MOTOR VEHICLE ROUTE AND AREA DESIGNATION GUIDE

National OHV Implementation Team

v. 111705

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INTRODUCTION

The purpose of the *Motor Vehicle Route and Area Designation Guide* (Guide) is to assist interdisciplinary teams in designating roads, trails, and areas for motor vehicle use, leading to publication of a motor vehicle use map. The Guide provides a framework for designation and implementation and a variety of reference tools.

This Guide is not management direction, and field units may adopt their own approaches or take only elements they find useful, to the extent consistent with 36 CFR part 212, subpart B. The Forest Service is preparing proposed changes to travel management directives in the Forest Service Manual and Handbooks.

The process outlined in the Guide includes six major steps (see page 4):

1. Compile Existing Travel Management Direction
2. Assemble Resource and Social Data
3. Use Travel Analysis to Identify Proposals for Change
4. Environmental Analysis and Decision-Making
5. Publish Motor Vehicle Use Map
6. Implement, Monitor, and Revise

The prohibition on use of motor vehicles off designated routes becomes effective when field units complete the designation process. It is critical that the agency move quickly to complete designation, and a broad spectrum of interest groups supports this goal. In order to expedite designation and avoid process gridlock, route and area designation should be guided by the following considerations:

- *Focus, focus, focus* – Tightly focused processes, analyses and decisions will minimize gridlock. Decisions should be focused on motor vehicles. Don't try to solve all travel management issues at once.

- *Avoid unnecessary inventory* – A complete inventory of user-created routes is not necessary. Gather only the information needed to evaluate proposed changes in travel management direction.

- *Avoid unnecessary environmental analysis* – An environmental impact statement (EIS), environmental assessment (EA), or land management plan amendment is not necessarily needed to designate a route system. There is no need to reconsider decisions made prior to the new travel management rule. Use travel analysis (step 3) to identify narrowly tailored proposals to change travel management direction, and conduct environmental analysis only when necessary. A decision to construct a route, add a route to the forest transportation system, or change authorization of or prohibitions on motor vehicle use

on a route or in an area is subject to the National Environmental Policy Act (NEPA). The ministerial action of identifying a designated route or area on a motor vehicle use map is not.

- *Focus on the change from the status quo* – For many national forests, the result of designation will be to change from cross-country motor vehicle use to a system of routes and areas designated for motor vehicle use. For other national forests, the motor vehicle use map will simply confirm travel management decisions that have already been made. Analysis should focus on the change from the current situation.

- *Collaborate* – Collaboration with federal, state, local, and tribal governments and the public is critical to the designation process. Involve government agencies and the public early and throughout the designation process to avoid surprises, promote trust, credibility, and coordination, and provide an integrated system of designated routes that is socially, environmentally, and economically sustainable and enforceable.

A key consideration in route and area designation is geographic scale. The proper scale for analysis will depend on the local situation, and may differ from one step to another in the designation process. Many units may wish to complete travel analysis at the level of a national forest, to address environmental and social issues at a broad scale. Other units may complete travel analysis at the level of a district, watershed, or mountain range or at some other scale. Travel management decisions to authorize or change motor vehicle use on particular routes will often be at a smaller scale than the travel analysis. The motor vehicle use map reflecting designated routes and areas will be published at the district or administrative unit scale.

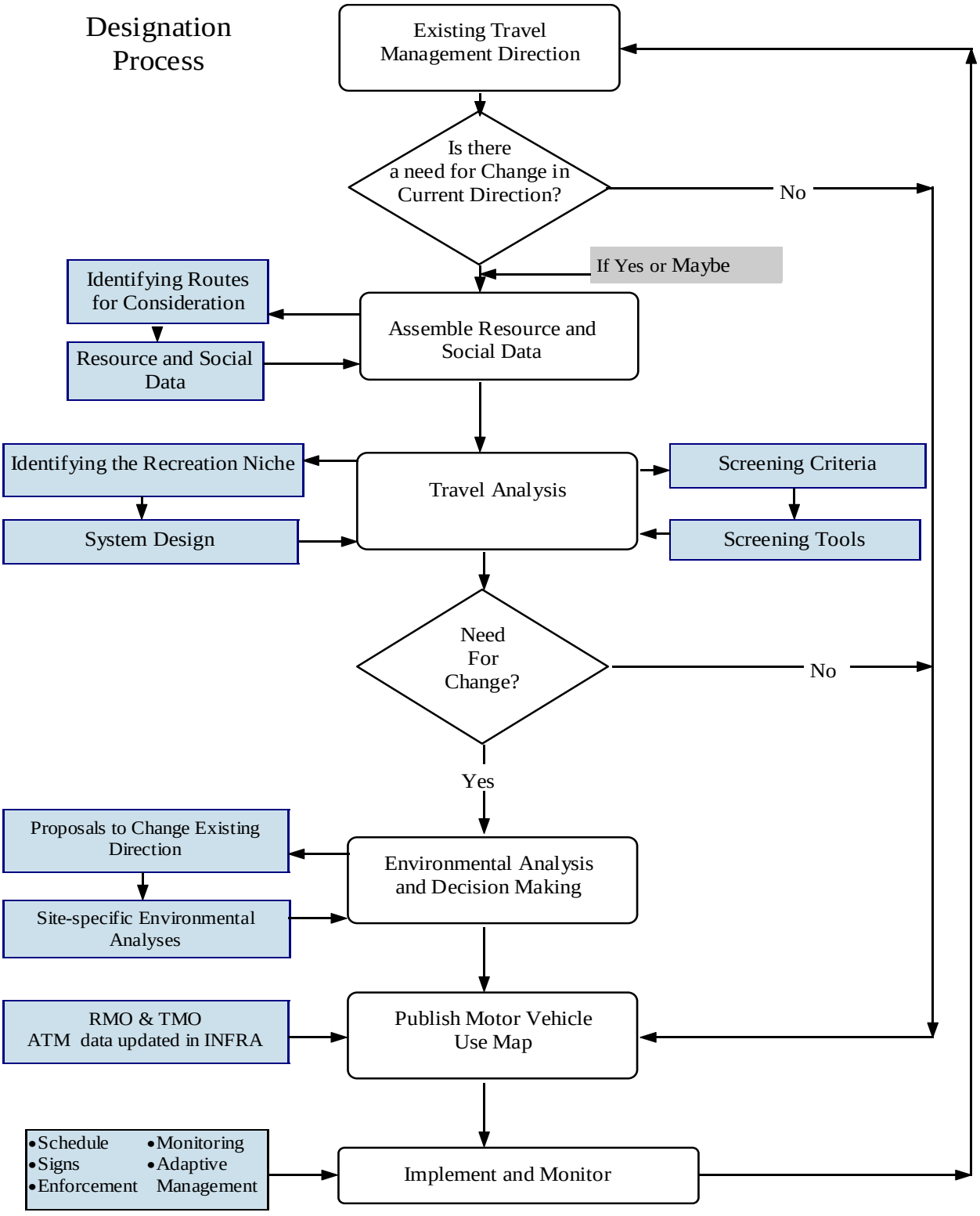
Prior to initiating the designation process, units should use travel analysis to evaluate their current travel management situation and identify proposed changes in travel management direction.

Current Situation	**Actions**
• Motor vehicle use restricted to NFS roads and NFS trails • No need to change roads, trails and areas managed for motor vehicle use	• Notify public • Publish motor vehicle use map
• Open to cross-country motor vehicle use • No need to change roads, trails and areas managed for motor vehicle use	• Make decision to prohibit cross-country motor vehicle use • Publish motor vehicle use map
• Motor vehicle use allowed or restricted. • Need to consider some user-created routes for designation, or otherwise change roads, trails, and areas managed for motor vehicle use.	• Propose adding routes to the forest transportation system or making other changes in travel management direction • If cross-country motor vehicle use is allowed, make decision to prohibit it • Publish motor vehicle use map

Each unit will need to consider its travel management situation and local issues carefully to determine if there is a need for change. A change in existing travel management direction may be necessary to accommodate existing and anticipated use or to protect resources. If a unit already prohibits motor vehicle use off designated routes and outside designated areas, and no change to those designations is needed, the unit may proceed to public notice and publication of the motor vehicle use map. Nothing in the final rule or this Guide requires reconsideration of previous travel management decisions. Appendix A includes examples of some typical situations that may be faced by national forests beginning the designation process.

Each unit should also consider whether existing information is sufficient to support travel management decisions or whether new data are needed.

This Guide provides a range of approaches for route evaluation. One of the principles of the rule is local decision-making within a national framework. The agency has been careful to provide for local flexibility to respond to local situations. At the same time, a certain level of consistency is necessary, particularly for adjoining units. A single trail generally should not be open to motor vehicle use on one side of a national forest boundary and closed on the other side, unless there is a good reason. Line officers must coordinate route and area designation with nearby units to ensure that the system of designated routes and areas makes sense for the land and for the users.


Designation Process
Existing Travel Management Direction
Is there a need for Change in Current Direction?
No
If Yes or Maybe
Identifying Routes for Consideration
Assemble Resource and Social Data
Resource and Social Data
Identifying the Recreation Niche
Travel Analysis
Screening Criteria
System Design
Screening Tools
Need For Change?
No
Yes
Proposals to Change Existing Direction
Environmental Analysis and Decision Making
Site-specific Environmental Analyses
RMO & TMO ATM data updated in INFRA
Publish Motor Vehicle Use Map
•Schedule •Monitoring
•Signs •Adaptive
•Enforcement Management
Implement and Monitor

Step 1
COMPILE EXISTING TRAVEL MANAGEMENT DIRECTION

Designation of routes and areas for motor vehicle use is not a completely new process. Every national forest has a system of NFS roads managed for motor vehicle use, reflected on a forest transportation atlas. Many also provide for motor vehicle use on NFS trails. Almost every national forest has completed a forest-wide roads analysis for roads managed for passenger cars. Almost every national forest has places where motor vehicle use is restricted by law (such as the Wilderness Act) or order.

Existing travel management direction reflects each national forest's history of travel planning, occupancy and use, road and trail construction, and a host of past decisions, including those contained in a land management plan. Some national forests have recently completed travel plans with extensive public participation.

The designation process must begin with a review of existing travel management direction. The baseline system consists of those National Forest System (NFS) roads, NFS trails, and areas on NFS lands currently managed for motor vehicle use, together with any orders or other prohibitions governing motor vehicle use. Use this baseline system in considering whether to propose changes to motor vehicle use during the designation process. Identifying the baseline system avoids unnecessary reconsideration of travel management decisions.

Public involvement at this stage helps ensure a common understanding of the baseline system, the starting point for analysis, and the scope of the decisions to be made. This is especially important when existing travel management direction is scattered among several documents and poorly understood. Failing to include the public in the process of compiling existing direction can lead to misunderstanding later in the designation process.

Baseline System

Consolidate existing direction on travel management into a single location. This step should not create new direction; rather, it is the sum of past decisions that guide motor vehicle use, including maps, road management objectives (RMOs), and trail management objectives (TMOs).

This step should also include a careful review of state vehicle codes and applicable local laws regarding licensing and registration, motor vehicle safety and equipment requirements, and motorized mixed use (motorized mixed use is use of a road by both highway-legal and non-highway-legal motor vehicles; a highway-legal vehicle is any motor vehicle that is licensed or certified for general operation on public roads within the state). Traffic on roads is subject to state traffic laws except when in conflict with designations established under 36 CFR part 212, subpart B, or with the rules at 36 CFR part 261. Thus, whether NFS roads are currently open to non-highway-legal vehicles depends on state traffic law.

If existing travel management decisions provide an adequate system of designated routes and areas and restrict motor vehicle use to the designated system, the existing decisions can be used to produce the motor vehicle use map, and there is no need to proceed through subsequent steps.

Designation is complete. This situation is typically the case when a national forest has recently completed route designation through a travel planning process.

Land Management Plans

Land management plans are strategic, aspirational documents. They establish goals, objectives, and desired future conditions, determine the suitability of land for various uses, and provide guidelines for resource protection. The plans themselves do not designate roads, trails, or areas for motor vehicle use. Rather, land management plans provide the management context in which travel management decisions take place.

Travel management decisions, including restrictions on motor vehicle use, are project-level decisions. They implement land management plans and must be consistent with them. Travel management decisions must therefore be supported by adequate public involvement and site-specific environmental analysis.

Some land management plans prepared under the 1982 planning rule incorporate travel management decisions supported by site-specific analysis in the environmental impact statement and record of decision for the plans. Examples include land management plans that restrict motor vehicle use in certain areas. We do not expect land management plans to incorporate travel management decisions in the future, but we recognize that land management plans may include specific direction as well as strategic guidance. Both form a part of the existing travel management direction. Appendix B includes a sample of the kinds of direction related to motor vehicle use sometimes found in existing land management plans.

Existing Designations

Many national forests will be able to begin their designation process with the presumption that NFS roads and NFS trails are in effect already designated for the motor vehicle uses for which they are currently managed. All national forests, for example, include NFS roads managed as open to highway-legal vehicles. Generally, these NFS roads are identified as maintenance level 2, 3, 4, or 5. These NFS roads are to a certain extent already designated for use by highway-legal vehicles. Nothing in the travel management rule requires reconsideration of such past management decisions. National forests may use travel analysis (see step 3) to identify needed changes to the forest transportation system.

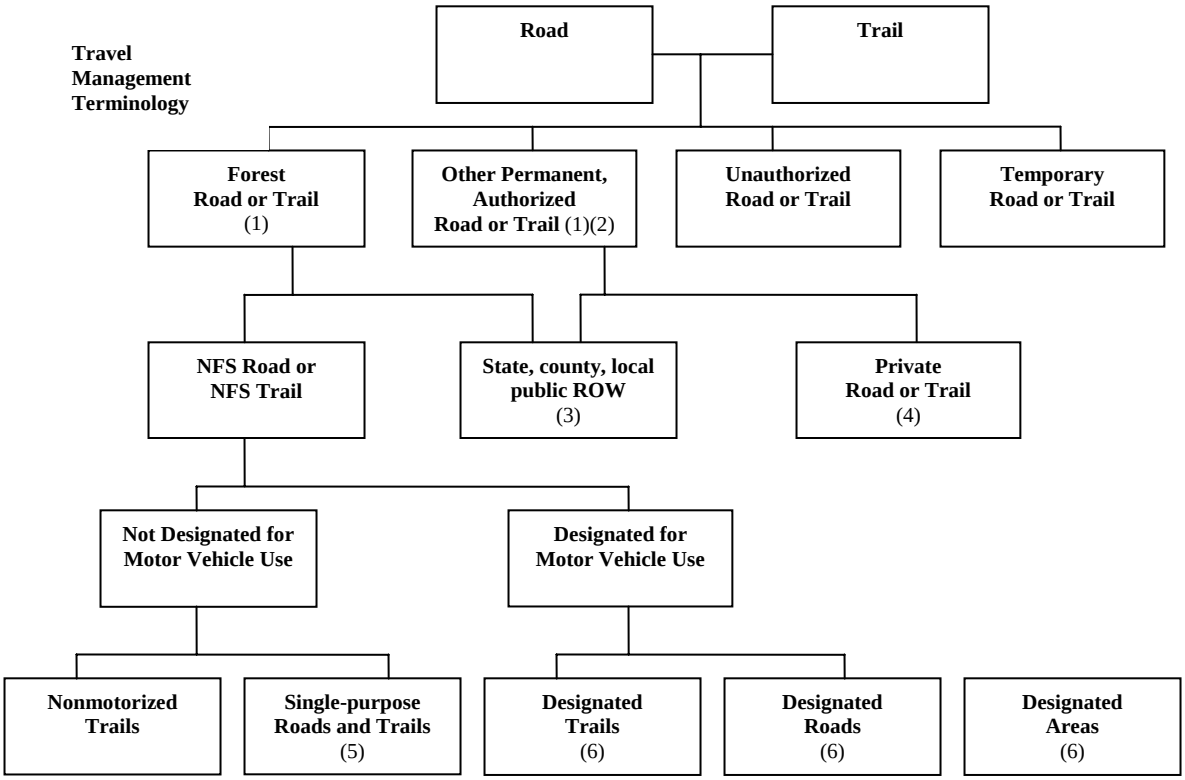
Travel management decisions will generally be focused on user-created routes, cross-country motor vehicle use, and use of off-highway vehicles (OHVs) other than over-snow vehicles. An OHV is any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. An over-snow vehicle is a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow. The new travel management rule exempts over-snow vehicles from the designation process. Over-snow vehicle use may still be subject to restrictions and prohibitions under 36 CFR part 212, subpart C.

The purpose of the travel management rule is to designate a system of roads, trails, and areas for motor vehicle use (other than over-snow vehicle use) and end unmanaged cross-country motor vehicle use. The rule is not intended to require reevaluation of the entire forest transportation system.

