the following categories:

No Action – No recommendation at this time. Some known problems were identified as maintenance-only issues and have been addressed in the “Management Opportunities” section above.

Lower Maintenance Level – Several road segments are recommended for lowering of ML from ML 3 to ML 2. One ML 2 road had been raised in the INFRA database to ML 4 in anticipation of an improvement plan that has since been abandoned; the recommendation is to “return” it to ML 2. Lowering maintenance levels will generally reduce the amount of deferred and ongoing maintenance needed on that road. This would result in cost savings to the Forest, although in many instances the road was not being maintained to its intended level due to insufficient funding, and in some instances lowering maintenance levels is simply acknowledgment of what has already happened in practice, so the “savings” in those cases would be in the form of “reduced shortfall”.

Raise Maintenance Level – Two roads are recommended for increases in ML. One is Manzanita Lookout access road, which is currently in the process of being improved to ML 3 to accommodate the level and type of traffic a lookout road requires. Staffing at Manzanita Lookout is contracted and improved access should lower contract costs and provide safer access for the person staffing the lookout. The other is a road that was originally constructed to ML 4 standards and is maintained as a ML 4, but was listed as ML 2 in INFRA. The lookout road would incur increased maintenance costs due to the ML upgrade. In the other example, no costs would accrue to the Forest since the road is already being maintained at the higher ML as recommended.

Improve – This recommendation applies to a variety of situations ranging from resurfacing to sign installation to tree trimming for sight distance to repairing erosion problems. One common situation involves campground spur roads that were not originally constructed to accommodate the large RV vehicles common today. These spurs are recommended for lengthening to allow safe parking of these larger vehicles in the campgrounds. Maintenance costs would not be expected to increase noticeably due to these spur extensions.

Resolve Issues – This recommendation also applies to variety of situations. Several roads are recommended for administrative action to resolve right-of-way issues. Two roads are part of an unresolved situation regarding a Scenic Byway, and the specific actions recommended on these roads will depend on their inclusion (or not) in the Scenic Byway. Another road is currently undriveable and is causing resource damage. This road initially seemed like a candidate for obliteration. However, there are legal access agreements that may limit the Forest’s options. Until these legal obligations are assessed in detail no specific recommendation can be made. Cost savings cannot be estimated until the specifics of the proposed actions are developed.

Priorities for Recommendations

All action recommendations were given a priority rating of High (H), Medium (M), or Low (L). Various criteria were used to assign priority including whether safety is at issue, whether active resource degradation is occurring, and whether the recommendation is perceived as urgent. A few projects that are already underway were labeled “High Priority” since those decisions have already been made and the work is in progress. In addition, recommendations to lower maintenance level

were considered high priority since only an administrative action would be needed, rather than ground-disturbing work, and maintenance costs savings would begin to accrue as soon as the change occurs. These recommendations were labeled “High-Administrative” (H-A) to distinguish them from the urgency of the other projects assigned a priority of “High”.

The effects of the recommendations on various resources were estimated (see Table 5-2, Priorities). Effects to various resources are represented in the table with a “+” for positive effects, “0” for no effect, “-” for negative effects, and “U” for unknown effects. “U” was used exclusively for the issue of Tribal concerns, where potential concerns cannot be known until specific proposals are presented to the Tribes for comment. An activity’s effect on natural resources can sometimes be reduced or avoided with careful project design, using practices such as limited operating periods to avoid disturbance to wildlife, or “best management practices” to minimize impacts to water quality. These specifics will be identified when/if each recommendation is carried forward into the decision process by the Forest. The estimated effects displayed in Table 5-2 assume that “typical” protections such as these would be afforded when appropriate. No effects were estimated for “No Action” recommendations.

Table 5-2. Priorities

						ESTIMATED EFFECTS OF RECOMMENDATION ON RESOURCES										
						+ indicates positive effect										
						0 indicates no effect										
						- indicates negative effect										
						U indicates unknown effects										
ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY	
36N15	WILLOW SPRING	4.8	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	+	U	+	0	H-A	
37N07	WILLOW CREEK CG	0.2	3	Improve	LENGTHEN SPURS	0	0	+	0	+	+	U	0	40000	M	
37N11	WILLIAMS RES	6	3	Lower ML	LOWER TO ML 2	0	+	0	0	-	+	U	+	0	H-A	
37N42	HAYDEN HILL	6	3	Improve	COUNTY ROAD, NEEDS ADDITIONAL CROSSDRAIN	+	0	+	0	0	0	U	0	3260	M	
38N02	ANDERSON RANCH	10.4	3	Improve	IMPROVE DRAINAGE AT CATTLEGUARDS	+	-	0	+	0	+	U	+	10000	H	
38N30B	BLUE LAKE CG	1.2	3	Improve	LENGTHEN SPURS	0	0	+	0	+	+	U	0	240000	H	
38N32	YOUTH CAMP	0.7	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	575	H	
38N47	ASH CREEK C G	0.2	3	Improve	LENGTHEN SPURS	0	0	+	0	+	+	U	0	35000	M	
38N60	CLARK VALLEY	1.5	3	Lower ML	LOWER TO ML 2 AFTER YOUTH CAMP JCT	0	0	0	0	-	0	U	+	0	H-A	
39N06	MAHOGANY RIDGE	6.6	3	Improve	GRAVEL SURFACING	0	0	+	0	+	0	U	+	212520	L	
39N08	ASH VALLEY	31.5	4	Improve	COUNTY ROAD, GRAVEL SURFACING	+	0	+	0	+	0	U	0	391022	L	
39N11	BEAR CAMP FLAT	1.8	3	Improve	IMPROVE 1.8 MILE SEGMENT	0	0	+	0	+	+	U	+	139400	M	
39N18	COLD SPRING	2.4	3	Improve	GRAVEL SURFACING	+	0	+	0	+	0	U	+	91894	M	
39N28A	PATTERSON C G	0.7	3	Improve	LENGTHEN SPURS	0	0	0	0	+	+	U	0	25000	M	
39N97	ADIN OFFICE	0.1	3	Improve	NEW OFFICE PARKING	0	0	0	0	+	0	U	0	40000	H	
40N03	SHASTA TIE	31.2	3	Resolve	FS PART LOWER TO ML 2, SIGN FOR DEER, RESOLVE ROW	0	+	0	0	-	0	U	0	2000	H	
40N05	RUSH CREEK	2.1	3	Improve	GRAVEL SURFACE, IMPLEMENT WINTER CLOSURE	+	0	0	0	+	+	U	0	53450	M	
40N05A	RUSH CREEK CG	0.3	3	Improve	LENGTHEN SPURS, SURFACE	0	0	+	0	+	+	U	0	50820	M	

