# DEVELOPMENT OF GUIDANCE AND EVALUATION CRITERIA FOR OFF-HIGHWAY VEHICLE (OHV) MANAGEMENT PLANNING

By

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# INTRODUCTION

## TERMS AND DEFINITIONS

**OHV or Off-Highway Vehicle:** Motorcycles, four-wheelers, dune buggies, four-wheel-drive vehicles, or other vehicles used for off-road travel on unimproved roads or trails.

**Agencies:** Federal, state, or local land management agencies including the Forest Service, Bureau of Land Management, National Park Service, and State Parks.

**Delphi Process:** A procedure designed to obtain the most reliable consensus amongst a group of experts through a series of questionnaires interspersed with controlled feedback.

## OVERVIEW

The popularity of motorized recreation has skyrocketed in the last decade. Interest in trailbikes and two-wheeled motorcycles has declined in favor of four wheeled All-Terrain-Vehicles (ATVs) capable of accessing ever more remote and rugged areas. Most of this activity is focused on public lands administered by the Forest Service, BLM, and state agencies. The rapid increase in the number of riders, and the resulting user conflicts, environmental damage, and demand for riding opportunities, have created a very complex problem for land managers trying to balance recreation provision and resource protection. Creating an OHV management plan is a strategy being adopted by many areas to provide greater guidance in making decisions related to OHVs. However, very little guidance exists regarding what goes into making a high quality OHV plan.

The purpose of this study is to develop a set of criteria that can be used both as guidance when crafting an OHV management plan, and to evaluate the quality of existing

plans. Drawn from a wide variety of sources and shaped by input directly from land managers, such a tool provides an important framework for the creation of plans that are well written, robust, and useful. Sources used to draft criteria include the literature of plan evaluation, as well as OHV reports, user surveys, and existing plans. Further refinement of criteria was provided by surveys and interviews with agency employees actively engaged in OHV management. Surveys and interviews were not intended to yield statistically valid data regarding the criteria. Instead, they provided a means of gathering input from a group of experts in a procedure similar to a Delphi process.

## PLAN QUALITY

This study seeks to develop a set of criteria that could be used to assess and increase the quality of OHV management plans. But what is meant by quality? According to whom? Does the quality or lack of quality in these plans really effect management of resources on the ground? Given the multifaceted nature of planning, these questions lead us in any number of directions, from a discussion of the roles and purposes of plans, to implementation concerns, to the usefulness of evaluation as a rational or scientific tool. To address these and other questions that arise from any assessment of plan quality, I begin with an examination of the roles of plans, a discussion that examines the underlying assumptions of what a plan should be.

### The Roles of Plans

The literature of plan evaluation is almost exclusively concerned with traditional land use, development, or comprehensive plans. At first pass, it might seem improper to apply a body of literature that was written largely for city planning to the field of natural resource management. An examination of the underlying intent of plans and planning reveals this initial assessment to be illusory. From an examination of the literature, several distinctly different concepts emerge regarding the roles of plans. These roles apply equally well to both OHV planning and other more traditional planning venues. Simply stated, a plan can be considered as (1) a document or guide, (2) a statement of policy, and (3) the result of a process.

As a working document OHV management plans serve essentially the same function as traditional land use plans, serving as a guide for spatially allocating uses across a defined and limited supply of land. In planning for both recreation and development, land allocation is performed to protect resources, to lessen the chance of conflicts between incompatible uses, and to let users (whether they be riders or developers) know where they should focus their activities. This practice has even been referred to as "recreation zoning" (Parks and Recreation, 2002). Unlike traditional land use planning, recreation management on public lands creates a situation where the government is required to supply nontrivial and nonexcludable services (recreation opportunities) in the absence of any pricing structure that would control overuse (Lieber and Fesenmaier, 1983, pg. 287). This creates a situation where demand can outstrip the agencies funding resources to manage use. OHV is not only growing at an astounding rate, it is a management intensive activity, both in terms of providing adequate opportunities and in minimizing resource damage. This requires the development of a system whereby use can be allocated to those areas most capable of accommodating recreation without incurring serious long-term environmental impacts.