Jurisdiction

One part of compiling existing travel management direction is to identify jurisdiction for roads and trails on or serving NFS lands. Only NFS roads and NFS trails can be designated for motor vehicle use. NFS lands also include state, county, and municipal roads authorized by legally documented rights-of-way (see page 8). While the Forest Service may have some authority to take law enforcement actions or to regulate certain uses of such roads to protect NFS lands, they are not NFS roads and are not subject to designation under 36 CFR 212.51. Determining jurisdiction will also be important to identifying transportation systems in which federal, state, and local designations and policies are reasonably consistent.

Sometimes jurisdiction over a given road or trail is uncertain or disputed (e.g., disputed R.S. 2477 claims). Generally, roads and trails on NFS lands should be considered in the designation process unless authorized by a legally documented right-of-way. Coordinate with federal, state, county, and local public road authorities and law enforcement agencies, and consult with the local Office of the General Counsel in evaluating roads or trails when jurisdiction is uncertain. Legal research and title searches will sometimes be necessary to establish jurisdiction.



(1) Included on forest transportation atlas.
(2) Includes permanent public and private roads authorized by a written instrument that are not necessary for use of the NFS.
(3) Includes forest highways as well as other public roads on a legally documented right-of-way.
(4) Includes permanent private authorized roads not necessary for use of the NFS (e.g., private access to an inholding).
(5) Includes ML1 roads and other forest roads not designated as open to motor vehicle use (e.g., a private road to access a mining claim on NFS lands).
(6) Included on a motor vehicle use map.

Step 2
ASSEMBLE RESOURCE AND SOCIAL DATA

Travel analysis and travel management decisions will depend on information about existing use patterns, violation and accident patterns, natural resource conditions, user demand, and social and economic interactions. Field units should take care to gather only the information necessary to make informed travel management decisions. Route designation should not generally require comprehensive or exhaustive new inventories.

The public, including user groups, may be a valuable source of information. Federal, state, local, and tribal governments often have critical information and perspectives. Public participation at this stage can include sharing information about user-created roads and trails, joint collection of data, and collaborative learning about impacts. An open public process can increase understanding about travel management issues and set the stage for successful collaborative decision-making.

Identifying Roads, Trails, and Areas for Consideration

The baseline for travel analysis includes the inventory of existing NFS roads and NFS trails managed for motor vehicle use. This inventory must include maps as well as information on the current authorized uses and characteristics of each route.

Most national forests will also need some process to identify any existing user-created roads and trails which may be considered for addition to the forest transportation system. This process should emphasize planning and design of a desired system rather than exhaustive descriptions of existing use. A complete inventory of user-created routes is not required. However, users deserve some assurance that their favorite routes are given appropriate consideration, and we must have enough information about these routes to evaluate social and environmental impacts of adding them to the forest transportation system. Three approaches follow for addressing user-created routes.

No Inventory

In this approach the Forest Service does not initially gather data on user-created roads and trails. Rather, the agency facilitates identification of desired additions to the forest transportation system with the communities of interest. As desirable routes are identified, the agency and interested parties can organize joint visits to gather necessary information.

This is generally the preferred approach because it has the least cost, the greatest emphasis on collaboration, and focuses on changes to the baseline system of NFS roads and NFS trails. This approach should especially be considered where the number of potential user-created routes is very large and information on individual routes is limited. It will be most effective where there are well-established user groups and effective working relationships.

Considerations

- No initial inventory costs.

- Requires the Forest Service to define expectations and facilitate interests early in the process.
- Establishes a desired system of NFS roads and NFS trails through collaboration and consensus.
- Dependent upon participation by diverse communities of interest.
- Focuses on issues and needs rather than history of use.

Partial Inventory

In this approach, the Forest Service identifies an initial set of known user-created routes for consideration. These routes may be well-known and established and may be based on existing agency inventories or other information. The Forest Service may identify high-priority corridors or zones in which agency employees or members of the public map existing routes according to defined criteria. Communities of interest validate this initial list and identify additional routes for consideration.

This may be the preferred approach for dealing with well-known, well-established user-created routes (where not including them in an initial inventory would appear disingenuous); specific areas of particular sensitivity; or units where the number of user-created routes is relatively low. The focus is still on identifying those user-created routes which should be considered for addition to the forest transportation system, rather than on a complete record of every path ever used.

Considerations

- Low to moderate inventory costs.
- Makes use of existing information.
- Early identification of key routes.
- Dependent upon participation by diverse communities of interest.

Complete Inventory

In this approach, the Forest Service begins the designation process by assembling a complete inventory of user-created routes on the unit through some combination of remote sensing and inventory conducted by field crews. A complete inventory will often include well-sited routes that would make good additions to the forest transportation system, poorly located routes causing environmental damage, and even multiple braided routes providing access to the same location. The emphasis is on an inventory of what exists on the ground, without exercising judgment. Communities of interest may validate the inventory by identifying routes missed in the initial pass or participate in the inventory themselves.

This may be a suitable approach where units have made commitments to interested parties, outside funds are available, and the process is already underway. A complete inventory of user-created routes has long-term value for monitoring and identification of restoration needs. However, beginning the designation process with a complete inventory is very costly, lends legitimacy to unplanned routes, and focuses attention on recording past activities rather than identifying future needs.

Considerations

- High inventory costs.
- Provides an immediate basis for monitoring route proliferation during the travel planning process.
- Provides a basis for short-term closures pending designation.
- Establishes a record of existing ground disturbance for long-term restoration.
- Difficult to conclude, as routes continue to be developed
- Subject to debate over completeness and mapping standards.
- Provides more complete information on existing use for evaluation of project-level environmental impacts.

Resource and Social Data

Organize existing data from monitoring reports, agency knowledge and public input. From this initial screen, collect new field information only if critical to making an informed designation decision.

Collected information will (1) provide key information for assessing roads, trails, and areas; (2) facilitate public involvement, review, and communication; and (3) provide the basis for travel analysis and environmental analysis (especially for cumulative effects). Consider the criteria in 36 CFR 212.55 as a basis for collecting and organizing information to support the designation process.

Data collection should be prioritized based on the importance of the information in determining the need for change to the existing system of NFS roads and NFS trails. The length of time or timing required for some field and data gathering protocols and consultation can delay environmental analysis if field surveys are not started until after proposed actions are identified. Such surveys may address historic and cultural resources; threatened, endangered, and sensitive plant and animal species; soil and water quality; safety; and user needs and conflict assessments. Therefore, units should assess information gaps early in the designation process and begin data gathering to collect needed information.

Step 3
USE TRAVEL ANALYSIS TO IDENTIFY PROPOSALS FOR CHANGE

Travel analysis provides a comprehensive look at the network of NFS roads and NFS trails across a broad landscape before beginning the NEPA process. Some travel management issues (e.g., overall response to user demand, open road density and other wildlife issues) must be considered at a broad scale, while other issues (e.g., sharing of a particular trail or mitigation for a particular stream crossing) are best evaluated at the project level. Travel analysis offers an initial opportunity to address broad-scale issues. Site-specific issues are addressed at the project level (step 4).

Travel analysis should result in a set of proposals for changes to the forest transportation system, which can be evaluated through the NEPA process. These may include proposals to add user-created routes to the forest transportation system, proposals to change prohibitions or restrictions on motor vehicle use, and proposals to change authorized classes of vehicle or time of year on NFS roads and NFS trails. Travel analysis does produce these decisions; rather, it identifies a suite of proposals for project-level consideration and evaluation.

Travel analysis should encompass past administrative decisions and analyses whenever possible, to avoid duplication of administrative decisions and effects analyses that have already been completed. If existing travel management direction restricts motor vehicle use to designated routes and areas and travel analysis results in the conclusion that no changes to the baseline system are needed, no further analysis is necessary and a motor vehicle use map reflecting designated routes and areas may be published.

By analyzing and evaluating the network of roads and trails across a broad area, travel analysis provides the basis for cumulative effects analysis in subsequent NEPA documents.

Travel analysis integrates management of motor vehicle use into the roads analysis process used by the Forest Service to evaluate NFS roads. Rather than add a new analytical process to field units already burdened by process requirements, the agency plans to propose changes to FSM 7710 and associated directives to adapt the roads analysis process to provide more comprehensive evaluation of motor vehicle use.

Public involvement at this stage is essential to ensure that the public has a chance to identify and respond to broad-scale issues. Collaborative efforts in travel analysis can result in proposed changes to the forest transportation system that enjoy broad support, avoid serious environmental issues, and are relatively straightforward to address under NEPA. Failure to involve the public in travel analysis can result in lack of understanding and support for the travel management program and repeated challenges to project decisions.

Travel analysis should include evaluation of recreation niche and recreation demands, as well as initial screening of user-created routes that are candidates for inclusion in the forest transportation system.

Planning and Design of Motorized Recreation Opportunities

Using the baseline system of NFS roads and NFS trails as a starting point, a sustainable system of designated roads, trails, and areas requires consideration of users' preferences and the potential supply of OHV opportunities. NFS roads and NFS trails serve two main purposes. Roads, and to a lesser extent trails, provide access for natural resource management and travel within and across NFS lands. Roads and motorized trails also provide an enjoyable recreational experience for OHV riders and other recreational visitors. A road originally constructed for timber purposes might end at the harvest unit, while a loop might provide a more enjoyable recreational opportunity. Transportation system design also requires consideration of trail and road densities, motorized mixed use, safety, historical use, and system sustainability and enforceability.

Identifying the Recreation Niche

An understanding of the supply and demand of recreational opportunities, including opportunities for OHV riders, is important in designating a system of roads, trails, and areas for motor vehicle use. General information about demand (what people want) and supply (what we have) may be contained in land management plans, state comprehensive outdoor recreation plans, and other area, regional, statewide, and national assessments. Two recent reports related to demand include *Off- Highway Vehicle Use on National Forests: Volume and Characteristics of Visitors* (posted at http://fsweb.wo.fs.fed.us/rhwr/ohv/hd/NVUM-final_national-OHV-use-report-080504.doc) and *Off-Highway Vehicle Recreation in the United States, Regions and States* (posted at http://www.fs.fed.us/recreation/programs/ohv/OHV_final_report.pdf). User groups are often an excellent source of demand information. Planners must determine how best to use existing information and what additional resource and social information is necessary to define a recreation niche for motor vehicle use on an administrative unit or a ranger district.

National forests cannot provide every recreational opportunity, and the Forest Service is not the only supplier of motorized recreational opportunities. The Forest Service does not, for example, typically provide urban-type sports facilities and opportunities such as swimming pools, golf courses, or motocross tracks on NFS lands. Each Forest Service unit must identify the recreation niche it serves in coordination with state and local governments and private recreation providers.

Demand: Assessing User Needs

Designing a system of designated roads, trails, and areas to provide high quality, sustainable recreation experiences requires an understanding of the type of opportunities motorized recreation visitors desire. A user needs assessment focuses on key visitor and site information, including visitor demographics; public expectations; interaction with other users; and motorized recreation visitation by vehicle class, type of activity, and level of difficulty.

Motorized recreationists are not a uniform group. Beginning riders and families desire different experiences from expert riders seeking challenge. Motorcyclists, all-terrain vehicle (ATV) riders, and four-wheel-drive enthusiasts sometimes have different expectations from each other. A user needs assessment should address the diversity of recreation users.

A formal study is not required, but travel analysis should include consideration of user needs. A user needs assessment includes:

- Compilation of relevant existing information.
- Identification of the user community.
- Public outreach.
- Identification of user profiles and desired experiences.

Refer to the *OHV User Needs Assessment Guide for Motorized Recreation* for a detailed discussion of assessing user demand. See also *A Technical Guide for Integrating Recreation Heritage and Wilderness into Land and Resource Management Planning,* at http://fsweb.wo.fs.fed.us/rhwr/planning.

Supply: Roads, Trails, and Areas

The supply of motorized recreation opportunities includes NFS roads and NFS trails managed for motor vehicle use. The potential supply can also include user-created routes identified for consideration in step 2 (Assemble Resource and Social Data). Evaluation of supply should consider existing and potential motorized recreation opportunities provided by other governmental agencies and the private sector. Travel analysis provides initial pre-NEPA screening of user-created routes to identify those suitable for inclusion in proposals for additions or changes to the forest transportation system.

Tools for Assessing Demand and Supply

Tools used in land management planning may also assist with travel analysis. The following are some of the available analytic tools. It is not necessary to apply all of these tools on every national forest. Refer to *A Technical Guide for Integrating Recreation Heritage and Wilderness into Land and Resource Management Planning* for more detailed descriptions of these tools.

The *Recreation Opportunity Spectrum (ROS)* is a framework for describing and providing an array of opportunities for recreation and tourism. The ROS includes composite maps of social, physical, and managerial conditions ranging from modern and developed to primitive and undeveloped.

Considerations in Travel Analysis:
Identify zones where motorized recreation is appropriate and identify key social, physical, and managerial conditions. Settings suitable for OHV riders range from semi-primitive motorized to more modified settings that accommodate more visitors and associated facilities. Primitive and semi-primitive non-motorized settings are not generally suitable for motorized recreation. ROS maps provide an initial layer for understanding experiences that may be provided on an administrative unit or a ranger district. The level of developed infrastructure and volume of use should be appropriate for the ROS zone.

The *Scenery Management System (SMS)* is used to inventory, analyze, and map scenery based on physical, ecological and social factors. Maps, narratives, and tabular information are used to classify NFS lands according to their scenic value.

Considerations in Travel Analysis:
Opportunities to view scenery are important to OHV users and should be incorporated into transportation system design. Review SMS maps to identify scenic overlooks and outstanding landscapes.

Sense of Place (SOP) is a place-based, multi-scale process used to identify peoples' values, attitudes and connection to the landscape. SOP is based on public input, institutional knowledge, and other sources. The resulting map captures peoples' individual and cultural attachments to the landscape, which helps better understand recreation demand and niche.

Considerations in Travel Analysis:
SOP identifies attractions important to OHV recreationists and others, from outstanding scenery to historic places. This approach highlights the importance of the landscape to recreationists and identifies complementary or conflicting uses.

National Visitor Use Monitoring (NVUM) is an on-site survey of NFS visitation on a 5-year cycle. NVUM yields reports on national forest visits, satisfaction, and user expenditure data. These data sets are available through the Natural Resources Inventory System (NRIS) human dimensions module.

Considerations in Travel Analysis:
NVUM provides a profile of visitors to national forests. The Activity Participation Chart reflects motorized recreation in the context of the recreation program as a whole. The first iteration of NVUM reports does not distinguish among types of OHV users. However, specific and localized questions may be added to NVUM interviews to supplement information on OHV users.

A useful NVUM report on OHV visitors to the national forests (*Off-Highway Use on National Forests: Volume and Characteristics of Visitors, a special report to the National OHV Implementation Team*, August 5, 2004) is available on the national OHV website (http://fsweb.wo.fs.fed.us/rhwr/ohv). Data include the number of OHV users, demographics of OHV users, and the average length of their visits to the national forests, organized by state and region.

The *National Survey on Recreation and the Environment (NSRE)* is a telephone survey of the general population designed to describe their recreation activities and participation trends. The NSRE is generally conducted every 5 years to assess trends in outdoor recreation by activity, geographic region, and user demographics.

Considerations in Travel Analysis:
An NSRE report has been prepared for OHV recreation that is focused on user demographics by state and region (*Off-Highway Vehicle Recreation in the United States, Regions and States: A*

National Report from the National Survey on Recreation and the Environment (NRSE), June 2005). The report provides insight into recreational use of OHVs nationally that can guide communication and inform discussions with cooperators, states, and other federal agencies. The NSRE report is available on the national OHV website.

The *Infrastructure Database (INFRA)* is the Forest Service's electronic record of tabular and quantitative information on the supply and condition of Forest Service facilities.

Considerations in Travel Analysis:
INFRA includes information on existing NFS roads, NFS trails, and other recreation facilities that support OHV use. It is important to consider information from multiple INFRA databases (such as for roads, trails, and developed facilities) in determining desired settings and opportunities.

These tools can be used to assess demand and supply as shown in the following table:

DEMAND		**SUPPLY**	
Tools:	**Output:**	**Tools:**	**Output:**
ROS	Activities	ROS	Settings/special places
SMS	Valued landscapes	SMS	Existing landscapes
SOP	Special places	SOP	Special places
NVUM	Satisfaction and use patterns	NVUM	Recreation use
NSRE	Activity trends	NSRE	Existing activities
INFRA	N/A	INFRA	Agency facilities

Integrating Demand and Supply: Recreation Niche

Travel analysis, with public input, should determine whether there is a need to change the forest transportation system. Refer to *A Technical Guide for Integrating Recreation Heritage and Wilderness into Land and Resource Management Planning* for a general description of how to identify issues and enhancement opportunities for recreation. Addressing issues and enhancement opportunities requires consideration of the capability of the area under analysis to provide sustainable motorized opportunities consistent with the applicable land management plan.

System Design

The starting point for travel analysis is the existing system of NFS roads and NFS trails managed for motor vehicle use. Through travel analysis, the interdisciplinary team identifies possible additions or changes to this system within the area under consideration to provide a sustainable

transportation system that meets user needs, protects resources, and is within the agency's ability to operate and maintain.