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ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY
	LOWER				ROAD										
40N05B	RUSH CREEK CG UPPER	0.2	3	Improve	LENGTHEN SPURS, SURFACE ROAD	0	0	+	0	+	+	U	0	66496	M
40N06	BIG JOHN SPRING	3.8	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	2850	H
40N06A	CLARK RESVR	0.6	3	Lower ML	LOWER TO ML 2	0	0	+	0	0	+	U	0	450	H-A
40N06B	SPUR SEC 3	0.8	3	Lower ML	LOWER TO ML 2	0	0	+	0	0	+	U	0	600	H-A
40N11	FOX MOUNTAIN	10.9	3	Lower ML	LOWER TO ML 2 AFTER LOOKOUT JCT	0	+	0	0	-	0	U	+	0	H-A
40N12	HOSKINS SPRING	6.6	3	Improve	GRAVEL SURFACING	0	0	+	0	0	0	U	0	261888	L
40N13	NILES SPRING	3	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
40N18A	MANZANITA LO	0.5	2	Raise ML	WORK IN PROGRESS, RAISE TO ML 3	0	0	+	0	+	+	U	-	0	H
40N22	HUNTERS RIDGE	21.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	15975	H
40N25A	SOUP SPRING CG	0.2	3	Improve	LENGTHEN SPURS	0	0	+	0	+	+	U	0	70000	M
40N29	JOHNSON CREEK	5.8	3	Improve	LOWER TO ML 2 AFTER GROUSE MTN JCT, GRAVEL SURFACE ML 3 SEGMENT	0	0	0	0	-	0	U	+	38000	H
40N32	GROUSE MOUNTAIN	5.2	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
40N33	MESSENGER GULCH	9.4	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
40N37	RATTLESNAKE BUTTE	5.4	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
40N41	MAZ-CAL TIE	4.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	3225	H
40N41B	CAL TIE SPUR	0.3	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	225	H

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						U indicates unknown effects									
ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY
40N43	EMERSON CANYON CG	3	3	Improve	SPURS, CROSSING, SURFACE (BOTH FS/COUNTY SEGMENTS)	+	0	+	0	+	+	+	+	129210	H
40N46A	MILL CR CG	0.2	3	Improve	LENGTHEN SPURS	0	0	+	0	+	+	U	0	95000	H
41N04	COOLEY GULCH	3.4	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	2550	H
41N10	STONE COAL	14	3	Improve	COUNTY ROAD, GRAVEL SURFACING	+	0	+	0	+	0	+	0	90828	M
41N11	RONEY FLAT	17.6	3	Improve	GRAVEL 1.5 MILES, REPAIR DRAINAGE PROBLEMS	+	0	+	0	+	+	U	+	34000	M
41N34	CANYON CREEK	5.4	3	Improve	TREE TRIMMING FOR SIGHT DISTANCE	0	0	+	0	0	+	U	0	4050	H
41N47	HARRIS SPRING	4.3	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
42N03	LONG BELL	19	3	Resolve	RESOLVE ROW	0	0	0	0	0	0	U	0	500	H
42N06	OLD LOVENESS RD	3.9	3	Lower ML	LOWER TO ML 2 AFTER DUNCAN RES JCT	0	0	0	0	-	0	U	+	0	H-A
42N10	ROUND MTN. MAIN	0.9	3	Resolve	RESOLVE ROW	0	0	0	0	0	0	U	0	500	H
42N11	BEELER RESERVOIR	2.5	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	+	+	0	H-A
42N14	HOWARDS GULCH C G	0.3	4	Improve	LENGTHEN SPURS, RESURFACE ROAD	0	0	+	0	+	+	U	0	90586	M
42N24	PAYNES	1.7	3	Lower ML	LOWER TO ML 2	0	+	-	0	-	0	U	+	0	H-A
42N35	HULBERT	5.2	3	Improve	SPOT GRAVEL SURFACE	+	0	0	0	+	+	U	+	53500	H
42N51	GRANGER CANYON	4	2	Resolve	EROSION, CHANNEL INFRINGEMENT, SAFETY	+	0	+	0	-	+	U	+	40000	H
42N60J	MCKAY FLAT RES	0.1	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A
42N68	LONG BELL G.S.	0.2	3	Improve	NEEDS SPEED SIGNS	0	0	+	0	0	+	0	0	600	M
42N69	CDVL WORK CENTER	0.1	3	Improve	REPAVE PARKING AREA	0	0	+	0	0	+	0	0	12000	M
42N79	PEPPERDINE CAMP	0.6	3	Improve	WIDEN, TRAILHEAD PARKING	0	0	+	0	+	+	U	0	2322	M