Implicit in this allocation of activities is the statement that the activity itself is a legitimate use of the land and its resources. To draft an OHV plan is to acknowledge that OHV use is acceptable in the area under consideration. Thus, the drafting of a management plan essentially serves as a statement of policy. Most plans function within a larger policy framework that is often too vague to address the appropriateness of individual uses. Going back to the land use example, a zoning ordinance might state that a certain area is to be used for business, but fail to specify the individual uses that should be allowed on each site. Likewise, federal policy may state that a national forest is to provide recreation opportunities for the public without spelling out specifically what recreation activities are appropriate and where these activities should and should not occur. In this context, a plan for the management of OHVs is a statement of the degree to which OHV recreation is appropriate in the area covered by the plan.

A third role is that of the plan as a process. In this case, the policy statements and the final document are secondary to the planning process itself. It is the planning process that, if conducted correctly, brings together people with varying backgrounds, opinions,

and expertise to reach a common goal through cooperative action. Planning then becomes a forum for communication, interaction, and learning that should ultimately lead to better management in the future (Innes & Booher, 1999). It is this importance of process that is the focus of most of the current planning literature. This "new paradigm" of collaboration is not only prevalent in the field of planning, but in most government and management forums as well. Looking through the available literature on OHV planning, including national, state, and local OHV management plans, collaboration is a theme that receives heavy emphasis. Recent changes in the planning policies of both the BLM and the Forest Service reflect this. The following statement from the BLM Land Use Planning Handbook (2000) exemplifies these changes, "[Managers] have discovered that individuals, communities, and governments working together toward commonly understood objectives yields a significant improvement in the stewardship of public lands."

The three roles of plans given above serve as an outline for a discussion of plan evaluation. From these three views, the outlining of criteria for plan quality becomes more defined. If a plan is to serve as a working document or guide, it should be well organized and logical. If it is to serve as a statement of policy, it should state these policies explicitly. If it is to serve as the product of a process, that process should be open and inclusive. Using these and many other criteria, it is possible to begin an assessment of plan quality.

## Do Good Plans Matter?

Postmodernists have gone to great length to persuade practitioners of the frivolity of planning (Alexander & Faludi, 1989). Plans, they argue, are based on rationality and predictability, concepts that are inherently unobtainable given the chaos of human endeavor. Therefore, what could be more pointless than evaluating plans that could never possibly achieve their desired outcomes because of a reliance on fundamentally false assumptions? This line of reasoning, although an interesting philosophical exercise, does little to inform decision makers on how to improve the management of resources and development.

More recently, studies have shown that indeed "good" planning does matter, (Burby, 2003, Dalton & Burby, 1994). These studies show a direct linkage between "quality" planning, and successful outcomes. This correlation between plan quality and management success helps confirm the usefulness of planning in general, and supports the usefulness of this study.

## Goals

OHV planning only began in earnest in the last decade, following an explosion in the popularity of All Terrain Vehicles (ATVs). Since the late 1980's the sale and use of OHVs have risen at astounding rates. In 2001, U.S. consumers were purchasing OHVs at the rate of 1500 per day, with nearly one-third of them doing so for the first time (US Department of the Interior BLM, 2001). The ever-increasing and unregulated use of OHVs has resulted in a multitude of conflicts between users and nonusers, users and land management agencies, and between agencies and the public. If agencies are to both accommodate the increasing demand for motorized recreation, and protect natural resources, greater attention needs to be paid to planning and management of OHVs.

As much as municipal land use planning has suffered from the lack of scientific knowledge of ecology and natural resource management, OHV planning has suffered from a lack of planning rigor and neglect for considerations such as public involvement (not just input), and cost benefit analysis that are part and parcel of community planning. As OHV use has expanded and use configurations such as cross-jurisdictional trail systems have emerged, the planning infrastructure of land management agencies has failed to respond. A high degree of collaboration and coordination of management efforts is still missing in many areas. OHV planning often seems to occur with little knowledge of the efforts of other districts, forests, or agencies, leading to a constant reinvention of the wheel. The criteria presented here are intended to begin bridging the gap between planning and natural resource management by collecting management practices that have worked well in the past, and by alerting those engaged in OHV planning efforts to considerations and ideas of which they may not be aware.