Design Factors

In travel analysis the objective is to provide both recreation experiences and access. Customer satisfaction is important. Roads, trails and areas that meet users' needs while protecting natural and cultural resources and protecting public safety will minimize user-created routes, resource damage, facility deterioration, and law enforcement issues.

The following factors may be relevant to designing a sustainable transportation system:

Recreational Experience

- Types of use (e.g., recreational riding and hunting)
- OHV as the primary or secondary use (i.e., motor vehicle use in conjunction with another recreational activity such as camping, hunting, or fishing)
- Vehicle classes (e.g., ATVs and motorcycles)
- Safety
- Controlling speed
- Length of stay and ride
- Volume and season of use
- Relationship between OHV use and other national forest uses
- Type and range of levels of difficulty
- Proportion of easy, moderate, and difficult routes
- Destinations/attractions (e.g. lakes, vistas, hunting areas, and historic places)
- Relationship to support facilities (e.g., access roads, staging areas and trailheads, toilets, campgrounds, and picnic shelters)
- Ability to link routes, attractions, and facilities
- Relationship to other recreation providers' infrastructure
- Need for loop trails
- Flow of the route (how alignment, line of sight, obstacles, and surface tread affect speed and control of vehicles)
- Opportunities to convert appropriate roads to trails
- Historical use patterns
- Current and potential use by permitted outfitters and guides

Environmental Issues

- Soil, water, vegetation, wildlife and cultural resources
- Cumulative actions (other past, present, and future actions which may contribute to cumulative impacts from OHV use, including actions on non-NFS lands)
- Relationship between motor vehicle use and other national forest uses
- Sound or emissions in relationship to nearby uses and landowners
- Number of, and how to address, stream crossings

- Relationship to riparian areas
- Relationship to wilderness and other non-motorized areas
- Future management of user-created routes not designated for motor vehicle use

Operational Issues

- Known or potential safety issues on and off the route
- Speed, volume, type, and distribution of traffic on roads
- Support from user groups, manufacturers, volunteers, and other cooperators
- Support from state, county, municipal, or other governmental agencies
- Possible seasonal closures due to weather, wildlife, or other factors.
- Support from fee programs
- Access for emergency, maintenance, and enforcement
- Ability to enforce regulations and designations
- Route and facility maintenance requirements and costs (annual and long-term)
- Route and facility management requirements and costs (annual and long-term)
- Ability to fund maintenance, operation, and enforcement of the system

Analysis of Candidate Roads, Trails, and Areas

Based on the above considerations and appropriate field review, travel analysis should:

- Identify locations to avoid in route designation (e.g., critical habitat for threatened and endangered species and lands identified as unsuitable for motorized recreation in the applicable land management plan)
- Identify locations where additional routes are needed or desired
- Identify locations where additional routes are possible/feasible
- Identify environmental, social, or managerial factors that could limit route locations
- Identify potential user-created routes which could be considered for addition to the forest transportation system
- Review use patterns which would result from connecting roads, trails, trailheads, and attractions and supporting facilities, and propose adjustments to the network where needed
- Propose changes to the existing motor vehicle road and trail system, as needed and appropriate
- Propose changes to existing travel management restrictions, as needed and appropriate

Overlays of important factors can facilitate identification of changes needed to the existing motor vehicle route system by highlighting locations where factors overlap.

Proposed changes to the forest transportation system can then be carried forward as proposed actions for consideration under NEPA.

Appendix C contains references to websites, documents, and other source material to assist managers in designing trail systems.

Motorized Mixed Use on Roads

Designation addresses not just where motor vehicle routes are located but which vehicle classes may use which routes. NFS roads are designed for use by full-sized highway-legal vehicles, but many NFS roads also provide recreational access for ATVs and other non-highway-legal OHVs. NFS trails may be connected to each other by segments of road. Motorized mixed use is defined as designation of an NFS road for use by both highway-legal and non-highway-legal vehicles at the same time. The Forest Service anticipates the need to continue managing some NFS roads for motorized mixed use. Motorized mixed use involves safety, legal, and engineering considerations.

NFS roads managed at maintenance level 3, 4, or 5 are considered open to public travel by passenger cars under the Highway Safety Act. Designating these roads for motorized mixed use requires the exercise of professional engineering judgment addressing the probability and severity of accidents. The roads/travel analysis process should be used to review and adjust Road Management Objectives and maintenance levels.

State laws on use of non-highway-legal OHVs vary, both in terms of whether these vehicles are allowed to operate on roads and in terms of operator age, licensing, certification, training, and other vehicle and operator requirements. Designations under 36 CFR 212.51 may preempt state law (for example, by allowing motorized mixed use where it would otherwise be prohibited), but should do so only after consideration of safety, liability, and enforcement issues, and after coordination with state and local governmental and law enforcement agencies. *Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads*, a San Dimas Technology and Development Center publication, provides detailed guidance on how to conduct this type of engineering analysis.

The level of analysis necessary for motorized mixed use will vary depending on:

- Whether the use is consistent with state and local law;
- Whether the road currently has motorized mixed use;
- The history of accidents and enforcement problems related to mixed use on the road; and
- The exercise of engineering judgment by a qualified engineer.

Engineering analysis may range from documentation of the application of engineering judgment to a full engineering report, depending on the context and intensity of engineering factors. This analysis should be coordinated with recreation, law enforcement, and other appropriate specialists.

Access Across Adjacent Private Land

Many roads and trails on NFS lands originate on or cross non-federal land. Public access across non-federal land requires acquisition or reservation of a right-of-way by the Forest Service across that land.

If a sustainable forest transportation system requires access across non-NFS lands, the Forest Service should procure legal access to those lands if it has not already done so by working with state and local governments and private landowners. Avoid designating routes that cross non-federal lands to which the Forest Service does not have legal access.

System Sustainability

Much of travel analysis focuses on providing recreation opportunities while minimizing environmental impacts. However, a sustainable forest transportation system also requires sufficient financial resources to operate and maintain roads and trails and enforce travel management restrictions. To be successful, Forest Service units will depend upon federal, state, user, and cooperator resources and volunteers.

Travel analysis should address whether the transportation system is sustainable fiscally as well as environmentally. One of the purposes of the existing roads analysis process is to identify the minimum road system necessary to meet land management plan goals (FSM 7710.2). The agency needs to be able to manage and maintain designated roads and trails over the long term. The travel management rule acknowledges this fundamental need in its general criteria and requires an assessment of future work and the likelihood of resources to achieve it. The regulation directs consideration of "the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration" (36 CFR 212.55(a)).

Travel analysis should result in proposals to change the forest transportation system in ways that are financially sustainable. Use caution before proposing major additions to the system of NFS roads and NFS trails without a way to pay for them. At the same time, field units should leverage available sources of funding to maximize public access to NFS lands. Take full advantage of cooperative relationships with state and local government and user groups in developing a financially sustainable strategy for travel management.

Consider the following costs in evaluating sustainability of the forest transportation system:

- Annual and long-term road and trail tread and facility maintenance
- Signing, including sign maintenance and replacement
- Field presence (trail rangers and volunteer coordinators), including periods of peak visitation
- Enforcement by both LEO and FPO resources
- Restoration activities
- Monitoring

Consider the following in assessing the financial sustainability of the transportation system:

- What activities and services are required annually and periodically to operate and maintain the system, including support facilities?
- What are the estimated annual operating costs (including monitoring)?
- What are the estimated annual maintenance costs?

- Is there adequate staff to manage the system?
- What is the mix of funding sources and staffing? How reliable are these sources? Over what period?

The following are sources of potential funding and support for administering a travel management program:

- Volunteers
- OHV manufacturers, trade associations, and cooperators
- OHV user groups and non-governmental organizations
- The Federal Highway Administration's Recreation Trails Program
- Federal funds distributed through the National Forest Foundation
- Fees established under the Federal Lands Recreation Enhancement Act
- State agencies and state registration and fuel tax programs
- Local communities and county governments
- Foundations and environmental organizations
- Other recreation advocacy groups
- Other public or private OHV recreation providers

Evaluation of Roads, Trails, and Areas

In addition to system-level considerations, travel analysis may include initial screening of those user-created routes identified in Step 2. This initial, pre-NEPA analysis provides information from which to refine the set of potential routes that may be added to the forest transportation system.

The criteria in 36 CFR 212.55 apply to all decisions regarding whether to allow motor vehicle use on a route or in an area. A variety of tools have been used by field units in applying these criteria or documenting their consideration. Three of these tools – a checklist, a risk-value assessment, and the route impact and recreation value assessment (RIVA) – are profiled below. All of these tools are optional, and other tools are available. None of these tools changes the designation criteria in 36 CFR 212.55, the underlying requirements for public involvement and environmental analysis under NEPA, or any other requirement of law, regulation, or policy. These tools can be helpful in effectively comparing potential routes and developing proposals for changes to the forest transportation system, but those proposals must still receive adequate site-specific analysis and public involvement.

Areas are not expected to be large or numerous. Designated areas should be defined by special natural features or past uses which make them uniquely resistant to damage from cross-country motor vehicle use.

Screening Criteria

General and specific criteria for designation of roads, trails, and areas for motor vehicle use are enumerated in 36 CFR 212.55. These criteria address resource issues, use conflicts, and

recreation opportunities. These criteria provide a filter for screening potential additions to the forest transportation system.

General Criteria

Consider effects on:

- NFS natural and cultural resources
- Public safety
- Provision of recreational opportunities
- Access needs
- Conflicts among uses of NFS lands
- Need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated and the availability of resources for that maintenance and administration

Specific Criteria for Trails and Areas

Consider effects on the following, with the objective of minimizing:

- Damage to soil, watershed, vegetation and other forest resources
- Harassment of wildlife and significant disruption of wildlife habitats
- Conflicts between motor vehicle use and existing or proposed recreational uses of NFS lands or neighboring federal lands
- Conflicts among different classes of motor vehicle uses of NFS lands or neighboring federal lands

Consider:

- Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors

Specific Criteria for Roads

Consider:

- Speed, volume, composition, and distribution of traffic on roads
- Compatibility of vehicle class with road geometry and road surfacing

Rights of Access

Recognize:

- Valid existing rights
- The rights of use of NFS roads and trails under 36 CFR 212.6(b)

Wilderness Areas and Primitive Areas

NFS roads, NFS trails, and areas on NFS lands in wilderness areas or primitive areas shall not be designated for motor vehicle use unless, in the case of wilderness areas, motor vehicle use is authorized by the applicable enabling legislation for those areas.

Screening Tools

The following tools are some of those that have been used by field units to evaluate potential roads, trails, and areas for motor vehicle use in the past. Commercial tools are also available. Each tool will need to be adapted to a certain degree to be consistent with the new travel management rule. The tools are provided as examples of the thought process involved, rather than as templates that are directly transferable to other units.

Checklist

This Guide contains two field-developed checklists used in evaluating roads, trails, and areas for motor vehicle use. Appendix D includes a checklist developed by the Ouachita National Forest. Appendix E includes a checklist produced by Region 5. Checklists provide information about resource impacts, social conflicts, and recreational opportunities, and ensure that consideration of criteria is documented.

Risk-Value Assessment

A risk-value assessment should rank roads and trails based on risks (e.g., wildlife disturbance and impacts on cultural resources) and values (e.g., access to facilities and recreation opportunities for OHV users). Rather than applying the evaluation criteria based on a numerical scale, this process ranks risks and values and summarizes the overall risk and value of each route on a high to low scale.

Critical thinking should be employed to determine which factors to assess. This process results in a matrix that prioritizes roads, trails, and areas for further consideration in planning and design of the transportation system. See
http://www.fs.fed.us/r3/lincoln/NonNepa/roads_analysis/road_index.htm
for application of a risk-value assessment to roads analysis on the Lincoln National Forest.

Route Impact and Recreation Value Assessment (RIVA)

Evolving from the roads analysis process and, in particular, from its risk-value assessment approach, the RIVA allows evaluators to numerically rank and compare resource impacts and recreation values for a particular route. RIVA was developed by members of the OHV community, conservationists, ranchers, local business owners, and Bureau of Land Management (BLM) and Forest Service personnel during the Fourmile travel management planning process in the Arkansas River Valley in the White River National Forest (Appendix F). RIVA facilitates comparison between evaluators to hone further the group of routes being considered in the

designation process. RIVA allows a diverse community of interests to collaborate efficiently and move toward consensus.

Step 4
ENVIRONMENTAL ANALYSIS AND DECISION MAKING

Any proposed changes to the forest transportation system, including changes to previous travel management decisions (step 3) are subject to public involvement and environmental analysis under NEPA and other environmental laws.

Timing and focus are critical. NEPA is not triggered until the agency has a proposal and is preparing to proceed with it. Avoid beginning the NEPA process too early, before the Forest Service has a specific proposal for change, and avoid overly broad, generic proposals. The better we do the pre-NEPA work in Steps 1, 2, and especially 3 and the more public input and support for a proposal, the simpler the NEPA task will be. The environmental analysis for travel management proposals should focus on those specific changes the agency proposes to the baseline transportation system identified in Step 1.

Site-Specific Environmental Analysis

This Guide is not intended to duplicate or replace Forest Service NEPA procedures, which are found in Forest Service Handbook (FSH) 1909.15. The following discussions focus on the application of NEPA to travel management decisions.

Incorporation of Past Decisions

The travel management rule does not require reconsideration of past travel management decisions. If an administrative unit or a ranger district is not proposing any changes to the forest transportation system and motor vehicle use in that unit or district is already restricted to a system of designated routes and areas, no additional analysis is necessary. The unit or district should publish a motor vehicle use map reflecting those designations and enforce them pursuant to the prohibition on motor vehicle use in the new travel management rule.

Proposed Action

Travel management typically involves the following types of proposed actions, which trigger public involvement and site-specific environmental analysis:

- Proposals to add user-created routes to the forest transportation system and designate them for motor vehicle use
- Proposals to change existing motor vehicle uses, such as vehicle class and time of year, on NFS roads and NFS trails
- Proposals to change, establish, or remove restrictions on motor vehicle use (including the restriction on cross-country travel)
- Proposals to establish new areas on NFS lands for motor vehicle use
- Proposals to allow limited use of motor vehicles within a specified distance of certain designated routes for the purposes of dispersed camping or big game retrieval in accordance with 36 CFR 212.51(b)

The following types of actions also require public involvement and site-specific environmental analysis, and may be included in travel management proposals if appropriate and ripe for decision:

- Proposals to construct new NFS roads and NFS trails
- Proposals to reconstruct or relocate existing NFS roads and NFS trails
- Proposals to decommission existing NFS roads and NFS trails

There is no need to initiate a NEPA process to designate those NFS roads, NFS trails, and areas on NFS lands that are already managed for motor vehicle use where that use will continue unchanged, or to retain existing restrictions on motor vehicle use.

This Guide is not intended to address future treatment of roads and trails on NFS lands that are not designated for motor vehicle use. Some may be managed as non-motorized trails or single-purpose roads and trails and retained in the forest transportation system. Others may be physically obliterated. Proposals for these actions may be packaged with proposals related to designation or addressed in a separate package after designation.

Collaboration with the public in travel planning should begin before initiation of the NEPA process. Careful framing of the proposed action and effective collaboration will increase acceptance of the decision.

The geographic scope of the environmental analysis need not be the same as the scope of the travel analysis described in step 3 of the Guide. Once the responsible official identifies specific proposed changes in current travel management direction, the official should carefully consider how to group the proposals and environmental analysis to ensure efficient analysis and decision-making.

Proposed Action, Example

The Smokey Bear National Forest proposes to restrict motor vehicle use in the Biltmore Creek watershed to designated roads and trails. As a component of this decision, the Forest also proposes to add two user-created trails in the Biltmore Creek watershed (the northern trail and the southern trail) to the forest transportation system. These two trails, totaling 15 miles, would be designated and managed for continued use by off-highway vehicles less than 50 inches in width. The attached map displays the existing forest transportation system in the Biltmore Creek watershed and the proposed additional trails.

Purpose and Need

Changes to the forest transportation system are evaluated as site-specific proposals. Each proposed action requires a site-specific statement of purpose and need, which should be narrowly tailored to that proposal. The statement of purpose and need should enumerate the rationale for the specific changes being proposed.

Purpose and Need, Example
The proposed restriction on cross-country motor vehicle use is needed to protect water quality in Biltmore Creek. Cross-country motor vehicle use has resulted in at least 16 user-created crossings of Biltmore Creek within a two-mile stretch. The northern trail and the southern trail proposed for addition to the forest transportation system are needed to connect NFS Trail 876 with NFS Trail 422 to create a loop trail for off-highway vehicles with a minimum of impact to Biltmore Creek, as discussed in the Smokey Bear National Forest travel analysis. The proposed trails would cross the creek at relatively stable fords; directing use to these crossings would reduce long-term impacts to fisheries.

Scoping and Issues

Conduct scoping on agency proposals for change, involve the public, and coordinate with state, county, tribal, and local governments. This should not be the first time the public is involved in the travel management process. Scoping at this stage should build upon prior public involvement efforts.