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ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY	
42N79A	PEPPERDINE CG	0.3	3	Improve	SPURS, CORNERS, WET AREA	+	0	+	0	+	+	U	0	25000	M	
43N07	STOUGH RESV	0.8	3	Improve	SURFACE, EROSION/WATER QUALITY, DUST ABATEMENT ISSUE	+	0	+	0	+	+	U	+	26952	H	
43N07A	STOUGH RESVR. CG	0.2	3	Improve	SPURS, SURFACE	0	0	+	0	+	+	U	0	45820	M	
43N14	SOUTH CONNECTOR	3.6	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A	
43N16	TICHNOR ROAD	7.7	3	Improve	SPEED SIGNS	0	0	+	0	0	+	U	0	4468	H	
43N17	PAYNES CREEK	4.7	3	Improve	GRAVEL SURFACING	0	+	+	0	+	+	-	+	252110	M	
43N18	ROUND VALLEY	11.5	3	Lower ML	LOWER TO ML 2 AFTER 44N33 JCT	0	0	0	0	-	0	+	+	0	H-A	
43N19	MEDICINE LK E SIDE	0.8	3	Improve	DEVELOP PER MASTER PLAN	0	0	+	0	+	+	0	0	21680	H	
43N24	CEDAR PASS CG	0.3	3	Improve	LENGTHEN CG SPURS, SURFACING, CULVERT, CAMPGROUND SITE PLAN	+	0	0	0	+	+	U	0	107290	H	
43N35	SIX SHOOTER	1.7	3	Improve	GRAVEL SURFACING	0	0	+	0	+	0	U	0	76392	L	
43N36	RESERVOIR F	6.5	3	Improve	PAVE	0	0	+	0	+	+	U	0	1830140	M	
43N44	MEDICINE TRAILER DUMP	0.1	3	Raise ML	RAISE TO ML 4 -- ROAD IS ALREADY AT THAT LEVEL	0	0	0	0	0	0	0	0	0	L	
43N46	HENSKI WILDLIFE	0.3	4	Lower ML	LOWER BACK TO ML 2, UP TO ML 4 NO LONGER PLANNED	0	0	0	0	0	0	+	0	0	L	
43N48	MEDICINE LAKE	4.7	3	Improve	PAVE	0	0	0	0	+	+	U	0	119617	H	
43N54	SHOTGUN PEAK NORTH	4.7	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A	
43N58	HEMLOCK CG	0.3	4	Improve	RECONSTRUCT PER DEVELOPMENT PLAN	+	0	+	0	+	+	0	0	250000	H	
43N59	HOGUE CG	0.3	4	Improve	RECONSTRUCT PER DEVELOPMENT PLAN	+	0	+	0	+	+	0	0	250000	H	
43N60	MEDICINE CG	0.3	4	Improve	RECONSTRUCT PER DEVELOPMENT PLAN	+	0	+	0	+	+	0	0	250000	H	

						ESTIMATED EFFECTS OF RECOMMENDATION ON RESOURCES										
						+ indicates positive effect										
						0 indicates no effect										
						- indicates negative effect										
						U indicates unknown effects										
ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY	
43N85	WART ON TREE	3.4	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A	
44N03	BIG SAGE RESERVOIR	3.5	3	Improve	GRAVEL SURFACING	0	0	+	0	+	+	+	0	147000	L	
44N03A	BIG SAGE CG	0.2	3	Improve	DEVELOP PER MASTER PLAN	0	0	0	0	+	+	U	0	21000	M	
44N17	MEDICINE LAKE HWY	23.5	5	Improve	SIGNS	0	0	+	0	0	+	U	0	20000	H	
44N30	WARNER SUMMIT	5.6	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A	
44N32	RESERVOIR C	0.7	3	Improve	DEFINE SPURS, SURFACING	0	0	0	0	+	+	U	0	22500	L	
44N69	CEDAR MTN	3.9	3	Lower ML	LOWER TO ML 2	0	0	0	0	-	0	U	+	0	H-A	
44N75	MEDICINE LAKE	8.9	3	Resolve	RESOLVE SCENIC BYWAY DEVELOPMENT ISSUES, RESOLVE ROW, SPEED SIGNS	0	0	+	0	+	+	-	+	23000	H	
45N04	BENTON MEADOW	7.5	3	Improve	COUNTY ROAD, SURFACING	+	0	0	0	+	+	U	+	438750	M	
45N06	LOGAN SLOUGH	2.9	3	Improve	GRAVEL SURFACING	0	0	+	0	+	+	U	0	5100	L	
45N35A	PLUM VALLEY C G	0.2	3	Improve	LENGTHEN SPURS, GRAVEL SURFACING	0	0	+	0	+	+	U	0	40890	H	
46N06	COLD CREEK	12.2	3	Improve	GRAVEL SURFACE	0	0	0	0	+	+	U	+	410000	H	
46N06A	SUGAR HILL LO	1.8	3	Improve	GRAVEL SURFACE	0	0	0	0	+	+	+	+	70000	H	
46N25	MILL CREEK	6.3	3	Improve	FS AND COUNTY PART BOTH NEED REPAIRS (BRIDGE, DRAINAGE, SURFACING), TREE TRIMMING FOR SIGHT DISTANCE	+	0	+	0	0	+	+	+	1549020	M	
46N29	CLEAR LAKE	36.3	3	Improve	COUNTY ROAD, RESURFACING	0	0	+	0	+	0	U	0	2586375	L	
46N30	LASSEN CREEK	35.3	3	Improve	RESURFACING BOTH FS AND COUNTY SEGMENTS	+	0	+	0	+	0	U	0	1482000	L	
47N05	OLD US 395	8.3	3	Improve	COUNTY ROAD, FISH PASSAGE CONCERNS	0	0	0	0	0	0	U	0	21067	M	
47N28	MORRELL MINE	1.1	3	Improve	COUNTY ROAD, NEEDS ADDITIONAL CROSSDRAINS	+	0	+	0	0	0	U	0	3960	M	