Combining information gathered from the literature, surveys, and personal interviews with experts, this study seeks to provide a set of guidance criteria that will

provide OHV planners with a checklist of important items that, if met, will increase the quality of any OHV plan.

The remainder of this paper is composed of a review of the literature regarding planning evaluation and OHV management, a detailed explanation of the methodology, findings, and a discussion of the results and implications of the study.

# LITERATURE REVIEW

## CRITERIA DEVELOPMENT

The use of criteria in plan evaluation is well documented (Alexander & Faludi 1989, Baer, 1997, Berke, 1994, Bryson & Bromiley, 1993, Dalton & Burby, 1994, Gruft & Gutstein, 1972). Assessment of the rationality and optimality of planning strategies is made with the knowledge that such evaluations are not infallible. If done correctly, evaluation, although subjective in nature, still allows for positive and negative judgments of plan quality to be made and comparative analysis to be performed (Baer, 1997)

In this study, criteria for plan quality were drawn from three sources: (1) the literature of plan evaluation, (2) literature related to OHV management, and (3) in-depth interviews with personnel actively involved in OHV management on the ground.

### General Criteria of Plan Quality

Several papers discuss approaches to assessing the overall quality of planning efforts (Alexander & Faludi, 1989, Baer, 1997, Dalton & Burby, 1994). From these, several general categories of criteria can be identified. The article presented by William Baer neatly summarizes the topics reported by earlier authors as being reliable indicators of plan quality. General categories of criteria include: (1) adequacy of context, (2) “rational model” considerations, (3) procedural validity, (4) adequacy of scope, and (5) guidance for implementation. These categories include individual criteria ranging from the format and layout of a plan, to the amount of consideration given to political context and

feasibility. Many of the indicators of general plan quality used here are drawn directly from Baer's work, although substantial revisions have occurred to increase their relevance within the OHV context.

## Criteria from OHV Planning Literature

The literature of OHV planning can be divided into four broad categories. (1)Academic literature, which is comprised of reports and studies published in peer reviewed journals. (2) The body of Federal and state regulations, (3) Management Frameworks used by land management agencies to guide management activities, and (4) Other sources comprised of reports, studies, user surveys and other materials published by both governmental and nongovernmental entities.

### Academic Literature

Academic literature on OHV planning and management is nearly nonexistent. This is probably a reflection of the fact that OHV recreation has only recently become popular as a major outdoor activity, as well as the fact that planning as a discipline is not at all well represented in the field of natural resource management. The majority of studies of OHV management appear in agency publications, government sponsored studies, and studies performed by industry trade groups, user groups, and conservation organizations. This so called "grey" literature, although often lacking the focus and rigor of published academic work, provides a rich pool from which to draw ideas regarding the major problems and concerns faced by those engaged in OHV management. Because of the nature of the literature and the difficulty obtaining some of the publications, it is doubtful that agency staffs have reviewed the majority of this work prior to beginning OHV planning activities. The main purpose of this study is to collect the key points from the OHV literature and organize them in way that would make them useful to OHV planners and land managers during the planning process.

## Regulations

Because local OHV management occurs mainly within the context of a federal or state land management agency, OHV planning is best viewed as a component within the hierarchical structure of such organizations. This structure includes laws and mandates, land use and planning decision frameworks, and national and/or state OHV plans. Two executive orders pertain directly to OHV planning and management, E.O. 11644 and E.O. 11989 (an amendment to 11644). The purpose of E.O. 11644, signed in 1972 by President Nixon was to, " [establish] policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands." These objectives are echoed almost verbatim in the Code of Federal Regulations, CFR Title 43, Part 8340. The regulations and management strategies that appear in Forest Service and BLM plans are built upon this regulatory foundation. The BLM Land Use Planning Handbook (2000), the BLM National OHV Management Plan (2001), and the National Forest System Land Resource Management Planning Final Rule (2000), are all extensions of this, and provide general guidance as to what should be done regarding OHV management.