Step 1 – Familiarize parties with existing travel management direction
Step 2 – Share information on resource and social data
Step 3 – Analyze travel networks and interactions at the broad scale, and identify proposals to change travel management direction
Step 4 – Evaluate specific proposals for change

Scoping should focus on identifying specific issues associated with the proposed changes to the forest transportation system and travel management direction. Ensure that our public communications are simple, clear, and understandable.

Issues, Example
The Columbia State Game and Fish Commission and other respondents note that the proposed northern trail crossing of Biltmore Creek is already showing some signs of bank erosion and sedimentation associated with cross-country motor vehicle use. The Commission and the respondents believe that the proposed designation of this trail for motor vehicle use, along with the proposed restriction on cross-country motor vehicle use, will concentrate use and accelerate erosion and sedimentation in Biltmore Creek, reducing the population of the native snub-nosed darter and potentially affecting the downstream population of the endangered sweetwater minnow.

The Happy Trails Riders Club and several off-highway vehicle riders note that the loop created by the northern trail and southern trail is too long and difficult for families with small children and other beginning riders. The Club and the riders also note that an existing user-created trail (known as the middle way) between the two proposed crossings provides more diverse recreation experiences. The Club and the riders believe that the proposed restriction on cross-country motor vehicle use would limit the opportunities available to families and new riders.

Alternatives

Alternatives should reflect different approaches to achieve the specific purpose and need, in response to the issues, consistent with the applicable land management plan. Avoid developing alternatives as broad themes or approaches to managing NFS lands. Include appropriate mitigation in development of alternatives.

Alternatives, Example
In Alternative 1 (the no action alternative), the Forest Service would not restrict motor vehicle use in the Biltmore Creek watershed to designated roads and trails or make any changes in the forest transportation system at this time. Cross-country motor vehicle use would continue to be allowed. This alternative would not implement the new travel management rule or fulfill the purpose and need. This alternative addresses the diversity of opportunities issue.

In Alternative 2, the Forest Service would construct a trail bridge at the northern trail crossing of Biltmore Creek, in cooperation with the Game and Fish Commission and the Happy Trails Riders Club. The northern and southern trails would still be designated for vehicles less than 50 inches in width. This alternative addresses the fisheries issue associated with that crossing.

In Alternative 3, the Forest Service would designate only the southern trail (8 miles) for motor vehicle use. The northern trail would not be designated for motor vehicle use, although it would remain open to foot travel. Trails 876 and 422 would still be connected by the southern trail, but there would be no loop trail for motor vehicle use. This alternative addresses the fisheries issue.

In Alternative 4, the Forest Service would designate the northern trail, the southern trail, and the middle way (22 total miles) for motor vehicle use. This alternative addresses the diversity of opportunities issue.

Environmental Impacts

Environmental impacts include both beneficial and detrimental effects, even if on balance the unit or district proposing the change believes the effects will be beneficial. Restrictions on cross-country motor vehicle use, for example, may affect use on roads and trails and in areas that remain open to motor vehicle use.

Environmental analysis of travel management decisions must include adequate analysis of cumulative effects, including effects of past, present, and reasonably foreseeable future actions, on NFS lands and other lands. Although the proposed action focuses on specific changes to the forest transportation system, the cumulative effects analysis must address the effects of the proposal in concert with other actions, including the effects of the existing transportation system. For example, if a unit proposes to add 5 miles of user-created trail in a particular watershed to the forest transportation system, the unit should consider the cumulative effects of the proposed addition together with the effects of the 45 miles of existing county roads, NFS roads and NFS trails in the watershed. Be sure to consider other activities (e.g., timber harvesting, grazing, and mining) that may contribute to cumulative impacts with the proposed action, including activities on non-NFS lands (such as activities on non-NFS roads and subdivision development).

Use the travel analysis completed in step 3 to keep the process manageable. A solid travel analysis should provide the overall context in which specific changes to the forest transportation system are being proposed.

Care should be taken to consider logical parts of the forest transportation system together and to avoid splitting decision-making involving connected actions.

Environmental Documents

Refer to FSH 1909.15 to determine the appropriate environmental and decision documents (environmental impact statement (EIS)/record of decision; environmental assessment/decision notice; or decision memorandum) to document the analysis of proposed changes to the forest transportation system.

Consider the context and intensity factors in 40 CFR 1508.27. A proposal that may have a significant environmental impact requires an EIS.

In inventoried roadless areas, consider the impacts of proposed changes to the forest transportation system on roadless character. FSH 1909.15, section 20.6, states that "proposals that would substantially alter the undeveloped character of an inventoried roadless area of 5,000 acres or more" normally require an EIS.

Providing there are no extraordinary circumstances, a categorical exclusion applies to proposals for:

- Prohibitions to provide short-term resource protection or to protect public health and safety (FSH 1909.15, sec. 31.12, para. 1);

- Repair and maintenance of roads, trails, and landline boundaries (FSH 1909.15, sec. 31.12, para. 4); and

- Construction and reconstruction of trails (FSH 1909.15, sec. 31.2, para. 1).

The proper level of documentation will depend on the site-specific nature of the proposal and its environmental (including cumulative) impacts.

Decisions

The decision to be made is whether or not to change the forest transportation system and motor vehicle use restrictions as proposed, or in some other fashion that achieves the stated purpose and need. Note that the prohibition in 36 CFR 261.13 does not become effective until publication of a motor vehicle use map (step 5).

Land Management Plan Amendments

Designations and restrictions on motor vehicle use are fundamentally site-specific decisions, and are not normally made in land management plans. However, each site-specific travel management decision must be evaluated to ensure it is consistent with standards and guidelines in the applicable land management plan. If proposed changes to the forest transportation system (including the prohibition on cross-country motor vehicle use) would be inconsistent with the applicable land management plan, a proposed amendment to the plan must be included with the proposed action so that the decision will be consistent with the land management plan.

Requirements for land management plan amendments are found in FSM 1921.3 and FSM 1922.5. The level of analysis should be sufficient to evaluate any programmatic effects associated with the site-specific changes to the forest transportation system.

National Historic Preservation Act (NHPA) Compliance

In order to promote common understanding of the application of NHPA to travel management, the Forest Service has prepared, in consultation with the Advisory Council on Historic Preservation, *USDA Forest Service Policy for Section 106 of the NHPA Compliance in Travel Management: Designated Routes for Motor Vehicle Use*. Highlights of that policy state:

> The following categories of proposals shall be considered "undertakings" with the potential to affect historic properties, triggering evaluation under section 106 of NHPA, 36 CFR part 800, and applicable programmatic agreements (PAs):
>
> - Construction of a new road or trail;
> - Authorization of motor vehicle use on a route currently closed to vehicles; and
> - Formal recognition of a user-developed (unauthorized) route as a designated route open to motor vehicles.
>
> Existing, formally established system (classified) roads and trails, already open to motor vehicle travel, generally need not be re-evaluated for purposes of this rule. Their designation on a motor vehicle use map will not generally be considered an undertaking for the purposes of NHPA and not subject to Section 106 review.

When a unit proposes to add a user-created road or trail to the forest transportation system, or to change allowable motor vehicle use on an existing NFS road or NFS trail, the responsible official must make a determination as to the potential impact of that proposal on historic properties. If there is no effect to any historic properties because there are no historic properties present or because the proposal will not affect any historic properties, the process concludes with this determination.

Travel management decisions must be based upon appropriate inventory of historic properties, considering local conditions and inventory protocols, the degree to which designation of the route will change existing use patterns, and the probability of finding historic properties.

Curtailing unrestricted cross-country motor vehicle use will protect historic properties across a broad landscape. It is in the interest of resource protection and historic properties to conclude the designation process as rapidly as possible. Inventory and evaluation of historic properties should be conducted with this in mind.

Step 5
PUBLISH A MOTOR VEHICLE USE MAP

Publication of a motor vehicle use map (36 CFR 212.56) completes the designation process. The prohibition at 36 CFR 261.13 (on motor vehicle use that is inconsistent with designations) goes into effect upon publication of a motor vehicle use map.

Note that a motor vehicle use map must cover an entire administrative unit or ranger district (36 CFR 212.1). If environmental analysis in step 4 is conducted at a finer (e.g., watershed) scale, then new restrictions on motor vehicle use will not go into effect until designation is complete for the entire ranger district or administrative unit and reflected on a motor vehicle use map.

Motor vehicle use maps are generated based on information on designated roads, trails, and areas from the agency's corporate (INFRA) database. Key inputs include RMOs and TMOs.

Road and Trail Management Objectives

RMOs and TMOs translate travel management decisions into direction for day-to-day management of an NFS road or NFS trail. RMOs and TMOs reflect travel management decisions that were made with public involvement and the requisite environmental analysis. Therefore, establishing RMOs and TMOs does not involve new decisions and does not require further environmental analysis or documentation.

An RMO establishes the intended purpose of an NFS road. An RMO contains design, operation, and maintenance criteria and documents traffic management strategies (FSM 7731) for each vehicle class on the road. An RMO also incorporates forest orders and road use permits associated with the road. An example of an RMO is contained in FSH 7709.55.33, Exhibit 1, available at http://fsweb.wo.fs.fed.us/directives/fsh/7709.55/.

A TMO documents the designed use, the managed use, prohibited uses, and specific design and maintenance parameters for an NFS trail, such as clearing width, tread width, and grade. Directions on establishing TMOs and an example of a TMO are available at http://www.fs.fed.us/r3/measures/Inventory/trails%20files/TRACS/TMO/.

Motor Vehicle Use Map

Under the new travel management rule, motor vehicle use maps are the principal enforcement tool for motor vehicle regulations. A motor vehicle use map must be consistent with national standards governing content, presentation, and data and must be available both on paper and electronically. When designation is complete, users and other interested parties should be able to retrieve the motor vehicle use map for each administrative unit or ranger district from agency websites. Through the GSTC, the Forest Service is developing a standard protocol for producing motor vehicle use maps from INFRA data.

A motor vehicle use map will be a single-purpose, inexpensive-to-produce, black-and-white map. It does not replace visitor maps, travel maps, or other maps intended to convey visitor

information. A motor vehicle use map displays those roads, trails, and areas designated for motor vehicle use. Routes not designated for motor vehicle use (such as non-motorized trails, single-purpose roads and trails, unauthorized roads and trails, and temporary roads and trails) will not be shown on a motor vehicle use map.

A motor vehicle use map will be developed using linked INFRA data and GIS spatial data. To produce a quality map, data must be clean. Once the INFRA and GIS data are linked, current, and accurate, CartoTools or other map production software can be used to produce a variety of other map products, including full-color recreation opportunity maps that reflect motor vehicle designations and are consistent with the motor vehicle use map.

Many administrative units and ranger districts will continue to use visitor maps, travel maps, or recreation opportunity maps as their primary tools for communicating recreation opportunities to visitors. A motor vehicle use map must still be available on the internet and in hard copy at administrative unit and ranger district offices.

After their initial publication, motor vehicle use maps will be re-published annually, reflecting any revisions to designations since the last printing.

Step 6
IMPLEMENT, MONITOR, AND REVISE

Implementation of travel management decisions requires effective public education, enforcement, and monitoring. Information from monitoring will help determine whether designations should be revised. Approaches to implementation may be established in an implementation schedule or other document as necessary to meet local needs.

Implementation

Implementation of motor vehicle designations shall include:

- Publishing and disseminating a motor vehicle use map
- Educating visitors on travel management regulations and designations
- Amending existing authorizations to provide for needed motor vehicle access
- Enforcing travel management restrictions
- Monitoring impacts

Implementation may also include:

- Signing
- Maintaining designated roads and trails
- Decommissioning unauthorized roads and trails
- Rehabilitating environmental damage
- Establishing cooperative and volunteer agreements**,** fee programs, or other resources for sustainable funding
- Constructing and reconstructing roads, trails, and associated facilities

Signs

Guidance for signing is found in EM-7100-15, *Sign and Poster Guidelines for the Forest Service* (2005).

Designated routes should be signed with appropriate route markers or guide signs corresponding with the route identification shown on the motor vehicle use map.

Signs indicating motor vehicle restrictions are not required to provide for enforcement under 36 CFR 261.13. As a practical matter, signs and kiosks will often complement and reinforce the motor vehicle use map. Consider using travel restriction signing:

- In trespass or other problem areas with poor compliance from the public.
- For educational purposes when a restriction or prohibition is new to the public.
- To avoid confusion with other prohibitions established under Subpart B.

When travel restriction signs are used, the sign or decal should clearly display all the applicable prohibitions. Signs showing accepted, discouraged, and eliminated traffic are not required.

Signs may also be used to:

- Reinforce designations with route markers, guide signs, and reassurance markers
- Reinforce designations by vehicle class and time of year, as appropriate
- Reinforce the prohibition regarding motor vehicle use off the designated system.
- Inform visitors about a motor vehicle use map
- Inform visitors about authorized motor vehicle use taking place off the designated system (e.g., use of temporary roads by contractors, permittee use in a range allotment)
- Inform visitors about orders related to short-term or emergency restrictions, restrictions to over-snow vehicles, or restrictions to non-motorized uses not covered by the travel management rule (e.g., restrictions on bicycle or stock use on a trail).
- Communicate traffic restrictions (e.g., bridge weight limits, speed limits) not covered by the travel management rule.

Enforcement

Enforcement needs to be targeted and effective, with a sufficient field presence by qualified forest protection officers (FPOs), law enforcement officers (LEOs), and other agency law enforcement personnel. Education and engineering design can complement law enforcement and reduce the number of violations.

All Forest Service personnel are responsible for observing and reporting violations of regulations. When violations occur, they must be documented on an Incident Report Form (FS 5300-1) and reported to FPOs or LEOs. Situations involving property damage or injury should be corrected quickly, and repeated violations of regulations should be addressed by increased law enforcement presence.

Field personnel should be evaluated for suitability as FPOs and, if eligible, should be trained as FPOs. FPOs are more numerous and visible to the public than LEOs and are more likely to be present when a violation occurs. Limits on the types of contacts FPOs may initiate are enumerated at FSM 5304.6.

Travel managers should work closely with law enforcement personnel to ensure good communication and feedback on enforcement challenges, and to coordinate with state and local law enforcement agencies and federal courts.

Monitoring

Monitoring programs should emphasize realistic, cost-effective commitments we can meet. Monitoring can include several kinds of activities. Project implementation monitoring evaluates compliance with land management plans and project decisions, including any required mitigation measures. Effectiveness monitoring evaluates the effectiveness of management actions in achieving desired outcomes. Program monitoring tracks and evaluates ecological, social, and economic trends. Validation monitoring verifies assumptions and models used in project implementation.

Each kind of monitoring is relevant to managing motor vehicle use. Field units will need to ensure that travel management decisions, including mitigation, are carried out (project implementation monitoring); that designation and enforcement are effective in limiting cross-country travel (effectiveness monitoring); that the long-term outcomes envisioned in the travel management rule are achieved at the local level (program monitoring); and that assumptions and models used in project analysis remain valid (validation monitoring).

Careful thought is required to ensure that the information collected through monitoring will be useful in evaluating and revising travel management decisions.

According to the Forest Service Inventory and Monitoring Institute, an effective monitoring program should:

- Be targeted to specific objectives and designed to answer specific questions.
- Focus on the appropriate spatial and temporal scale to answer those questions.
- Involve collaboration with others (e.g., other agencies, interested publics, researchers, and nongovernmental organizations) to share the workload (including obtaining data from other sources), gain expertise, and build credibility and trust.
- Use the best available science and established protocols to collect and evaluate the data.
- Use current information management techniques and tools.
- Contain stringent selection criteria so that monitoring is conducted only if it is feasible, realistic and affordable.
- Emphasize evaluation as much as collection of data.

Noon, Spies, and Raphael (1999) point out several reasons why monitoring programs can fail including:

- Insufficient basis in ecological theory or knowledge.
- Insufficient logic employed in selection of indicators of resource impacts used in monitoring.
- Lack of understanding of cause-and-effect relationship between management actions and resource impacts.
- Failure to connect monitoring with decision-making.
- Failure to identify trigger points for management action.

Appendix H lists factors managers have typically considered in designing a monitoring plan for motor vehicle use.

Adaptive Management

The designations identified on a motor vehicle use map are subject to revision. To avoid future problems in motor vehicle use, monitoring information must be used to reevaluate decisions and change them when necessary. The importance of monitoring and the possibility of future changes should be effectively communicated with the public and cooperating agencies.

Motor vehicle use maps should be republished annually to reflect revisions to designations. Publishing on a predictable, well-established schedule will build public expectations and understanding of the rule, the designations, and the map, and help avoid situations in which a user innocently relies on an obsolete motor vehicle use map.

Changes to the system of roads, trails, and areas designated for motor vehicle use may include constructing routes, closing designated routes to motor vehicle use, or changing designated motor vehicle uses or seasons of use. Revisions to designations are subject to 36 CFR 212.54. In most cases, these changes (including connected actions and cumulative effects) are addressed on a site-specific basis and do not trigger reconsideration of decisions about the whole system of designated routes and areas on an administrative unit or a ranger district.