						ESTIMATED EFFECTS OF RECOMMENDATION ON RESOURCES										
						+ indicates positive effect										
						0 indicates no effect										
						- indicates negative effect										
						U indicates unknown effects										
ROAD NUM	ROAD NAME	LENGTH (MILES)	OBJECTIVE ML	RECOMMENDATION	COMMENTS	AQUATIC/RIPARIAN	WILDLIFE	FIRE/FUELS	COMMODITY PRODUCTION	PUBLIC USE	SAFETY	TRIBAL CONCERNS	MAINTENANCE COSTS	ESTIMATED COST	PRIORITY	
47N28A	LARRY FLAT CG	0.5	3	Improve	GRAVEL ROAD	0	0	+	0	+	0	U	0	22740	L	
47N72	BUCK CREEK	12.3	3	Improve	SURFACING	0	0	+	0	+	0	U	0	367650	L	
48N02	HIGHGRADE	16.5	3	Improve	COUNTY ROAD, SURFACING	0	0	+	0	+	0	+	0	341620	L	
48N04	MONUMENT	9.9	4	Resolve	RESOLVE SCENIC BYWAY DEVELOPMENT ISSUE, RRRING SIGNS, PROTECT BAT CAVES AND ARCH CONCERNS	0	+	0	0	0	+	-	+	11000	H	
48N08	CROWDER FLAT	40.4	3	Improve	COUNTY, SURFACING, SIGNS, DUST ABATEMENT	0	0	0	0	+	+	+	0	110000	M	
48N21	DISMAL SWAMP	2.8	3	Improve	RELOCATE, CROSSINGS, SURFACING	+	+	+	0	0	+	+	+	100000	H	
48N70	FOUR MILE	12.2	3	Improve	SURFACING, SIGNS	+	0	0	0	+	+	U	0	57320	M	
48N80	LILY LAKE CG	0.2	3	Improve	SURFACING	0	0	+	0	+	0	+	0	5700	L	
48N81	CAVE LAKE DAY USE AREA	0.4	3	Improve	LENGTHEN SPURS, SURFACING	+	0	+	0	+	+	+	0	47160	H	
													TOTAL	13,513,617		

County Roads

Some of the roads included in this analysis are County Roads that enter or pass through the Forest. When known conditions on these roads warranted a recommendation for action, those were included along with the recommendations made for Forest-managed roads. Generally, the County Road recommendations were given a “low” priority since the Forest is unable to independently carry these recommendations forward to a decision. However, the interdisciplinary team felt it was important to identify known problems regardless of jurisdiction. There are a variety of opportunities for interagency, cooperative projects that would allow the County and the Forest Service to work together in solving problems or making improvements on County-maintained roads within the Forest Boundary.

Issues Not Addressed by Recommendations

The recommendations listed in Table 5-2 address the issues of adverse environmental effects, insufficient maintenance funds, safety, and rights-of-way. The management opportunities also identified above address the issue of data gaps that will be of concern at finer scales of roads analysis as well as further addressing the issue of insufficient maintenance funds. Other issues listed in Step 3, such as noxious weeds, concerns regarding public involvement, and road access needs for future economic opportunities, are not specifically addressed by the recommendations.

Roads with an elevated level of concern regarding noxious weeds were identified during this analysis. No recommendations were designed to address noxious weeds because a Forest-wide noxious weeds treatment plan is being prepared for the Modoc NF.

Public comment is an important part of the Forest Service’s decision-making process. This roads analysis is not a decision document; the recommendations listed here are only that -- recommendations. If and when the Forest chooses to carry these recommendations forward to a decision, the appropriate level of public involvement will be solicited at that time.

Road access needs for potential future uses are hard to determine. The Modoc NF recognizes the likelihood for increased activities of some types; in particular, recreation, restoration activities, and vegetation management activities (juniper removal is one example) are expected to increase in coming years. When proposals are made to change the current road system in a way that might affect these (or as-yet unidentified) potential future activities, these new or increased uses of the roads will be considered as a part of the decision-making process. Likewise, if new access is needed for some future activity, proposals for road construction will be made and analyzed as necessary. Currently no such access needs have been identified.

Priorities for Maintenance

While Table 5-2 addresses prioritization of recommended actions regarding roads, it does not address road maintenance. The lack of sufficient funds to maintain roads is a primary reason why roads analysis is being conducted. Although implementation of recommendations to lower the maintenance level of several roads would reduce the Modoc’s annual costs for road maintenance by more than \$200,000 (using national average costs), these changes would not bring sufficient savings to entirely eliminate the shortfall relative to the maintenance funds received. Unless budgets

increase significantly, the Forest will still have insufficient funds to maintain all roads to standard. Therefore, road maintenance also needs to be prioritized.

As might be expected, the Forest currently prioritizes road maintenance by giving public safety concerns highest priority followed by resource damage as second priority. Next in priority would be road damage causing loss of investment. Last priority would be simple access problems. However, the road maintenance crews can only apply these priorities to situations of which they are aware. During the course of this analysis four roads were identified as being high priority for full maintenance due to rapid degradation causing hazardous driving conditions and resource damage if not fully and properly maintained each year. These roads are: 38N30B – Blue Lake Campground, 47N06 – Carr Butte, 43N17 – Paynes Creek, and 44N75 – Medicine Lake. Without the time and resources to compile a complete list during the course of this analysis, this concern was instead noted as a recommendation to the Forest to establish such a list to assist in the most effective use of available maintenance funds.

Emergency repairs, on all maintenance level roads, for safety or to prevent further resource damage may take priority over the normal scheduled maintenance as described above.

Assumptions and Information Limitations in Step 5

- ❖ For most recommendations the administrative costs for carrying the recommendation forward to a decision (including NEPA analysis) were not included in the cost estimates in Table 5-2.
- ❖ The costs of implementing recommendations are approximations. In some cases, there will be several alternative actions that could potentially create the desired result, and only careful assessment of the situation using the NEPA process will determine the specific actions.
- ❖ The cost of maintaining various road segments at existing maintenance levels is estimated based on adjustments to national cost averages as mentioned in Step 2. Similarly, these average costs were used to estimate the savings that would be incurred if some maintenance levels were reduced.