This body of regulatory work was used in criteria development to define the broad categories of important criteria. These topics include, but are not limited to recreation opportunity and demand provision, collaboration, monitoring, and funding and feasibility. It was also important in drafting criteria to realize that the planning process at these agencies is composed of many layers. Awareness of this is reflected in the criteria by addressing the need to clearly and explicitly define the relationship between the plan and other levels of regulation and management. Criteria such as, "Is the administrative authority for preparation indicated?" and "Is there planning for procedural coordination with other plans and agencies?" are direct acknowledgements of this complexity.

## Management Frameworks

Although the regulatory structure discussed above provides a basis for what should be done, it is much less helpful at determining how management activities should be conducted. When faced with mandates that often conflict, such as recreation provision and resource protection, land managers need a system that helps determine how finite natural resources will be allocated, and where and when trade-offs can or should be made. Three such frameworks are in use today: the VERP (Visual Experience and Resource Protection) framework used by the National Park Service, the ROS (Recreation Opportunity Spectrum) and Limits of Acceptable Change (LAC) systems used by the Forest Service, and the VRM (Visual Resource Management) framework used by the BLM. These documents were used to develop criteria that reflect the need for land managers to allocate resources based on good science, sound reasoning, and a logical, defensible system of decision-making. A quick look at the steps involved in one of these processes may be helpful at this point.

The VERP framework is composed of six basic steps: (1) Identify two goals in conflict (such as recreation provision and protection of the environment), (2) establish that both goals must be compromised (you can't simply stop all recreation, and recreation will impact the environment in some way), (3) decide which goal will ultimately constrain the other, (4) develop standards that determine a limit of acceptable change (LAC) for the constraining variable, (5) compromise this goal until the standards are reached, and (6)compromise the other goal as much as necessary. Obviously, such a framework requires research to develop standards, frequent monitoring of conditions to determine when standards have been met, and a structure for carrying out such tasks as constraining use. Whether the VERP framework is being used explicitly or not, this same process occurs all the time with respect to OHV management. Criteria drawn from such a framework help insure that activities such as trail construction or closures are done in an open, transparent way, using science and an explicitly stated systematic means for making decisions. The VERP system is very similar to the Limits of Acceptable Change system and both seek to define an explicit and logical process for making land management decisions. The ROS provides a similar type of structure for making

decisions regarding recreation provision. The VRM framework is also similar but focuses on management for scenic value.

## Other Sources

Other sources of OHV management information include several recent surveys of OHV owners, other trail users, and resource managers (Minnesota DNR, 2001, Utah DNR, 2001, Crimmins, 1999, Tennessee Governors OHV Committee, 2002). These surveys provide valuable insight into topics such as user preferences, perceptions, and desires that were very helpful in designing criteria. For instance, both the Minnesota and Utah surveys indicate that the majority of users do not believe that OHVs cause significant environmental damage, ranking conservation and resource management among the least important issues surrounding OHV recreation (Minnesota DNR, 2001, Utah DNR, 2001). This attitude contrasts with the attitudes of land managers and their efforts to engage in active OHV planning, pointing to a need to incorporate public education and awareness activities as integral parts of both the planning process and management strategy. These surveys were also very important in drafting criteria concerning recreation provision, or "level of service". From these studies a great deal can be learned about user attitudes, riding habits, and preferences for specific types of opportunities. Criteria regarding the diversity of user experience and trail difficulty come directly from insights gained in these surveys.

Studies concerning the environmental effects of OHV recreation were also instructive in building suitable criteria. The environmental effects of OHV use in arid ecosystems are well documented (Webb & Wilshire, 1983). While the nature of these effects can likely be generalized to all OHV use, the extent of environmental impact depends greatly upon climate, geology, topography, vegetation, and other factors that vary greatly from place to place. The characterization and monitoring of these effects is a critical part of any OHV management plan. The intent of criteria related to data and monitoring was not to dictate how exactly such impacts should be tracked, but rather to insure that methods are based on sound science and rational decision processes.