Orders closing a route or area will continue to be issued when motor vehicle use is directly causing or will directly cause considerable adverse effects pursuant to 36 CFR 212.52(b)(2) and in other emergency situations (e.g., fire closures). Ideally, however, the designated system will be managed so that considerable adverse effects do not occur. Early identification of potential problems and close work with users will prevent impacts before they become significant.

Occasionally (e.g., when a new species is listed under the Endangered Species Act), there may be a need to fundamentally shift the system of designated routes and areas across a large portion of an administrative unit or a ranger district. In these cases, a broad travel analysis leading to proposed changes and further NEPA analysis are likely to be appropriate.

One adaptive management tool to consider in route and area designation is conditional decisions. Conditional decisions specify an action that will take place when a certain anticipated or potential condition is met, as in the following examples:

Road 6814 has been closed to all public access for the last 20 years, due to a restriction imposed to protect the municipal water supply of the City of Smalltown. The City of Smalltown is currently considering installing a filtration system, which would remove the need for the closure. If the City installs the filtration system, Road 6814 will be designated for use by highway-legal vehicles.

Trail 778 is designated for motorcycle use. The trail is located within the historic range of the endangered big-eared sloth, which is highly sensitive to noise and is no longer found in the State of Columbia. Reintroduction of the sloth to the Moon Mountains is being considered by the U.S. Fish and Wildlife Service. If the sloth is reintroduced, Trail 778 will no longer be designated for motorcycle use.

The advantage of a conditional decision is that when the triggering event occurs, the planned response may be implemented without further analysis or decision-making, as long as the administrative unit or ranger district analyzed in the original decision the environmental effects of the action that will occur when the condition is met. Use of this tool requires that the initial action, the triggering event, and the planned response be enumerated and analyzed in the supporting environmental and decision documents, so that the complete decision and its environmental consequences are clear and well-understood. If a specific situation is too complex

or there are too many uncertainties, it is better to make the initial decision, wait to see if the situation changes, and make a new decision based on new analysis.

APPENDIX A

Some Typical Situations Facing Units Beginning Route and Area Designation

In the absence of consistent national direction, administrative units and ranger districts have taken a variety of approaches to management of motor vehicle use. As field units prepare to implement the new travel management rule, they face many different starting conditions. The following six descriptions are intended to illustrate some of that variety and to suggest different approaches for handling route and area designation.

Readers should not expect any of the following templates to match their particular unit's situation exactly. They should use judgment to fit the template to their local conditions.

Situation 1 -- The Nomo National Forest

The Nomo NF is managed under a forest order issued in 1972 that prohibits use of motor vehicles off NFS roads. All NFS trails on the Nomo NF are managed for non-motorized recreation, and the Nomo NF Land Management Plan identifies the entire national forest as generally unsuitable for OHV recreation. State traffic law prohibits all use of non-highway-legal vehicles on public roads. OHV riders in the local community use a popular play area on private land. The state and county generally support the prohibition on off-road travel on the Nomo NF, and there is no substantial public interest in changing it.

One Possible Approach to Implementing the Travel Management Rule

The Nomo NF publishes a motor vehicle use map reflecting the current situation without any additional analysis or decision-making. The only routes on the map are those NFS roads designated for use by highway-legal vehicles.

Situation 2 -- The Goodplan Ranger District

Over the past three years, the Goodplan RD carried out a collaborative travel planning effort involving local and regional interest groups, state, county and tribal governments, and a broad cross-section of the local community. This effort culminated in a final EIS and Record of Decision signed by the Forest Supervisor in January 2004. The decision designated those NFS roads and NFS trails on the RD open to motor vehicle use, by class of vehicle and time of year, and restricted motor vehicle use to the designated system. Some user-created routes were added to the forest transportation system, while others were decommissioned. With the ROD, the Forest Supervisor issued a closure order prohibiting travel off the designated system or inconsistent with the designations. The decision has been implemented without major problems and is broadly supported in the community.

One Possible Approach to Implementing the Travel Management Rule

The Goodplan RD publishes a motor vehicle use map reflecting the existing travel plan without any additional analysis or decision-making. The map reflects the decisions made in the 2004 ROD, designating roads and trails for motor vehicle use by vehicle class and time of year.

***Situation 3* -- The Happy Trails National Grassland**

The Happy Trails NG is open to cross-country motor vehicle use. However, over the years the Happy Trails NG has worked effectively with the local OHV riding community, the county, and the local tribal government to develop a sustainable network of NFS roads and NFS trails in response to local demand for riding opportunities. Many NFS trails have been constructed and maintained with funding from cooperators and state gas tax funds. The result is that the riding community is generally satisfied with the existing system of NFS roads and NFS trails. Livestock fencing and natural features limit the opportunities for cross-country riding, which is relatively rare and discouraged by both user groups and the Forest Service to limit impacts to livestock and the environment.

One Possible Approach to Implementing the Travel Management Rule

The Happy Trails NG begins an EA with a proposal to restrict motor vehicle use to the NFS roads and NFS trails currently managed for that use. Issues and alternatives focus primarily on the proposed restriction on cross-country motor vehicle use. When the decision notice is signed, the Grassland publishes a motor vehicle use map displaying those NFS roads and NFS trails designated for motor vehicle use.

***Situation 4* -- The Halfway National Forest**

The Halfway NF was long managed as open to cross-country motor vehicle use . The Halfway NF supports an extensive network of NFS roads, but its only managed NFS trails are equestrian/pedestrian trails in a wilderness area. OHV riding is very popular in the local community, and the Forest has many miles of user-created trails. In 2003, to stop proliferation of user-created routes, the Halfway NF issued a decision notice, finding of no significant impact, and environmental assessment to restrict motor vehicles to existing roads and trails (both NFS roads and trails and user-created routes). The decision notice was accompanied by a closure order signed by the Forest Supervisor. This decision was the first step in a two-step process. The Forest Supervisor committed to evaluate user-created routes and determine whether they should be designated for motor vehicle use through site-specific analysis over the coming years.

One Possible Approach to Implementing the Travel Management Rule

Working with governmental agencies and the public, the Halfway NF completes a Forest-wide travel analysis identifying a network of user-created trails to be considered for designation. These are evaluated in EAs for each of the Halfway NF's five RDs. In each EA, the proposed action is to add the identified routes to the forest transportation system and restrict motor vehicle use to designated roads and trails. Issues and alternatives focus primarily on the individual

routes proposed for designation. Each cumulative effects analysis incorporates relevant effects from the travel analysis for the entire NF, including the routes proposed on the other districts. As each decision notice is signed, that district publishes a motor vehicle use map reflecting the designations on that RD.

***Situation 5* -- The Openandclosed National Forest**

Officially, the Openandclosed NF restricts motor vehicle use to designated roads and trails. The Openandclosed NF Land Management Plan and an accompanying forest order, both signed in 1986, prohibit use of motor vehicles off of designated roads and trails. However, neither the plan nor the order identifies which roads and trails are designated. Over the last 20 years, riders have continued to use user-created routes, and new routes have become established. Without a designation or a designation process, the closure order has been essentially unenforced. Agency managers have told riders that popular user-created trails would be considered for designation. In 1986, the local community included few OHV riders, but now it is a popular sport. The local riding community is largely unaware of the closure order.

One Possible Approach to Implementing the Travel Management Rule

Working with governmental agencies and the public, the Openandclosed NF completes a forest-wide travel analysis. Before beginning travel analysis, the Openandclosed NF discusses the existing order with interested parties and highlights the need to identify the system of routes designated for motor vehicle use in the NF. The travel analysis identifies a network of user-created trails to be considered for designation. These are evaluated in EAs for each of the two isolated mountain ranges that make up the Openandclosed NF (the Caliente and Humido Mountains, each of which encompasses two RDs). In each EA, the proposed action is to add the identified routes to the forest transportation system. Issues and alternatives focus primarily on the individual routes proposed for designation. Each cumulative effects analysis incorporates relevant effects from the travel analysis for the entire NF, including the routes proposed on the other mountain range. As each decision notice is signed, those districts publish motor vehicle use maps reflecting the designations.

***Situation 6* -- The Wideopen National Forest**

The Wideopen NF is open to cross-country motor vehicle use. OHV riding, a longstanding local recreational activity, has recently exploded in popularity, and now attracts regional and national visitors and represents an important sector of the local economy. While the Wideopen NF manages an extensive system of NFS roads and NFS trails for motorized recreation and has recently constructed additional trails with Recreation Trails Program funds, the Wideopen NF has not been able to keep up with recreation demand. User-created trails continue to proliferate. A few user-created trails in poor locations have resulted in locally serious environmental impacts to wetlands and riparian areas. Local user groups are already working with the Wideopen NF to identify a sustainable trail network, to rehabilitate environmental impacts, and to secure additional funding for trail operation and maintenance.

One Possible Approach to Implementing the Travel Management Rule

Working with governmental agencies, the user community, and the public, the Wideopen NF launches a forest-wide travel analysis. Meanwhile, the Forest Supervisor issues a temporary, emergency closure of those specific user-created trails where motor vehicle use is directly causing considerable adverse effects. The travel analysis identifies a large number of user-created trails to be considered for designation and includes an evaluation of broad-scale supply, demand, and environmental impacts associated with the system of routes as a whole. Based on the travel analysis, each ranger district launches environmental assessments for separate networks of proposed trails, on a watershed-by-watershed basis. Altogether there are nine EAs prepared covering the three ranger districts. In each EA, the proposed action is to add the identified routes to the forest transportation system and to restrict motor vehicle use to designated roads and trails. Issues and alternatives focus primarily on the routes proposed for designation. Each cumulative effects analysis incorporates relevant effects from the travel analysis for the entire NF, including the routes proposed in other watersheds. Once all the decision notices for a particular district are signed, that district publishes a motor vehicle use map reflecting the designations on that RD.

APPENDIX B

Sample Land Management Plan Direction On Motor Vehicle Use

The following table provides one example of the places in an existing land management plan where direction regarding travel management may be found. This example is not meant to be comprehensive, but rather to suggest the variety of places where direction affecting travel management could be located in a plan. Maps, tables, and appendices containing travel management direction should be referenced as appropriate.

The sample, from the mythical Smokey Bear National Forest, uses an older land management plan format to illustrate the types of direction older plans may contain. More recent land management plans may be more strategic in focus. Each land management plan is unique and may vary in format and content. Forests that share regional planning direction (e.g., the Sierra Nevada Framework or Northwest Forest Plan) may want to work cooperatively to identify travel management direction contained in multi-forest documents.

Land management plans are not the only source of existing travel management direction and may not be the primary source on many national forests. The baseline travel management direction may include forest orders, travel plans, roads analysis, watershed analyses, project-level decisions, and road and trail management objectives.

SAMPLE LAND MANAGEMENT PLAN DIRECTION
ON MOTOR VEHICLE USE
SMOKEY BEAR NATIONAL FOREST

Source Document and Citation	Direction
ROD, SNFPA Desired Future Condition Motor Vehicles	Motor vehicle travel takes place on a system of designated routes, trails, and limited off highway vehicle (OHV) use areas.
LRMP, Smokey Bear NF 4.3.2.1 General	9. Forest activities which significantly increase noise levels above background levels will be reviewed to determine the environmental effects and appropriate mitigation. Frequency and duration of the noise are considered in determining significance.
LRMP, Smokey Bear NF 4.3.2.3 Seismic and Geological Hazards	2. Roads and trails will be designed and located in a manner to preclude acceleration of active landslides or activation of dormant landslides.
LRMP, Smokey Bear NF 4.3.2.5 Watershed	2. Best Management Practices (BMPs) will be implemented to meet water quality objectives and maintain and improve the quality of surface water on the Forest. Methods and techniques for applying the BMP will be identified during project level environmental analysis and incorporated into the associated implementation documents (see Appendix I).
LRMP, Smokey Bear NF 4.3.2.6 Vegetation	5. Prevent the destruction or adverse modification of habitat determined to be essential for Sensitive or special Emphasis plant species.
LRMP, Smokey Bear NF 4.3.2.7 Riparian/Wetland Areas	2. Management activities or practices may occur in riparian areas as long as the habitat and species diversity of the area is maintained in a healthy state. Resource impacts are mitigated in favor of riparian dependent resources. Mitigating measures may include but are not limited to: a. restricting entry, b. revegetation, c. replacement of lost habitat, d. public information and contact, e. visitor capacity management, f. relocation of incompatible facilities or operations, g. maintenance of wildlife corridors.
LRMP, Smokey Bear NF 4.3.2.7 Riparian/Wetland Areas	4. Ensure habitat conditions necessary for maintenance of viable populations of riparian Management Indicator Species (Bird Assemblage) using the Habitat Capability Model.
LRMP, Smokey Bear NF 4.3.2.7 Riparian/Wetland Areas	6. Limit new vehicular activities in riparian areas to road and trail crossings. Any existing motorized vehicular activities in riparian areas should be relocated where feasible.
LRMP, Smokey Bear NF 4.3.2.7 Riparian/Wetland Areas	9. Culverts, trail crossings and other in-channel structures in existing fishery streams shall be designed and installed to minimize adverse impacts to fishery habitats.
LRMP, Smokey Bear NF 4.3.2.10 Fish and Wildlife	5 Existing water sources will be maintained in a usable state for wildlife needs. Minimize human/wildlife/livestock interactions

Source Document and Citation	Direction
	which may be detrimental to wildlife populations
LRMP, Smokey Bear NF 4.3.2.10 Fish and Wildlife	13. High noise producing activities should be located and timed to avoid disturbance of nesting/breeding locations of Sensitive or Special Emphasis wildlife species.
LRMP, Smokey Bear NF 4.3.2.10 Fish and Wildlife	17. Locate no new NFS roads or trails in known or suspected habitat of the Giant Kangaroo, Three-Toed Sloth, or Dwarf Alligators, without consulting with the U.S. Fish and Wildlife Service and Columbia Department of Fish and Game.
LRMP, Smokey Bear NF 4.3.2.14 Recreation	1. Recreation planning and management will be integrated with other management activities through use of the Recreation Opportunity Spectrum (ROS). The recreational environmental setting, experience, and activity opportunities appropriate to each management area will be maintained.
LRMP, Smokey Bear NF 4.3.2.14 Recreation	3. Separation of conflicting recreational uses will be provided, consistent with Management Area objectives.
LRMP, Smokey Bear NF 4.3.2.15 Cultural Resources	3. All ground-disturbing project impact areas will be inventoried, sites evaluated if adversely affected, and consulted upon prior to a NEPA decision to allow identification, protection, and mitigation of any significant cultural properties. The consultation process under the Regional Programmatic Agreement will be used for no effect and no adverse effect projects that fit PA treatments; the consultation process mandated by Federal regulations (36 CFR 800) will be completed for adverse effect projects; all consultation will be completed early in the planning
LRMP, Smokey Bear NF 4.3.2.16 Lands	12. The Forest will cooperate with owners of intermingled and adjacent land and with local governments in order to develop road or trail systems that serve the needs of the public.
LRMP, Smokey Bear NF 4.3.2.18 Roads	2. The number of miles of roads and/or motorized trails will be limited to an average of three miles per square mile of area per major watershed. Total cleared rights-of-way width should be limited to no more than 66 feet when possible.
LRMP, Smokey Bear NF Management Area 1 Management Emphasis: Resource Protection	General Forest Recreation Trail and OHV route construction is not emphasized but may occur when needed to maintain appropriate ROS class experiences, or to provide loop trails or connecting links with adjacent opportunities.
LRMP, Smokey Bear NF Management Area 1 Management Emphasis: Resource Protection	Transportation Maintain Public access roads. Roads providing access to general forest opportunities are maintained to at least level 2 standard.
LRMP, Smokey Bear NF Management Area 5 Management Emphasis: Wildlife and Range	General Forest Recreation Trail and OHV route construction is not emphasized but may occur when needed to maintain appropriate ROS class experiences, or to provide loop trails or connecting links with

Source Document and Citation	Direction
Management	adjacent opportunities
LRMP, Smokey Bear NF Management Area 5 Management Emphasis: Wildlife and Range Management	Visual Resources Variety Class A areas within the State Highway 978 viewshed are managed to meet retention; all other Variety Class A lands are managed to meet partial retention. All lands within the State Highway 978 viewshed, other than Variety class A lands, are managed to meet partial retention. Foreground view areas from NFS Road 9N11 are managed to meet partial retention.
LRMP, Smokey Bear NF Management Area 5 Management Emphasis: Wildlife and Range Management	Transportation Design and locate public roads or motorized trails to minimize impacts on wildlife. Density of roads or motorized trails is limited to an average of one mile per square mile of area per major watershed.
LRMP, Smokey Bear NF Management Area 6 Management Emphasis: General Forest Recreation	General Forest Recreation Provide opportunities for motorized and non-motorized trail oriented activities through maintenance or construction of a trail system, OHV routes, trailheads and staging facilities adequate to meet public demand, maintain ROS Class experiences and insure acceptable resource protection. Emphasize providing loop and connecting trails to enhance opportunities and minimize resource damage.
LRMP, Smokey Bear NF Management Area 6 Management Emphasis: General Forest Recreation	Visual Resources Variety Class A lands are managed to meet retention. Lands visible from Interstate Highway 40, State Highway 133, Big Tree State Park, County Road 127 and Forest Roads 8N01, 8N12, 7N03, 9N10 and 9N05 are managed to meet retention and partial retention (see VQO Map).
LRMP, Smokey Bear NF Management Area 6 Management Emphasis: General Forest Recreation	Fish & Wildlife Manage stream segments containing resident species only to provide 80% or more of identified potential habitat capability based on habitat capability models developed for rainbow trout or other identified emphasis species as appropriate.
LRMP, Smokey Bear NF Management Area 6 Management Emphasis: General Forest Recreation	Transportation Design and locate public roads or motorized trails to minimize impacts on wildlife. With the exception of the Flying W OHV Area the density of roads or motorized trails is limited to an average of one mile per square mile of area per major watershed.