Step 6 – Report of Key Findings

The purpose of Step 6 is to report the key findings of the analysis. The report discloses the methodologies employed, the assumptions made, and the limitations of information used in the analysis.

Summary of key findings from Steps 2 through 5:

- ❖ Most of the maintenance level 3/4/5 roads on the Modoc National Forest are needed to provide access to and within the National Forest. The analysis does recommend that some of the existing maintenance level 3 roads be lowered to maintenance level 2 and two roads be upgraded from maintenance level 2 to 3. The roads that are recommended to remain as maintenance level 3/4/5 comprise the minimum road system needed for use and management of the Modoc National Forest.
- ❖ The recommended reduction in miles of maintenance level 3/4/5 roads would lower future maintenance cost. However, annual road maintenance costs will continue to exceed available funding to maintain the road system. Additional funding is needed along with continued efforts at reducing costs for maintaining the road system.
- ❖ Some issues have been identified that need to be addressed during watershed- or project-level roads analyses as they are completed. There are also additional information needs, such as unclassified road inventories, that need to be completed before these finer-scale roads analyses are undertaken. These needs are outlined in Steps 3 and 5 of this report.
- ❖ The recommendations and priorities included in Step 5 of this report include Rights-of-Way needs, construction/reconstruction needs, and guidelines for maintenance priorities. Decommissioning guidelines and priorities will be addressed, as appropriate, during watershed- or project-scale roads analyses in the future.

Products of the Analysis:

The following products are a result of the Forest-scale roads analysis completed for the Modoc National Forest:

- ❖ This report and accompanying maps. The final report and maps will be placed on the Forest Website at www.r5.fs.fed.us/modoc, where it will be available for viewing and use by other Forest Service employees and any other interested parties.
- ❖ The analysis record for this Forest-Scale Roads Analysis will be maintained at the Supervisor's Office of the Modoc National Forest, Alturas, California.

- ❖ As required by Forest Service Manual 7711.1, the MDF maintains a Forest Roads Atlas using the Forest Service Infrastructure Database (INFRA) to store and analyze information about roads. This Roads Atlas is located at the MDF Supervisor's Office in Alturas, California, and is maintained and updated as outlined in Forest Service Manual, Chapter 7710. The roads shown on the accompanying map titled Existing Roads are a graphical representation of the roads included in the Modoc's roads atlas as of February 15, 2002. The data in the roads atlas will continue to be updated and maintained as new information becomes available.

Appendix A – Communication Plan

Modoc National Forest

Communication Plan

Roads Analysis

Introduction:

A team from the Modoc National Forest is conducting a forest-wide roads analysis. The team is collecting information on maintenance level 3, 4, 5 roads -- the Forest's backbone transportation system. This is not a federal action; no decisions will be made. This forest-scale analysis will be completed January 2003 with a database of information to provide decision makers a platform of knowledge to use during watershed-scale analysis, proposed programs of work and project-level planning. Identification of public issues and opportunities are important to the analysis.

Background:

The Modoc National Forest has started a forest-wide roads analysis. The purpose of this scale of analysis is to (1) define the backbone road system, (2) identify relevant road associated issues, and (3) guide the analysis framework for watershed- and project-level analyses.

The backbone system (maintenance levels 3/4/5) focuses on providing a safe and environmentally sensitive road system. The consideration of user comfort and convenience is a function of assigned level. These roads are managed to encourage economic development of rural communities through quality recreation and tourism experiences. Of the approximate 3,400 miles of roads (2,800 transportation system miles and about 600 unclassified) an approximate 1000 miles are in levels 3, 4, and 5.

Roads Analysis is a national requirement prompted by the National Forest System Road Management Rule (Road Policy) published in the Federal Register January 12, 2001. The Record of Decision for the Sierra Nevada Framework requires data collection and analysis of watersheds. The direction for these national and regional programs is to use existing data and public involvement to determine issues and opportunities to provide a cost effective and efficient transportation system and to improve watershed health.

This exercise focuses on the 1,000 miles of backbone system (levels 3, 4, 5) transportation system. Is this sufficient for passenger car use?

Level 5 Normally double-lane and paved

Level 4 Provide higher degree of user comfort

Level 3 Dirt or paved surface; for standard passenger car

The approximate 2,400 transportation system miles and unclassified roads will be analyzed through project planning.

Level 2 For high clearance vehicles

Level 1 Service roads, usually closed all year

Communication Goals:

1. Be proactive, minimize confusion, be the first with the information.
2. Seek input from Tribes, Forest users, and employees.
3. Provide a feedback mechanism.
4. Provide consistent messages.

Communication Objectives:

1. Keep constituents informed of the analysis.
2. Meet with groups, boards, cooperating agencies, and interested parties. Discuss the analysis process and gather information.
3. Seek answers to the social, cultural and economic questions stated in the Roads Analysis Handbook.
4. Conduct government-to-government consultation with federally recognized tribes.

TALKING POINTS

- ❖ The Modoc National Forest has started collecting information for a forest-level roads analysis.
- ❖ This forest-scale analysis will be completed January 2003 with a database of information that is collected in one place. The Forest will have a draft database and maps completed September 1.
- ❖ Roads being analyzed are on maintenance level 3, 4, 5 roads -- the Forest's backbone transportation system.
- ❖ Roads analysis is a national requirement.
- ❖ This is an analysis and not a NEPA document. No decisions will be made.