The remainder of the OHV literature is composed of various reports on OHV use and management, and existing OHV management plans. The reports provided many

useful insights and recommendations that although specific to a single state or area such as Alaska, or the Rock Creek Motorcycle Area in California, displayed consistently recurring themes that were used to draft appropriate criteria (NPS-RTCA, 2002, Schwinck, 1985). Prominent themes include the need for public involvement, "state of the trail" assessments, trail routing and design, the need for monitoring, and conflict resolution. Existing management plans were also screened for recurring themes and areas of emphasis.

As a whole, the OHV literature was used to identify topics of concern. Often these topics took the form of recommendations reported in independent studies and intended for individual OHV recreation areas. These studies and reports come from a wide range of sources and most are not easily obtained. This is an attempt to bring together the salient points from this body of work to create a concise and useful checklist for OHV managers. (A complete index of sources and recurring themes is provided in Appendix A.)

## Summary

The increasingly rapid rise in the popularity of OHV recreation on public lands, and the friction that often accompanies the management of such activities, necessitates a planning process and final document that are robust and well crafted. OHV management also provides a nexus between the fields of planning and natural resource management. This study seeks to use the literature of planning, along with sources of information regarding OHVs and their management, to create a set of criteria that could be used to ensure that future OHV plans are of the highest possible quality. Plans drafted using such criteria should be more inclusive, more comprehensive, and provide better recreation and resource protection than do current efforts.

# METHODOLOGY

## OVERVIEW

This study is comprised of two basic elements: (1) the selection and development of plan evaluation criteria from planning and OHV literature sources, and (2) surveys and personal interviews with land managers to refine and finalize the criteria. The following diagram shows the progression from review of existing materials to creation of a finalized set of guidance criteria.

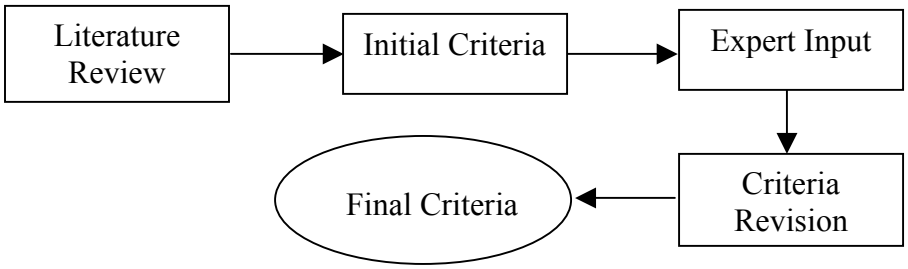


**Figure 1. Study Overview: Steps in the Process**

## CRITERIA SELECTION

### Criteria From the Literature

An initial survey of the available literature was used to identify preliminary criteria. Many reports, surveys, and plans have been published which make recommendations for OHV management. These sources often contain language that is already in criterion format such as, "An OHV management plan should include…", or "…is vital to the success of any OHV program." Often, topics occur several times in different publications as being particularly important or problematic. Using such indicators as potential benchmarks, a draft set of topic areas and individual criteria were compiled.
A discussion of the individual sources of literature information is given below.

## General Plan Criteria

Criteria for assessing the general strength of the plans were selected from sources in the academic literature of plan evaluation. (Alexander and Faludi 1989, Baer 1997, Berke 1994, Dalton and Burby 1994) These sources constitute the bulk of the literature on plan evaluation as it pertains to the assessment of the quality of existing plans. Baer's work provides a comprehensive synthesis of the majority of the planning literature related to general aspects of plan quality.

## Forest Service and BLM Planning and OHV Management Policies

Agency planning and federal policy guidelines were also used in the development of criteria. The BLM Land Use Planning Handbook, the BLM National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands, and the National Forest System Land Resource Management Planning: Final Rule were used to develop additional criteria. These documents were chosen because planning within these agencies occurs within a preestablished framework of policies and planning guidelines. These sources were important in drafting criteria that examine the degree of continuity in the planning process both within and between agencies.

## Natural Resource Management Frameworks

Three broad frameworks exist for developing natural resource management plans and policies. These frameworks deal with issues such as balancing environmental preservation and recreation provision, and assessing visitor capacity and monitoring visual impacts. The Visual Resource Management (VRM) framework is used by the BLM, and the Forest Service uses the Recreation Opportunity Spectrum (ROS) framework. The Visitor Experience and Resource Protection (VERP) framework is a similar tool used by the National Park Service for essentially the same purposes, and provides a very nice planning framework as described earlier. These frameworks provide broad guidance in determining appropriate levels of management for recreation activities on public lands.