APPENDIX C

Sources of Information for Trail Design

This appendix contains references to websites, documents, and other sources to assist managers in designing trails. The majority of sources are for designing individual trails, but may also be used for designing a trail system. This information is particularly useful for trail construction and reconstruction projects.

AGENCY OHV TRAIL SPECIFICATIONS

- Forest Service Handbook 2309.18-91-2 Exhibit 1
  http://fsweb.wo.fs.fed.us/directives/index.html

- Forest Service Sign and Poster Guidelines (EM 7100-15)

- Forest Service Standard Specifications for Construction and Maintenance of Trails (GPO EM 7720-103)

- Standard Drawings for Construction and Maintenance of Trails (GPO EM 7720- 104) (CAD drawings may be found at this web site: http://www.fs.fed.us/.ftproot/pub/acad/dev/trails/trails.htm)

MISSOULA TECHNOLOGY AND DEVELOPMENT CENTER

(MTDC), USFS Missoula, Montana (http://fsweb.mtdc.wo.fs.fed.us/index.html) 5785 Hwy 10 West, Missoula, MT 59808,.Phone: 406-329-3900, Fax: 406-329-3719.

General Publications

- *ATV Trail Work on the Allegheny National Forest,* Summer 2000. 0171 3804. Engineering Field Notes: Volume 33, Issue January-June. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering, 2001.

- 1988. *Low-Volume, Low-Cost Trail Bridges*. 8871 3836. Engineering Field Notes: Volume 20 Issue July-August. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering.

- *Managing Degraded Off-Highway Vehicle Trails* (MTDC 0223-2821).

- Kattell, John. 2003. *Packable Trail Bridges*. 0371 3817. Engineering Field Notes: Volume 35 Issue 2. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering. 6 p.

- 1993. *Barrier-Free Accessible Trail Surface Materials,,Northern Region Materials Engineering Investigations*. 9371 3839. Engineering Field Notes: Volume 25 Issue

September-October. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering.

- 1991. *Trail Hardening Test*. 9171 3816. Engineering Field Notes: Volume 23 Issue May-June. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering.

- 1989. *Helicopters and Trail Bridges: The Treasure Falls Project.* 8971 3831. Engineering Field Notes: Volume 21 Issue July-August. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering.

- 1988. *Low-Volume, Low-Cost Trail Bridges*. 8871 3836. Engineering Field Notes: Volume 20 Issue July-August. Washington D.C.: U.S. Department of Agriculture, Forest Service, Engineering.

- 1976. *Purchase Description for Morrison Trailblazer and Missoula Equipment Development Center Modifications*. 7671 2806. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

- Eriksson, Merv. 2000. *Trail Bridge Catalog*. 0023 2W01. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. The Trail Bridge Catalog Web site is intended to help land managers and engineers select trail bridge types, decks, rail systems, abutment systems, and materials. The site is divided into five sections: Trail Bridge Types, Trail Bridge Decks, Trail Bridge Rail Systems, Trail Bridge Abutments, and Trail Bridge Materials. The Trail Bridge Types, Decks, Rail Systems, and Abutments sections contain sketches, pictures, example and/or standard drawings, and guidelines for appropriate use with the USDA Forest Service Recreation Opportunity Spectrum (ROS) classifications. Standard drawings, or example drawings, are intended for informational purposes only.

- 1994. *Trails in Wet Areas Turnpike and Puncheon Construction*. 9423 2V01. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

- 1992. *Surface Water Control Techniques for Trail Maintenance*. 9223 2V01. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

- Meyer, Kevin G. 2002. *Managing Degraded Off-Highway Vehicle Trails in Wet, Unstable, and Sensitive Environments*. 0223 2821. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 48 p. Describes techniques that have been used to manage off-highway vehicle trails in Alaska. The report explains why off-highway vehicle trails become degraded and suggests management options to prevent degradation. The report also discusses the results of tests comparing different options for hardening off-highway vehicle trails. Appendices provide installation instructions for porous pavement panels and a list of locations where

trail-hardening systems are being tested in cooperation with the National Park Service Rivers, Trails, and Conservation Assistance program.

- Steinholz, Robert T.; Vachowski, Brian. 2001. *Wetland Trail Design and Construction*. 0123 2833. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 90 p. Describes materials and techniques used to construct trails in wetlands. This manual is written primarily for workers who are inexperienced in wetland trail construction, but it may also be helpful for experienced workers. Techniques suitable for wilderness settings and for more developed settings are included. Drawings by the author illustrate all important points. A glossary is included, as are appendixes with material specifications.

- Monlux, Steve; Vachowski, Brian. 2000. *Geosynthetics for Trails in Wet Areas*, 2000 Edition. 0023 2838. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. Geosynthetics are synthetic materials that are used with soil or rock in many types of construction. They perform three major functions: separation, reinforcement, and drainage. This report describes several types of geosynthetics; explains basic geosynthetic design and utilization concepts for trail construction in wet areas; and privies geosynthetic product information. Detailed product specifications and procurement sources are listed.

Other Trails Resources Available From MTDC, Brian Vachowski, Project Leader, USDA Forest Service

Constructing Trail Switchbacks

MTDC recently mailed copies of a new videotape, "Constructing Trail Switchbacks," to all Forest Service and Bureau of Land Management offices nationwide. In this 28-minute program, Liz Gupton, a trail designer with the USDA Forest Service, explains how to plan, design, lay out, construct, and maintain switchbacks. The step-by-step program shows two new switchbacks being constructed to reroute a problem section of the River Trail on the Lolo National Forest in Montana.

Forest Service and BLM employees can request additional copies of the video from MTDC. Distribution outside the Forest Service and BLM is being done through the Federal Highway Administration's recreational trails program. Orders for the video can be faxed to 202-366-3409. There is no voice phone number for orders. Information about other trails reports is available at the FHWA's Internet site, http://www.fhwa.dot.gov/environment/rectrails/publications.htm.

Trail Videotapes

"Constructing Trail Switchbacks" is the sixth and last videotape in a series intended to provide basic trail and tool skills to agency employees, volunteers, and cooperators. Other titles in the series include "Surface Water Control Techniques for Trail Maintenance," "Trails in Wet Areas: Turnpike and Puncheon Construction," "Basic Trail

Maintenance," "Handtools for Trail Work: Part 1 and Part 2," and "An Ax to Grind." Copies of these videotapes are available from MTDC.

Miscellaneous Reports and Publications

- *The Trail Construction and Maintenance Notebook*, a 139-page compendium of handy trail information, remains our most requested title. Hesselbarth, Woody; Vachowski, Brian. 2000. Trail Construction and Maintenance Notebook 2000 Edition. 0023 2839P. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 139 p. This notebook describes techniques used to construct and maintain trails. It is written for trail crew workers and is intended to be taken along on work projects. Numerous illustrations help explain the main points. The notebook was printed in 1996 and has been revised slightly during two reprintings. Revisions in this edition update references and reflect minor editorial changes.

- Bergmann, Roger. 2000. *Soil Stabilizers On Universally Accessible Trails*. 0023 1202. San Dimas, CA: U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. The Americans with Disabilities Act Accessibility Guidelines state that ground and floor surfaces should be firm, stable, and slip-resistant. This publication provides field personnel with the results of soil stabilizers on universally accessible trails. The study areas were the Wood River Accessible Fishing Site and Day Use Area on the Winema National Forest and the Bell Rock Pathway on the Coconino National Forest. Seven types of trail surfacing products are discussed.

- Vachowski, Brian. 1998. *Off-Highway Trail and Road Grading Equipment.* 9823 2837. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. Describes light-duty grading equipment that can be pulled by an all-terrain vehicle to maintain wide trails and roads. Three pieces of equipment were tested on a sandy motorcycle trail and a trailhead access road in the Francis Marion National Forest in South Carolina: a modified trail rock rake, a trail drag, and a commercial product, the Ultra Light Terrain Grader. All three pieces of equipment removed the washboards in the sandy soil. Narrower equipment would have worked better on trails. The equipment worked very well on roads and offers an affordable alternative to heavier graders for light-duty use. Other trail-grading accessories and drags for small tractors are also described.

- Vachowski, Brian. 1998. *Cattle Guards for Off-Highway Vehicle Trails*. 9823 2826. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. Describes four cattle guards that can be used to replace gates for off-highway vehicle trails. Drawings and photos of the cattle guards are included. Cattle guards prevent the perennial problem of gates being left open.

- Didier, Steve; Herzberg, Diane. 1996. *Stock-Drawn Equipment for Trail Work*. 9623 2802. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. Includes photos of stock-drawn plows and grading equipment that can be used to build and maintain trails in the backcountry. Describes the

advantages and disadvantages of different types of equipment. Includes sources where the equipment can be purchased.

- Hallman, Richard. 1988. *Handtools for Trail Work*. 8823 2601. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

- 1994. *Trail Maintenance Notebook: Wet Areas*. 9423 2846. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

- 1980. *Trail Deterioration and Maintenance*. 8023 2404. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center.

WESTERN TRAIL BUILDERS (http://www.trailbuilders.org/contact.html)

- *Trails Design and Management Handbook* by Troy Scott Parker. Unlike the other books in this section, this publication is full of detailed yet widely applicable specifications for multiple use concrete/asphalt trails and crushed stone trails. Commissioned by the Pitkin County (near Aspen, Colorado) Open Space and Trails Program, it is useful nationwide because it was written not for any particular trail, but rather for trails yet to be conceived on lands yet to be obtained. As such, and because it is a Pitkin County ordinance by reference, it had to be detailed enough to design and build anything that could arise in future years. Widely circulated throughout the United States and Canada, it is considered the most detailed technical specification in existence for concrete, asphalt, and crushed stone trails and associated trail structures such as bridges, boardwalks, retaining walls, dual treadways, and more. Written in 1994, the Handbook is still in use without ever having needed to be updated. Besides being richly detailed and created with an eye for crafting a quality trail experience, it is clearly written. It also contains sections of unique and concise planning guidelines and a checklist based on those guidelines. 230 pages, 8.5 inches by 11 inches, hundreds of line drawings. Download the introduction and table of contents as a PDF file (143K, readable with Adobe Acrobat Reader) at Western Trailbuilders' website. Available from the Pitkin County Open Space and Trails Program, 530 E. Main Street, Aspen, CO 81611, telephone: 970-920-5232, fax: 970-920-5198.

- *Recreational Trail Design and Construction* by David M. Rathke and Melvin J. Baughman. A remarkably concise and easy-to-read 28-page 8.5-inch by 11-inch booklet on natural surface trails. The book is meant as an introduction to trails for private landowners and land managers who are just learning about sustainable trails and serves admirably for this purpose. It has basic information on many aspects of the planning process and line drawings of common and uncommon trail structures. Copies are available from the Minnesota Extension Service, University of Minnesota Distribution Center, Room 20, Coffey Hall, 1420 Eckles Avenue, University of Minnesota, St. Paul, MN 55108-6069, Fax: 612-625-2207.

- *Lightly on the Land: The SCA Trail-Building and Maintenance Manual* by Robert C. Birkby. This 268-page, 7-inch by 9-inch perfect-bound book was designed for crew leaders and crew members of Student Conservation Association trail crews, but it was also created and mass-marketed for the entire trail community. Chapter titles include Trails; Crew Leadership; Camping with Work Crews; Safety; Tools, Crosscuts and Chain Saws; Measuring Distances, Grades, and Heights; Trail Survey and Design; Trail Construction; Trail Drainage; Trail Maintenance; Building with Rock; Felling and Bucking; Building with Timber; Bridge Construction; Revegetation and Restoration; Rigging; Knots; and History of the SCA Work Skills Program. As opposed to merely providing simple drawings of how things should look when finished, this book emphasizes tools, process, and techniques for trail work, camping, and crew leadership. Covers natural surface trails only, has many line drawings. Light on the art of trail design. Available from amazon.com.

- *The Complete Guide to Trail Building and Maintenance*, 3rd Edition, by Carl Demrow & David Salisbury. Updated in 1998, this 256-page, 6-inch by 9-inch perfect-bound book is a trail library basic. Chapters include Safety and Preparation: Work Safe, Work Smart; What Is a Trail?; Trails on Private Land; New Trail Layout and Construction; Trail Maintenance; Building Materials for Trail Reconstruction; Erosion Control and Trail Reconstruction; Bridges and Stiles; Cross-Country Ski Touring Trails; Tool Use and Care; and Developing and Using Trail Maintenance Inventories, plus appendices on first aid kits and suppliers of tools, equipment, and materials for trail work. The book was developed by the Appalachian Mountain Club for workers and volunteers on the Appalachian Trail, but has been widely used for natural surface trails by trailbuilders everywhere for years. The book has line drawings and photos. Emphasizes trail structures over trail design techniques. Available from amazon.com.

- *Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails*, 2nd Edition, by Charles A. Flink, Kristine Olka, and Robert M. Searns. Updated in 2001, this book serves as an introduction to the myriad issues of multiple-use trails with a heavy emphasis on rail trails. It is a good primer for communities and activists wanting to establish rail trails, but there is not enough information here to fully design such trails. Chapters include Getting Started (the relationship of the trail to the local community and site considerations); Planning and Public Involvement (trail planning, designing in-house or by an outside contractor, public involvement); Designing Your Trail (users, trail cross sections, challenging areas (brief), bridges and railings (brief), tunnels, road crossings, signs, support facilities, wildlife issues, landscaping, history, making your trail unique); Building Your Trail (land acquisition, compliance with permitting, funding sources, public-private partnerships); Managing and Maintaining Your Trail (who should manage, management for user safety, maintaining good relations, developing a fee structure, joint ventures within the corridor, protecting trail in the face of change, developing comprehensive budget and management plan); and Maximizing Your Trail's Potential (promotion and marketing, media, publications, website, citizen support). 230 pages, 11 inches by 8.5inches, perfect-bound, with line

drawings, photos, and annotated resources. Sponsored by the Rails-to-Trails Conservancy. Available from amazon.com.

- *Greenways: A Guide to Planning, Design, and Development* by Charles A. Flink, Kristine Olka, and Robert M. Searns. An excellent guide for those who want to develop a greenway in their community, this book takes a comprehensive overview of the entire greenway visualization and development process including integration with and planning for natural water in the greenway corridor. Chapters include Envisioning Your Greenway, Developing a Plan, Partnerships: Organizing Your Greenway Effort, Building Public Support, Funding, Greenway Protection and Ownership, Promoting Natural Values of the Land; Caring for Rivers, Streams, and Wetlands; Protecting Our Cultural Heritage, Greenway Design and Implementation Process, Greenway Trail Design, Water Recreation, Greenway Facilities Design, Greenway Safety and Liability, Greenway Management. Appendices for greenway contact organizations and federal funding sources. 380 pages, 8.5x11", perfect-bound, photos and line drawings, 1993. Available from amazon.com.

NATIONAL OFF HIGHWAY VEHICLE CONSERVATION COUNCIL
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OHV Trail Construction and Maintenance

The following resources are on file at the NOHVCC home office. They will be glad to send you a copy at no charge other than the cost of reproduction. In certain cases they will put you in contact with the publisher for an original copy. For more information on available resources, go to trailhead@nohvcc.org or call the home office at 800-348-OHVS (6487). Please provide your full name and mailing address and catalog numbers.

- T0001 - *Tractor Techniques for Trail Bed Preservation*. Hamilton, Nora, 1991, USDA Forest Service, 7-page description of effective tractor techniques for trail bed design.

- T0003 - *Recreation Trail Maintenance*. Clift, Don et al, 1985, Washington DNR, 24-page guide to practical guidelines for routine trail maintenance.

- T0005 - *Handtools for Trail Work*. Hallma, Richard, 1988, USDA Forest Service, 60-page review of hand tools used for trail work.