Target Audiences:

Recreation

- Fish/Game/Recreation Commission
- Back Country Horseman
- OHV Club
- Boy Scouts, Girl Scouts

Commodity/User groups

- Permittees
- Woodcutters
- Timber industry
- Miners
- Special Uses

Conservation/Environmental Communities

- Native Plant Society
- Klamath Forest Alliance
- Sierra Nevada Protection League

American Indian Tribes

- Pit River
- Klamath
- Ft. Bidwell Indian Community

Elected Officials

- Congressman Herger
- Congressman Doolittle
- Modoc County Board of Supervisors – area Supervisors for Lassen and Siskiyou Counties
- Alturas City Council

Federal, State, and Local Agencies

- BLM – Surprise and Alturas Field Offices
- Lava Beds National Monument
- Modoc National Wildlife Refuge
- Tulelake National Wildlife Refuge
- CDF – Bieber and Alturas
- Modoc County Road Managers

Others

- Modoc County Fire Chiefs Association

- Modoc County Fire Safe Council
- Modoc County Land Use Committee

Key Communities:

- Defined as Communities at Risk under the National Fire Plan

Public Issues of Concern:

- ✓ Perception that this is a road closure exercise.
- ✓ Perception that the government is locking up lands.
- ✓ Public access.

Communication Tools:

- Display map of the Modoc NF. Overlay of Levels 3, 4, 5 roads.
- Power Point overview Program
- Fact Sheets.
- General Analysis Process including facts on costs, miles of roads, contacts
- Talking Points/Key Messages
- Oral Presentations
- Letters to Key Contacts (Tribes)
- News Releases

Appendix B – References

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- USDA Forest Service, 1991.* Modoc National Forest, Land and Resource Management Plan, US Department of Agriculture, Forest Service, Pacific Southwest Region.
- USDA Forest Service, 1992.* Transportation Planning Handbook. Forest Service Handbook 7709.58. Washington, DC: US Department of Agriculture, Forest Service.
- USDA Forest Service, 1999.* Roads Analysis: Informing Decisions About Managing the National Forest Transportation System. Miscellaneous Report FS-643, Washington, DC.
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- USDA Forest Service, 2001b.* Historical Road Maintenance Funding Charts. Unpublished data provided by USDA Forest Service, Pacific Southwest Region, Public Use and Facilities Staff.
- USDA Forest Service, 2001c.* Record of Decision, Sierra Nevada Forest Plan Amendment, USDA Forest Service, Pacific Southwest Region.
- USDA Forest Service, 2002.* FY2002 Road Accomplishment Report. Unpublished annual report. Modoc National Forest, Alturas CA
- USDA Forest Service & USDA Soil Conservation Service, c. 1994.* Soil Survey of Modoc National Forest Area, California, US Department of Agriculture, Forest Service and US Department of Agriculture, Soil Conservation Service.

Appendix C – Questions and Criteria for Forest Level Roads Analysis

The questions in the Forest Service Publication *FS-643: Roads Analysis* can be separated into two categories: questions addressed road by road in the analysis, and questions addressed in a narrative or general manner or that were not addressed at this scale of analysis.

Each individual question from *FS-643* was assessed by the team to determine if the question applied at the Forest scale. Criteria were developed for each question that was appropriate to answer on a road-by-road basis. Each road was then rated using the established criteria. The following is a list of the questions for which road by road answers were given, and what the criteria was for answering the question. Note that ratings were changed to reflect a common scale of 1 to 5 for all questions. Initially a range of scales was used in the analysis.

Administrative Use (AU)

AU1: How does the road system affect access needed for research, inventory, and monitoring?

- 1 = No known effect
- 5 = Road accesses known research and inventory sites.

AU3: How does the road system affect access needed for administrative Forest Service activities?

- 1 = No known effect
- 5 = Road accesses Forest Service offices or administrative facilities.

Aquatic, Riparian Zone, and Water Quality (AQ)

AQ1: Road system modifies surface/subsurface hydrology?

- 1 = No/low risk of modification
- 3 = Moderate risk of modification
- 5 = High risk or known modification

AQ2: Road system generates surface erosion?

- 1 = No/low risk of surface erosion
- 3 = Moderate risk of surface erosion
- 5 = High risk or known erosion

AQ3: Road system affects mass wasting?

- 1 = No/low risk of mass wasting

- 3 = Moderate risk of mass wasting
- 5 = High risk or known mass wasting

AQ4: Road-stream crossings influence local stream channels & water quality?

- 1 = No/low risk of impacts
- 3 = Moderate risk of impacts
- 5 = High risk or known impact

AQ5: Potential for pollutants (chemical spills, oils, de-icing salts, herbicides) to enter surface waters?

- 1 = No/low risk
- 3 = Moderate risk
- 5 = High risk or known impact

AQ6: Road system hydrologically connected?

- 1 = No/low risk of connection
- 3 = Moderate risk of connection
- 5 = High risk of connection

AQ7: Downstream beneficial uses affected from road-derived pollutants?

- 1 = No/low risk of effects
- 3 = Moderate risk of effects
- 5 = High risk or known effects

AQ8: Road system affects wetlands?

- 1 = No/low risk of effects
- 3 = Known or potential for moderate localized effects
- 5 = Known or potential for significant loss of wetland function

AQ9: Road system altering physical channel dynamics?

- 1 = No/low risk of alteration
- 3 = Moderate risk of alteration
- 5 = High risk or known alteration

AQ10: Road system restricts the migration and movement of aquatic organisms?

- 1 = No/low risk of effects
- 3 = Moderate risk of effects
- 5 = High risk or known effects

AQ11: Road system affecting shading/litterfall/riparian vegetation?

- 1 = Out of area or no discernable effect.
- 3 = Concentration of plants.
- 5 = Significant impacts.

AQ12: Road system contributes to fishing/poaching/direct habitat loss?

- 1 = No/low risk of effects
- 3 = Moderate risk of effects
- 5 = High risk or known effects

AQ13: Road facilitate the introduction of non-native species?

- 1 = No/low risk of effects
- 3 = Moderate risk of effects
- 5 = High risk or known effects

AQ14: Road system overlap areas of high aquatic diversity/productivity/rare or unique species?

- 1 = No/low risk of effects
- 3 = Moderate risk of effects
- 5 = High risk or known effects

Civil Rights (CR)

CR (1): How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?

- 1 = No known effect
- 5 = High Importance

Ecosystem Functions and Processes (EF)

EF2: To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introduction to plant and animal species and ecosystem function in the area?