- T0009 - *Planning Trails With Wildlife in Mind*. MacDonald, Stuart, 1998, Colorado State Parks, 51-page book on designing trails and trail systems with wildlife in mind .

- T0010 - OHV Trail Hardening Study. Gusey, Daryl, 1991, Washington Interagency Committee for Outdoor Recreation, 39-page study on OHV trail hardening techniques and their effectiveness.

- T0011 - *Trail Maintenance: An Outline for Developing a Practical Maintenance Plan*. Lockwood, Cam, 1984, USDA Forest Service. A comprehensive outline for developing a practical trail maintenance plan.

- T0012 - *Trails 2000: .A Trail Construction and Maintenance Update*. Lockwood, Cam, 1996, USDA Forest Service, 32-page guide to the current tools and techniques for trail construction and maintenance.

- T0013 - *Rockmart Signs and Markers Catalog*. Rockmart Signs, 1998, Rockmart Signs and Markers, 27-page catalog of trail signage and markers.

- T0014 - *A Guide to Off-Road Motorcycle Trail Design and Construction*, 2nd Edition. Wernex, Joe, 1993, American Motorcyclist Association, 56-page guide to OHM trail design and construction.

- T0015 - *Introduction to Basic Trail Maintenance*. Padilla, Frank, 1990, CA Parks and Recreation, 50-page review of trail design and construction techniques.

- T0020 - *Boulder Buster: Breaking Rocks without Explosives*. Kilroy, Bill, 1998, Missoula Technology and Development Center, 10 page booklet on breaking boulders.

- T0021 - *OHV Trail and Road Grading Equipment*. Vachowski, Brian, 1998, Missoula Technology and Development Center, 20-page booklet on OHV trail gadding equipment.

- T0029 - *Motorcycle Farm*. Jaquish, Orin & Jeffrey Loser, 1973, Soil Conservation, 2-page article from July, 1973 issue of Soil Conservation Mag. About Motomecca OHV park.

- T0030 - *Motorcycle Area Design and Location: Impacts on the Recreational Experience of Riders and Nonriders*. Bury, Richard L, *et al*., 1975, 8-page study on effects of motorcycle riding area adjacent to campgrounds.

- T0032 - CD-ROM: *Off-Highway Motorcycle & ATC Trails Guidelines*. Wernex, Joe 2001; AMA CD-ROM 2001 edition of the Wernex trail construction manual +E43.

- T0033 - *Trails for the Twenty-First Century*. Flink, Carla, *et al*. 2001; Rails-to-Trails Conservancy. 202-page book on planning, design, and management for multi-use trails.

- T0034 - *Designing Sidewalks and Trails for Access, Part II*. Kirschbaum, J., *et al*. 2001; FHWA 350-page book; Best Management Practices Design Guide for Accessibility.

- T0035 - *Installation Guide: Slab-Plank Boardwalk*. Meyer, Kevin. 2002; NPS, 6 pages on slab plank boardwalk utilizing spruce as trail-hardening material.

- T0036 - *Installation Guide for Porous Pavement Panels*. Meyer, Kevin. 2002; NPS, 13 pages on installing porous pavement panels as a trail-hardening material for OHV trails.

- T0037 - *Trail Design*. Uhles, Steve. 2002; Cloud Peak Trail Services, 5-page Powerpoint presentation on elements of successful trail design.

- T0040 - *Wetland Trail Design and Construction*. Vachowskki, B., *et al*. 2001; USDA Forest Service, 82-page manual describing techniques for building a wetland trail.

- T0041 - *Trail Sustainability Checklist*. NPS 2001; 1-page checklist to use as a guide for making your trail sustainable.

WEB SITES FOR FURTHER INFORMATION

- http://nohvcclibrary.forestry.uga.edu
- www.trailbuilders.org/resources/books1.html
- www.americantrails.org/nttp/USFSnttp.html
- www.fs.ed.us/ftproot/pub/acad/dev/trails/trails.html
- www.ama-cycle.org

APPENDIX D

Checklist for Screening Potential Motor Vehicle Routes and Areas

A checklist for screening potential new motor vehicle routes and areas provides an overview of existing conditions and highlights some of the consequences of adding a route or area to the designated system. The benefits of using a checklist are its simplicity and ease of subsequent comparison and prioritization. Using a checklist helps document the screening process and serves as a basis for developing proposals for site-specific consideration.

A variety of information can be used to complete a checklist, including the applicable land management plan, monitoring reports, information from INFRA Trails/Roads/Recreation Sites, roads analysis, agency knowledge, and input from the communities of interest. A checklist should also include the general and specific criteria identified in 36 CFR 212.55.

The following checklist was developed by the Ouachita National Forest, which manages land in Arkansas and Oklahoma. Appendix F includes a different checklist prepared in California. Each administrative unit or ranger district may modify the format, criteria, or content to fit local circumstances. A list of questions that may be helpful in a checklist is also provided.

Ouachita National Forest Checklist

The Ouachita National Forest checklist includes two steps. The first relies primarily on basic resource information and includes some of the specific criteria in 36 CFR 212.55. Additional questions about each route are included in Step 2, with each step rated numerically. Responses to the questions are summed for comparison and ranking. Based on the final analysis of routes, a GIS map is produced showing potential routes for consideration in site-specific analysis.

Step 1

Routes are evaluated by their proximity to important aquatic/biological resources and how each fits within the applicable land management plan's desired future conditions. Each score is entered into a tabular database. Routes receiving any 0 scores are highlighted in red to signal that the route is located where resource impact will occur absent mitigation or where motor vehicle use is incompatible because of resource sensitivity. At this step, these routes are the least favorable for designation. The remaining routes are identified in green.

Step 2

During this step, additional questions assess route feasibility, recreational opportunity, safety, and existing infrastructure.

The numerical scores of Steps 1 and 2 are totaled for each route. For routes highlighted in green, the staff compares scores for each route and stratifies routes into most favorable and intermediately favorable categories in relation to the total possible score. The map for Step 2

identifies routes with the highest scores in green, the second tier of routes in purple, and routes with any score of 0 in red.

This map is used as a basis for identifying and prioritizing potential networks of roads and trails for motor vehicle use. Emphasis can be placed on the most favorable routes, though less desirable routes may also be considered for designation. Careful consideration and mitigation are required before including less favorable routes in the designated system. The map also identifies gaps in the network where new routes may be needed.

A final map displays a possible network of designated routes, including existing NFS roads and NFS trails, user-created routes to be considered for designation, and potential new construction.

Travel Management Checklist
Ouachita National Forest
January 2005

First Step

1. Is the route located within the area of state listed extraordinary waters or state identified sediment impaired waters?

    - 0 – route in area of State listed extraordinary waters or Sediment related listing on 303d list (State Impaired Stream list – see state website for stream listings)
    - 1 – Sediment related listing on 305b (State report on Water Quality)
    - 5 – not in area of listed waters

2. Is the route within the watershed of the municipal water supply?

    - 0 – within watershed of municipal water supply
    - 5 – not present

3. Is the route located in a management area where motor vehicle use is within the scope of the desired future condition?

    - 0 – [list your management areas which prohibit all motor vehicle use]
    - 1 – [list your management areas with limitations on motor vehicle use]
    - 5 – all other management areas

4. Are proposed, endangered, threatened, or sensitive aquatic species found on or near the route?

    - 0 – Proposed, threatened or endangered species are within 5 miles downstream
    - 1 – Sensitive species present
    - 3 – Sensitive species within 5 miles downstream
    - 5 – No species present or within 5 miles downstream

5. Is the route located near element of occurrence records (EORs) for sensitive species?

    - **0 – EORs are found on the route.**
    - 1 – EORs are know within 300 feet of route
    - 3 – EORs are know within 1320 feet of route
    - 5 – EORs are not present

Second Step

1. Is significant funding needed to allow motor vehicle use on this route?

    - 1 point –Significant funding likely needed to provide parking, improve crossings, clear route, maintain route etc.
    - 3 points –Low-cost improvements likely needed
    - 5 points –No improvements or only signing needed (overall signing of system may require considerable funding but nothing out of ordinary required for this route)

2. Would traffic on this route cause unsafe traffic conditions?

    - 1 point –Encounters with other types of vehicles would be common, speed and size of vehicles vary
    - 3 points –Encounters with other vehicles likely but vehicle speed is slow and there is plenty of sight distance and/or room to pass
    - 5 points – Encounters with other vehicles highly unlikely due to traffic volume, and/or long sight distance and plenty of room to pass

3. Are adequate parking/trailhead facilities available?

    - 1 point – No existing trailheads or suitable undeveloped areas with potential for parking
    - 3 points – No existing trailheads but adequate spaces for easily developed parking
    - 5 points – Some existing trailheads/parking areas and other spaces for easily developed parking

4. Does the existing route provide a loop opportunity and/or adequate mileage for a motorized trail?

    - 1 point – No opportunity for loop route, less than 20 miles in length or would require extensive new construction
    - 3 points – Some new construction required for loop opportunity but only short connection between existing routes, length of 20 – 30 miles OR possible loop with county jurisdiction road segment
    - 5 points – Existing loop(s) all forest service jurisdiction and length of 30 miles or more

5. Would designation of this route support or be consistent with the recreation zones described in the forest recreation niche?

    - 1 point – Route would not support the niche or enhance existing opportunities
    - 3 points – Route indirectly supports niche or enhances existing opportunities
    - 5 points – Route directly supports niche

6. Would county and local officials be likely to recommend or support designation of this route?

- 1 point – County and local officials would not support designation of route
- 3 points – Route is under FS jurisdiction and maintenance and county and local officials would likely agree with designation
- 5 points – County shares maintenance responsibility, and County and local officials are likely to request designation

7. What is the likelihood of creating a significant problem (such as overuse or illegal use) at another location if the route is not designated?

- 1 point – High likelihood of creating a problem by displacing existing users to another location
- 3 points – Moderate likelihood of creating a problem elsewhere by displacing users
- 5 points – Little to no likelihood of creating a problem elsewhere by displacing users

8. Would the route provide opportunities in an area of high demand or provide a unique opportunity not available in the area?

- 1 point – Potentially serves a small number of users or similar opportunities provided in the immediate area
- 3 points – Serves an area with medium demand or one with limited number of other opportunities in surrounding area
- 5 points – Serves area of high demand and/or a unique opportunity not provided in the surrounding area

9. What percentage of the route is located on sensitive soils?

- 1 point – more than 35% of the analysis area consists of sensitive soils (high erosion hazard, susceptible to compaction)
- **3 points – between 15-35% of the analysis area consists of sensitive soils (high erosion hazard, susceptible to compaction)**
- **5 points – less than 15% of the analysis area consists of sensitive soils (high erosion hazard, susceptible to compaction)**

10. Is the route located in a watershed with acceptable stream crossing densities?

- 1 point – between 1.7 – 2.0 crossings per square mile
- 3 points – between 1.4 – 1.7 crossings per square mile
- 5 points – less than 1.4 per square mile

11. Is the route located in a watershed with open road and trail densities at an acceptable level?

- 1 point –1.7 – 4.2 miles per square mile
- 3 points – 1 to 1.7 miles per square mile
- 5 points – less than 1 mile per square mile

Final Analysis of Checklist Results

- Review most favorable routes and intermediately favorable routes.
- Consider where other routes or new construction will be needed.
- Identify potential new roads, trails, and areas.
- Produce map showing proposed changes to the forest transportation system.

POSSIBLE ADDITIONAL CHECKLIST QUESTIONS

The following table lists additional questions that may be useful in the development of a checklist.

Land Management Plan
Does the applicable land management plan allow motor vehicle use in this area?
Is the ROS class compatible with motor vehicle use?

SPECIFIC REGULATORY CRITERIA
Soil
Is the dominant soil type compatible with motor vehicle use?
Are motor vehicles or other uses impacting soil conditions?
Water
Does the route/area travel through riparian areas?
Does the route/area have stream crossings?
Are aquatic threatened, endangered, or sensitive species vulnerable to use?
Is motor vehicle use impacting watershed conditions?
Vegetation
Are plant threatened, endangered, or sensitive species or habitat vulnerable to motor vehicle use on this route or in the area?
Are motor vehicles or other uses impacting vegetation?
Wildlife and wildlife habitat
Is critical seasonal habitat avoided?
Will period of use affect migration or nesting patterns?
Are motor vehicles or other uses impacting wildlife and its habitat?
Heritage Resources
Are there known cultural or historic sites?
Are there potential impacts to tribal use?
Are motor vehicles or other uses impacting cultural resources?
Does the route cross an area with a high probability of cultural resource sites and limited inventory?

RECREATION OPPORTUNITIES
Safety
Do features along this route pose hazards?
Is access to this route adequate for rescue, administrative, and law enforcement personnel and vehicles?
Is mixed use of highway-legal and non-highway-legal vehicles workable?
Enjoyment/Customer Satisfaction
Are unique scenery or attractions available to the rider?

Are a broad range of experience levels available?
Are a broad range of vehicle classes possible?
Do facilities exist to support recreation visitors?
Would this route contribute significantly to a trail loop?
Does this route/area link communities and recreation opportunities on NFS lands?
Is this route/area easily accessed by visitors?
Are strong cooperative relationships in place to support management of this route or area?
Do users of this area support motor vehicle use?
Do adjoining landowners support motor vehicle use?
Does this route/area serve a sizable demand for motorized opportunities?
Can this route be maintained and operated in an environmentally sound manner and at a reasonable cost?

APPENDIX E

Region 5 Checklist

Instructions

Questions/Topic

1, 2, and 3. Route/area is consistent with the established management objectives for the areas under consideration.

Check for consistency with the applicable land management plan, including management area direction and the recreation opportunity spectrum.

4. Route/area minimizes conflicts between motor vehicle use and other existing or proposed uses.

Methodologies to identify the degree of use conflicts include evaluation of the geospatial relation to other uses, sound level measurements, public query of various users, and assessment of historic complaints.

5. Route/area minimizes impact on soil and watershed resources.

Trail/area should be located so that motor vehicle use will meet applicable land management plan standards and guidelines for soil and water quality. Any applicable best management practices should be identified, and site-specific protection measures should be documented (*Water Quality Management for Forest System Lands in California: Best Management Practices*, Forest Service, Pacific Southwest Region, 2000). Use existing information to identify the degree of impact on soil and watersheds, including annual soil monitoring data and watershed assessments.

6. Route/area minimizes harassment of wildlife.

The assessment should focus on species of concern, particularly threatened, endangered, proposed, or sensitive species, and species with management emphasis identified in the applicable land management plan, such as management indicator species. Existing information that can be used for this assessment includes biological evaluations, biological assessments, species recovery plans, species conservation assessments or strategies, survey results, range maps, and wildlife habitat protection plans (WHPPs) written for California Off-Highway Motor Vehicle Recreation Division grant applications.

Methodologies to identify the degree of harassment of wildlife include identification of areas important to reproduction (e.g., fawning or nesting areas) and assessment of the degree to which disturbance from motor vehicle use is causing or is likely to cause significant stress and reduction of reproductive success. A similar assessment should be made for areas important during other critical times of the life cycle of species of concern, such as important wintering or foraging areas.

Potential cumulative impacts on wildlife from motor vehicle use on other trails, roads, and areas, including those that are already designated, should be considered in the assessment. Timing and intensity of motor vehicle use, including daily and weekly use and any short-term events, should also be included in the assessment.

7. Route/area minimizes significant disruption of wildlife habitat.

The assessment should focus on habitat for species of concern, particularly threatened, endangered, proposed, or sensitive species, and species with management emphasis identified in the applicable land management plan, such as management indicator species. In addition, potential disruption of sensitive habitats, such as meadows and riparian areas, should also be assessed.

Existing information that can be used for this assessment includes biological evaluations, biological assessments, species recovery plans, species conservation assessments or strategies, trail monitoring data, and WHPPs. Methodologies to identify the degree of disruption of wildlife habitat include GIS habitat modeling looking at total acres affected by motor vehicle use and potential disruption of habitat connectivity.

8. Route/area minimizes damage to vegetation.

Plant species that are threatened, endangered, proposed, sensitive, or management indicator species should be included in the assessment. Known or potential damage to sensitive areas, such as riparian areas and meadows, should also be assessed.

Existing information that can be used for this assessment includes trail monitoring data, GIS vegetation and trail layers, biological evaluations, biological assessments, species recovery plans, species conservation assessments or strategies, and WHPPs. Methodologies to identify the degree of damage to vegetation include ground-based vegetation protocols, such as plot and transect sampling.

9. Route/area minimizes damage to cultural and historic resources.

Existing information that can be used for this assessment includes trail monitoring data, previous cultural resource surveys, tribal consultation, and old maps or other records showing mines and ranches.

Methodologies to identify the potential for damage to cultural resources include known colocation of motor vehicle use and archaeological or historic sites and GIS modeling of locations with high probability for archaeological or historic sites.

10. Route/area minimizes safety issues for users of the route/area and other forest users.

Methodologies to identify the existence of safety issues include accident records, vehicle counts, traffic speed surveys, road and trail surveys, and user input.