- 1 = Out of area or no discernable effect.
- 3 = Concentration of plants.
- 5 = Significant impacts.

General Public Transportation (GT)

GT1: How does the road system connect to public roads that provide primary access to communities?

- 1 = National Forest traffic only or minor private traffic to scattered private property.
- 3 = Road accesses multiple grouped properties or developments
- 5 = Road carries a great deal of non-FS traffic between communities and/or major highways

GT2: How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, in holdings, and so on)?

- 1 = Road does not connect any large blocks of private ownership, or connects blocks of private, but there are currently no conflicts.
- 3 = Road connects blocks of private with minor conflicts.
- 5 = Road connects blocks of private with significant need for corrections.

GT3: How does the roads system affect managing roads with shared ownership or with limited jurisdictions? (RS2477, cost share, prescriptive rights, FLPMA easements, FRTA easements, DOR easements)?

- 1 = NF road on NF lands or public road across private property or adequate right-of-way of either NF on private or public road across NF lands.
- 3 = Right-of-way secure, but should be considered for change.
- 5 = Nonexistent right-of-way for either NF road or another road agency.

GT4: How does the road system address the safety of road users?

- 1 = Few or no known unusual safety concerns for the intended traffic.
- 3 = Recognizable traffic safety concerns which are reduced by heightened operator awareness.
- 5 = Unexpected traffic hazards may exist. Potential tort liability.

Commodity Production (TM, MM, & RM)

TM 1: How does road spacing and location affect logging system feasibility?

- 1 = Not Applicable
- 5 = Road system suitable

TM 2: How does the road system affect managing the suitable timber base and other lands.

- 1 = Not Applicable
- 5 = Road system suitable

TM 3: How does the road system affect access to timber stands needing silvicultural treatment?

- 1 = Not Applicable
- 5 = Road system suitable

RM1: How does the road system affect access to range allotments?

- 1 = No Effect
- 3 = Access to allotment used for range administration purposes.
- 5 = Access to allotment used to haul livestock to the allotment.

Protection (PT)

PT1: How does the road system affect fuels management?

- 1 = Low Value: Light to moderate fuel loadings made up of grass, brush, and/or junipers, little or no accumulated fuels.
- 3 = Moderate Value: Stands of scattered timber, dog hair thickets mixed with brush and junipers, moderate amounts of natural and activity fuels.
- 5 = High Value: Heavy stands of commercial timber and/or plantations, large areas of dog hair thickets, heavy concentrations of natural and activity fuels.

PT2: How does the road system affect the capacity of the Forest Service and cooperators to suppress fires?

- 1 = Low Capacity: Not brushed, single-lane, bridges not capable of supporting heavy equipment, dead end road, no access to high fire occurrence areas or structures, mid-slope location, and no potential for use as a fireline.
- 3 = Moderate Capacity: Partially brushed, single-lane, bridges capable of supporting heavy equipment, and through road.
- 5 = High Capacity: Brushed, two-lane, bridges capable of supporting heavy equipment, through road, access to high fire occurrence areas or structures, and can be used as a fireline

PT3: How does the road system affect risk to firefighters and public safety?

- 1 = Low Risk: Brushed, two-lane, bridges capable of supporting heavy equipment, through road, access to high fire occurrence areas or structures, and can be used as a fireline.
- 3 = Moderate Risk: Partially brushed, single-lane, bridges capable of supporting heavy equipment, and through road.
- 5 = High Risk: Not brushed, single-lane, bridges not capable of supporting heavy equipment, dead end road, no access to high fire occurrence areas or structures, mid-slope location, and no potential for use as a fireline.

Recreation (RR & UR)

UR3: What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quantity, quality, and type of unroaded recreation opportunities?

- 1 = Unknown or low adverse effects.
- 5 = High adverse effects.

RR3: What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quantity, quality, and type of roaded recreation opportunities?

- 1 = Unknown or low adverse effects.
- 5 = High adverse effects.

RR6: How does the road system provide access to developed recreational facilities and areas of concentrated recreational activities?

1 = Not Applicable.

5 = Provides access to developed recreational facilities and areas of concentrated recreational activities.

Social Issues (SI)

SI4: How does the road system affect cultural & traditional uses (such as plant gathering, & access to traditional and cultural sites) & American Indian treaty rights?

SI9: What are the traditional uses of animal and plant species in the area of the analysis?

SI10: How does road management affect people's sense of place?

5 = Roads rated five on any of the above 3 questions were considered to have a high value for access to one of the listed items.

= Roads with no rating on any of the above 3 questions, indicates that the information is unknown for that road.

SI11: What are the potential concerns regarding survey needs, presence, and important of heritage resources in the vicinity of each road? (This question was added by the ID Team; it is not included in *FS-643*).

1 = Low concern – many areas already surveyed and/or low density of archaeological sites.

3 = Medium concern – moderate proportion of areas already surveyed and/or moderate density of archaeological sites.

5 = High concern – few areas already surveyed and/or high density of archaeological sites.

Special Forest Products (SP)

SP1: How does the road system affect access for collecting special forest products?

1 -- Not Applicable

5 -- Road system suitable.

Terrestrial Wildlife (TW)

All wildlife questions and other wildlife-related issues were addressed with one combined rating, using the following categories:

1 = No effect

3 = Localized effect on individuals or single pair

5 = Significant disturbance on multiple pairs

Appendix D – Glossary of Road Terms

The following definitions are taken from Forest Service Manual 7700 -- Transportation System or Forest Service Handbook 7709.58 -- Transportation Planning Handbook.

Forest development road. An obsolete term that has been replaced with National Forest System Road.

Forest Road Atlas. The Forest Road Atlas is a key component of the Forest Transportation Atlas and, consistent with the road inventory, includes all classified and inventoried unclassified roads on Modoc National Forest System lands. The road atlas includes, at a minimum, the location, jurisdiction, and road management objectives for classified roads and bridges, the location of unclassified roads, and management actions taken to change the status of unclassified roads.