11. Route/area should be consistent with local standards for air, noise, and other factors.

Identify any local standards that should be considered. Where available, local studies or monitoring should be used to identify issues. If national or regional studies are used, be certain that they are applicable to the local standards and area. The applicable land management plan and monitoring of similar site-specific projects may provide information for assessing issues and possible mitigation measures.

After answering questions 4 through 11, rank the level of resource impacts and use conflicts as minimal, moderate, high, very high, or unacceptable.

For each of the issues recognized above, identify possible mitigation measures. Also, identify the probable success of mitigation measures and the relative cost and difficulty to implement them.

After answering questions 12 through 20, rank the motorized recreation opportunity value as high, moderate, or low on the form.

Region 5 Checklist

Forest: _____ District: _____

Opportunity ID: *(road, trail or area number or identification)* _____

Segment: *(optional)* _____

Name: *(optional)* _____

Beginning termini: _____

(for roads and trails, landmarks, road or trail junctions, longitude/latitude)

Ending termini: _____

Boundary Description: *(specifically defined areas)* _____

Type of motor vehicle use occurring: [ ] Motorcycle [ ] ATV [ ] 4-wheel drive

Management Areas: ROS Classes:

_____ _____

1. Does the ROS class or classes allow motor vehicle use?

[ ] Yes [ ] No

Notes:

(If yes, continue evaluation. Note any other pertinent information for later reference. If only a portion of the opportunity is within a motorized ROS class or classes, identify the segments that can be considered. If no, the road, trail or area should be considered for non-motorized uses or decommissioning. Opportunities that are not consistent with the ROS but have high value for motorized recreation may be noted for consideration in future planning.)

2. Does the management area or areas allow motor vehicle use?

[ ] Yes [ ] No

Notes:

(If yes, continue evaluation. Note any other pertinent information for later reference. If only a portion of the opportunity is within a management area allowing motor vehicle use, identify the segments that can be considered. If no, the road, trail or area should be considered for non-motorized uses or decommissioning. Opportunities that are not consistent with management area direction but have high value for motorized recreation may be noted for consideration in future planning.)

3. Is the opportunity entirely on NFS lands?

[ ] Yes [ ] No

If no, are there public rights-of-way across private land or agreements with other agencies for use of other public land?

[ ] Yes [ ] No

Notes:

(If yes, continue evaluation. If no, designation cannot occur until rights-of-ways or agreements are obtained. List each right-of-way and agreement. Be sure to note any restrictions on the right of public use.)

For the following questions, if the conflicts or resource issues vary because of vehicle type (e.g., motorcycle, all-terrain vehicle, or 4-wheel drive vehicle), address each vehicle class separately. Remember to address existing direction in the appropriate questions below.

4. Does the route/area location minimize conflicts between motor vehicle use and other existing or proposed uses?

[ ] Yes [ ] No

Notes:

(List the methodology used. Identify specific conflicts, and list possible mitigation measures.)

5. Does the route/area minimize impact to soil and watershed?

[ ] Yes [ ] No

Notes:

(List the methodology used. If impact is occurring or may occur, list possible mitigation measures and attempt to quantify the work required, i.e., 3 miles routine maintenance, .5 mile reconstruction, 1 minor reroute or 90% OK, 10% needs minor reconstruction.)

6. Does the route/area minimize the harassment of wildlife?

[ ] Yes [ ] No
Notes:

(List the methodology used. Identify specific harassment and list possible mitigation measures, i.e., physical barriers to access, minor rerouting, and seasonal restrictions.)

7. Does the route/area minimize significant disruption of wildlife habitat?

[ ] Yes [ ] No

Notes:

(List the methodology used. Identify specific disruptions and list possible mitigation measures, i.e., physical barriers to access, minor rerouting, and seasonal restrictions.)

8. Does the route/area minimize damage to vegetation?

[ ] Yes [ ] No

Notes:

(List the methodology used. Identify specific damage and list possible mitigation measuress, i.e., physical barriers to access, minor rerouting, and seasonal restrictions.)

9. Does the route/area minimize damage to cultural and historic resources?

[ ] Yes [ ] No

Notes:

(List the methodology used. Identify possible mitigation measures for sites impacted by the trail, e.g., data recovery, trail relocation, site encapsulation, or site interpretation.)

10. Are there any known safety issues for users of the route/area or other forest users that are attributed to the route/area?

[ ] Yes [ ] No

Notes:

(List how safety issues were identified. Identify specific safety issues and possible mitigations, i.e., tread widening, tread realignment, removing hazard, etc.)

11. Identify and evaluate any local issues, such as air, noise, and other factors, that were not addressed in the preceding questions.

Notes:

Motor Vehicle Use Evaluation Form

Assign the level of resource impact and use conflict to one of the following categories based upon the above evaluation. If differences were noted between vehicle classes in the evaluation, assign categories based on vehicle classes.

[ ] Minimal resource impacts/use conflicts

(Has impacts/conflicts in no more than 2 of the above questions and the impacts/conflicts are easily mitigated)

[ ] Moderate resource impacts/use conflicts

(Has impacts/conflicts in 3 or more of the above questions, but the impacts/conflicts are easily mitigated; or has one or more impacts/conflicts and one will require moderate amounts of time and/or resources to mitigate to acceptable levels)

[ ] High resource impacts/use conflicts

(Has one or more impacts/conflicts in the above questions and one will require large amounts of time and/or resources to mitigate to acceptable levels; or multiple impacts/conflicts, 2 or more that will require moderate amounts of time and/or resources to mitigate to acceptable levels)

[ ] Very high resource impacts/use conflicts

(Has more than one impact/conflict that will require large amounts of time and/or resources to mitigate to acceptable levels)

[ ] Unacceptable resource impacts/use conflicts

(Has one or more impacts/conflicts that cannot be mitigated to acceptable levels with available time, resources and/or technology)

Recreation opportunity provided by the route/area also needs to be assessed. Answer the following questions, and assign the route/area a recreation opportunity value at the end of the form.

12. Does the route/area provide a unique recreation opportunity or one that is in limited supply in the local area?

[ ] Yes [ ] No

Notes:

13. Does the route/area provide special recreation opportunities for a particular vehicle class?

[ ] Yes [ ] No

Notes:

14. Is the route/area of local, regional, or national significance?

[ ] Yes [ ] No

Notes:

15. Does the route/area provide access to significant locations or to unique or unusual features?

[ ] Yes [ ] No

Notes:

16. Does the route provide access to a campground, staging area, or other support facility?

[ ] Yes [ ] No

Notes:

17. Is the route an arterial route or does it connect two arterial routes?

[ ] Yes [ ] No

Notes:

18. Does the route provide a loop or part of a loop opportunity?

[ ] Yes [ ] No

Notes:

19. Does the route provide an alternative to having motorized mixed use on roads at maintenance level 3 or higher?

[ ] Yes [ ] No

Notes:

20. Are there any other factors that makes this route a desirable addition to the forest transportation system?

[ ] Yes [ ] No

Notes:

Based upon the above questions and public input, rank the recreation opportunity value, and note any overriding factors in the ranking.

[ ] High Recreation Value [ ] Moderate Recreation Value [ ] Low Recreation Value

Notes:

APPENDIX F

Route Impact and Recreation Value Assessment (RIVA)

Analyzing transportation networks is a complex process. To make the process less complicated, the following screening process assists in determining the potential of a route for designation for motor vehicle use. The process weighs resource impacts and recreational values. The resulting assessment indicates which routes should be further considered in the designation process.

Originally developed by Lisa Phillips (Colorado Wild) as a collaborative process, RIVA involved the motorized community, conservationists, ranchers, and local business owners, as well as Bureau of Land Management and Forest Service personnel. This process proved to be successful on several national forests, including the White River National Forest in the Rocky Mountain Region.

The first collaborative group to utilize RIVA was the Four-Mile Citizens Group. The following illustrates that effort.

Resource Impacts

The Four-Mile Citizens Group agreed to rate resource impacts on a scale of 7 to 35. A route was deemed to have high impacts if the total impact score was equal to or greater than 17, medium resource impacts with a score of 12 to 17, and low resource impacts with a score of less than 12. Seven criteria were used to identify resource impacts, each graded on a 1 to 5 scale and summed.

Criteria	References Used in Assessment	Rank 1=Low 5=high
Is the route duplicated within ½ mile?	**Forest Service maps, Travelway Inventory Map, Transportation Atlas, route documentation forms**	
Does the route impact wetlands or riparian areas (erosion observed flowing into a stream or wetland)?	**Route documentation forms**	

Criteria	References Used in Assessment	Rank 1=Low 5=high
Does the route impact wildlife habitat?	**Does the route impact wetlands or riparian areas (erosion observed flowing into a stream or wetland)?** **Maps, wildlife habitat studies, biological assessments and evaluations of proposed actions on the White River NF, the Lynx Conservation Assessment and Strategy, and other studies performed by professional biologists.**	
Could the route encourage encroachment in Wilderness?	**Land management plan maps**	
Does the route cause soil erosion?	**Photos, route documentation form**	
Does the route contribute to cumulative impacts, such as numerous stream crossings or high road density?	**Maps, route documentation form, Land management plan maps**	
Is the route in an Inventoried Roadless Area (IRA)?	**Forest Service IRA map**	
	TOTAL SCORE	

Recreation Values

The Four-Mile Citizens Group agreed to rate recreation values on a scale of 1 to 25. A route was deemed to have high recreation value with a score greater than 20, medium recreation value with a score of 15 to 20, and low recreation value with a score of less than 15. Five criteria were used to identify recreation value, each graded on a 1 to 5 scale and summed.

Criteria	References Used in Assessment	**Rank 1= low 5=high**
Is this a primary access route?	**Land management plan maps, Transportation atlas**	
Does this route have a unique destination, such as an overlook or campsite?	**Route documentation form, recreation map**	
Does this route provide a unique recreation opportunity?	**Inventory sheets, FS maps, photo documentation, recreation maps**	
Does this route provide a satisfying experience for route type?	**Topographic maps, FS maps, inventory documents** **Ex: loop road or trail**	
Can conflicts be mitigated on this route or is there an absence of conflict?	**Inventory documents, FS maps**	
	TOTAL SCORE	

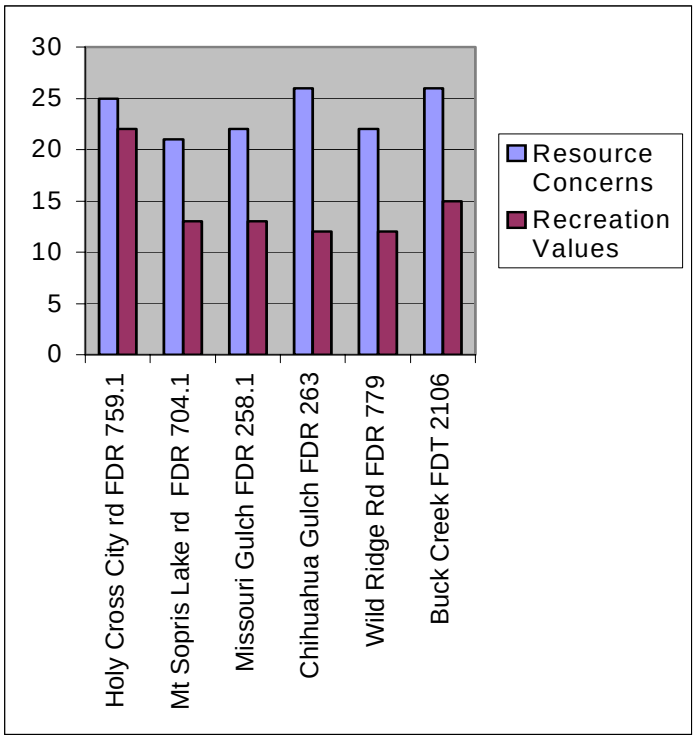
Summary

RIVA provides a relative measure of resource and recreation impacts to allow comparison of routes. Utilized in a collaborative fashion, RIVA can be used to achieve consensus among communities of interest.

Consensus on routes to decommission was readily achieved for routes rated with high resource impacts and low recreation values. Similarly, it was easy to achieve consensus on recommending roads, trails, and areas with high recreation values and low resource impacts for designation. However, achieving consensus on routes with high recreation values and high resource impacts required adoption of mitigation measures.

Route Impact and Values Graphs

The numeric score of each route was displayed on a graph as a comparative tool.



Specific Examples from the White River National Forest

Route #4: Peterson Creek FDR 706

Location**: Holy Cross Ranger District. Route is between Leadville and Minturn on US Highway 24 near Camp Hale**

USGS 7.5 Quad: Minturn

Length: **3.04 miles from Eagle River to Wilderness Boundary at Peterson Ck. Inventoried an additional .48 mi. into the wilderness area. Also .40 mi. of spur route.**

Elevation**: From 8,792' at the Eagle River to 9,286 in .25 miles to 10,021 where route enters Wilderness past Peterson Creek.**

General Description

The route begins at the Eagle River, and proceeds through a deeply rutted muddy wetlands. It comes out of the riparian area and proceeds straight up the mountain. (see maps). Water is flowing down the road. There are places where the water has forced itself out of the road embankment creating another stream down the side of the hill. There is a spur leading off of the main road (approx 1 mile up) which goes approximately ½ mile into the Holy Cross Wilderness.

Road continues past where it is shown on FS maps past junction of Peterson Creek. This portion of the road may also enter the Holy Cross Wilderness. It is very steep here with ruts > 2 ft deep. Water is flowing rapidly down rd. Orange staining in water may indicate a mine is above. Road was mapped ½ mile past Peterson Creek. crossing but it continues on.

Group Recommendations

We strongly recommend closing this route to all motorized vehicles. Resource impacts are severe (see chart). The route is increasing sediment into Peterson Creek as well as the Eagle River. Recreation values for this route are low. Agency concerns are high. The Colorado Division of Wildlife calls for complete closure to protect wildlife species and habitat. It is located in prime lynx habitat. Motorized use on this route is illegally expanding into the Wilderness. There is no evidence of maintenance on this road despite the sign that says it was adopted by an OHV club. Rather, there is evidence of new illegal routes having been made this season (see photos). The location of the route makes it a difficult area to access by foot. It is very hard to monitor. However, it is possible for horses and hikers, if they do not mind getting their feet wet. We

would recommend closing it to all recreation activities until the resources concerns can be mitigated. The route is not suitable for mountain biking due to the continual steep grade.

National Forest White River NF		**Ranger District**				
Travelway ID number FDR 706-Peterson Cr		**5 = Strong Yes**			**1= Strong No**	
Resource Concerns	**Reference**	**5**	**4**	**3**	**2**	**1**
1. Is this a duplicate route (within 1/2 mile)?	inventory map FS			**X**		
2. Does this route impact stream/wetlands or riparian areas?	route form, maps	**X**				
3. Does this route impact wildlife habitat (e.g., 4B and 5B management areas)?	FS mgmt map	**X**				
4. Could this route encourage encroachment in a wilderness area?	See maps	**X**				
5. Is there soil erosion? (What is the trend?)	photos, route form	**X**				
6. Are there cumulative impacts (e.g., numerous stream crossings or road density)?	maps, route form	**X**				
TOTAL SCORE = 28						
> 15 = High Resource Impacts						
12-15 = Moderate Resource Impacts						
< 12 = Low Resource Impacts						

Recreation Values	Reference	**5**	**4**	**3**	**2**	**1**
1. Is this a primary access route?	maps				X	
2. Does this route have a unique destination? (e.g., overlook or campsite)	inventory form				X	
3. Does this route provide a unique recreation opportunity?					X	
4. Does this route provide a satisfying recreational experience?					X	
5. Can conflicts be mitigated on this route or is there an absence of conflict?					X	
TOTAL SCORE = 10						
> 20 = High Recreation Value						
15-20 = Moderate Recreation Value						
< 15 = Low Recreation Value						

APPENDIX G

Monitoring Motor Vehicle Use

Monitoring Elements

1. Drainage

a. Water dispersal structures
   - Rolling dips
   - Overside drains

b. Culverts (undercutting, plugging and scouring)

2. Tread Surface

a. Creation of outside berms
b. Widening
c. Braiding

3. Resource Damage

a. Riparian resources
   - Direct impacts (e.g., kills, den construction, plant crushing)
   - Cover (loss of vegetation)
   - Sensitive areas (e.g., wetlands, aquatic spawning/rearing areas)
   - Stream crossings
   - Sedimentation

b. Wildlife habitat
   - Direct impacts (e.g., kills, den construction, plant crushing)
   - Cover (loss of habitat)
   - Sensitive areas (e.g., meadows, breeding areas, denning areas)

c. Heritage sites

d. Soil
   - Erosion (e.g., gullying, ruts, deposition, slides)

e. Vegetation
   - Direct impacts (e.g., trampling)
   - Invasive species

4. Use Patterns

a. Short cutting at switchbacks
b. Increasing trail width
c. Use off trail or area
d. Unauthorized use
e. Vandalism

5. Desired Experience

   a. Staging area congestion
   b. Use conflicts