Forest Roads. As defined in Title 23, Section 101 of the United States Code (23 U.S.C. 101), any road wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

Forest Transportation Atlas. The Transportation Atlas is the official repository of transportation facility decisions for the Modoc National Forest. It contains a current record of Forest transportation facilities. The Forest Service Infrastructure database (INFRA) is used for the storage and analysis of information in the Transportation Atlas.

Forest Transportation Facility. A classified road, designated trail, designated airfield, including bridges, culverts, parking lots, log transfer facilities, safety devices and other transportation network appurtenances, under Forest Service jurisdiction that is wholly or partially within or adjacent to National Forest System lands.

Forest Transportation System Management. The planning, inventory, analysis, classification, record keeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, cost-effective, access for use, protection, administration, and management of National Forest System lands.

Functional Class.

Arterial: Provides service to large land areas. Connects with other arterials or public highways.

Collector: Serves smaller land areas than arterials. Connects arterials to local roads or terminal facilities.

Local: Single purpose road. Connects terminal facilities (e.g. campgrounds, log landings, etc) with collectors or arterials.

INFRA. (Infrastructure Database) is a Forest Service corporate database application that provides for a consistent and accurate inventory, and financial data, of Forest Service physical assets on Forest Service lands. Each National Forest enters, manages, and reports information on the

inventory of their constructed features. Roads, trails, and bridges, among other constructed features associated with the transportation system, are managed within the Travel Routes application of INFRA.

Maintenance. The act of keeping fixed assets in acceptable condition. It includes preventive maintenance normal repairs; replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. Maintenance includes work needed to meet laws, regulations, codes, and other legal direction as long as the original intent or purpose of the fixed asset is not changed (*Financial Health - Common Definitions for Maintenance and Construction Terms*, July 22, 1998).

Maintenance Level.

- Level 1 Closed more than 1 year.
- Level 2 High-clearance vehicles.
- Level 3 Passenger vehicles -- surface not smooth.
- Level 4 Passenger vehicles -- smooth surface.
- Level 5 Passenger vehicles -- dust free; possibly paved.

National Forest System Road. A classified forest road under the jurisdiction of the Forest Service. The term “National Forest System roads” is synonymous with the term “forest development roads” as used in 23 U.S.C. 205.

New Road Construction. Activity that results in the addition of forest classified or temporary road miles (36 CFR 212.1).

Private road. A road under private ownership authorized by an easement to a private party, or a road that provides access pursuant to a reserved or private right.

Public road. Any road or street under the jurisdiction of and maintained by a public authority and open to public travel (23 U.S.C. 101(a)). The Forest Service is a public road agency, although the Modoc National Forest has not designated any roads as public roads.

Road. A motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary (36 CFR 212.1).

a. Classified Roads. Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, County roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service (36 CFR 212.1).

b. Temporary Roads. Roads authorized by contract, permit, lease, other written authorization, or emergency operation, not intended to be a part of the Forest transportation system and not necessary for long-term resource management (36 CFR 212.1).

c. Unclassified Roads. Roads on National Forest System lands that are not managed as part of the Forest transportation system, such as unplanned roads, abandoned travelways, and off-road vehicle

tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1).

Road Decommissioning. Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703).

Road Maintenance. The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective (FSM 7712.3).

Road Reconstruction. Activity that results in improvement or realignment of an existing classified road as defined below:

a. Road Improvement. Activity that results in an increase of an existing road's traffic service level, expansion of its capacity, or a change in its original design function.

b. Road Realignment. Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway (36 CFR 212.1).

Roads Subject to the Highway Safety Act. National Forest System roads that are open to use by the public for standard passenger cars. This includes roads with access restricted on a seasonal basis and roads closed during extreme weather conditions or for emergencies, but which are otherwise open for general public use.

Traffic Service Level.

A: Free flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.

B: Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal size load or vehicle.

C: Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.

D: Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult; backing may be required. Rough and irregular surface. Accommodates high clearance vehicles. Single purpose facility.

Transportation Facility Jurisdiction. The legal right to control or regulate use of a transportation facility derived from fee title, an easement, an agreement, or other similar method. While jurisdiction requires authority, it does not necessarily reflect ownership.

Unroaded areas. Areas that do not contain classified roads.

Appendix E – Interdisciplinary Team

Dan Chisholm, the Forest Supervisor, initially assigned primary responsibility for completing the Analysis to ID Team Leader Gary Barranco. Most of the work of the analysis was done with Mr. Barranco as the Team Leader. In September 2002, Kathleen Jordan, the Acting Forest Supervisor, designated Jed Parkinson and Sue Becker as co-team leaders to finish the analysis

The Forest Supervisor also staffed the balance of the Interdisciplinary Team with highly professional resource specialists. These people intimately understand the road system and the resources the road system access, and the issues associated with them. The entire interdisciplinary team and their area of expertise are displayed below.

Core ID Team Members	Responsibility
Gary Barranco	Initial Team Leader, Economics/Sociology
Jed Parkinson	Final Co-Team Leader, Engineering
Sue Becker	Final Co-Team Leader, Hydrology
Mary Rasmussen-Flores	Wildlife, Fish, Riparian Areas
Jessie Berner	Recreation, Public Access
Paul Bailey	Timber, Vegetation Management
John Ford	Transportation Planning
Extended ID Team	Responsibility
Yvonne Studinski	Geographic Information Specialist
Dan Meza	Tribal Relations Liaison
Irene Davidson	Botany, Noxious Weeds
Buck Silva/Keith Bryan	Fire Suppression/Fuels Management
Nancy Gardner	Public Participation
Jenny Jayo	Range
Marty Yamagiwa	Fisheries
Gerry Gates	Archaeology
Dick Read	Website Manager
Jayne Biggerstaff	Special Use Permits/Lands