### OHV Management Literature

A substantial body of literature exists regarding OHVs. Although very little of this documentation is published in academic journals, a variety of user surveys, conference proceedings, and independent studies by industry groups and land management agencies exist that aid in the development of evaluation criteria. These additional materials were obtained largely through correspondence with the National Off-Highway Vehicle Conservation Council (NOHVCC), which maintains an extensive library of OHV related materials. Many of these sources were used in the development of additional criteria to address topics that may not have been covered previously. In particular, user habits and preferences as detailed in the surveys were used to gain insights into issues of recreation provision and trail management that were not evident in the preceding analyses.

### Existing OHV Management Plans

Past OHV planning efforts have been limited. Few trail level OHV plans exist, and those that do often deal only with a single aspect of OHV management such as route designation or monitoring. Several different OHV plans were examined to determine what topics were currently being covered. Plans were selected according to several factors including availability, initial assessments of plan quality, and geographic variability. Areas that the plan emphasized strongly, or topics that were covered in great detail were used to draft additional criteria.

## REFINEMENT OF CRITERIA

### Process Overview

The methods of gathering information in this study most closely resemble the workings of the Delphi process. The Delphi process originated as technique for harnessing the knowledge of experts to forecast future events or trends. In a more generalized form, the Delphi technique uses consensus research methods designed to harness the insights of

appropriate experts in order to enable decisions to be made. Instead of a more traditional approach of achieving consensus through face-to-face discussion, this process eliminates committee activity and its associated group dynamics in favor of anonymous individual input (Moeller and Shafer, 1983). The definition of what constitutes an expert varies according to the question. In the situation of a Delphi intended to result in production of guidelines, an expert may be defined as either those with the knowledge (the theoretical expert) or those who will have to implement it (the practical expert).

In this study, a set of criteria for plan quality was compiled from the literature. In order to make them as useful as possible, feedback from experts was used to shape and refine the initial criteria. The OHV coordinators, recreation planners, and others consulted in this study can be considered to possess a high degree of both theoretical and practical knowledge in the field of OHV planning and management. Using surveys and interviews to gather information from these experts, it was possible to reach some degree of consensus on what issues are critical to the success of OHV plans, as well as to gain insight into how these issues are effected by the individual circumstances of each area.

## Selection of Participants

During the later stages of this study, experts were chosen for participation in both surveys and interviews that would further refine the criteria and provide a necessary reality check. This helped insure that the final criteria would be useful and practical., Relatively few (20) participants were involved in this study both due to logistical considerations, because it was focused on areas where the most intensive OHV use is occurring.

Participants from Oregon and Utah were chosen because of the high amount of OHV use occurring there. These states also have a large amount of public land that is called upon to provide a diverse array of outdoor activities. These two states are also experiencing significant user conflicts and litigation related to OHVs. While selecting participants, care was taken to select from as wide a geographic sample as was feasible in order to cover a variety of topographic, geologic, climatic, and socio-political contexts.

Names of potential qualified participants were obtained through searching agency directories for OHV coordinators, and by identifying and contacting individual forests or management districts that are experiencing high OHV use. In an effort to keep the focus

on creating plans that are useful in on-the-ground management of OHVs, employees that deal directly with OHV planning and management rather than district heads or forest supervisors were chosen. Because many areas do not yet have personnel dedicated specifically to OHVs, recreation planners and other positions that spend a substantial amount of time engaged in OHV management activities were also contacted. Many of the participants have been working with OHVs for many years and possess vast amounts of practical knowledge relating to OHVs and their management.

The following tables show the geographic distribution, and demographic breakdown of respondents.

| | | |
|---|---|---|
| Total Number of Surveys Mailed | | 24 |
| Responses: | Utah | 10 |
| | Oregon | 10 |

**Table 1. State of Residence**

| 2-5 years | >5 years |
|---|---|
| 5 | 15 |

**Table 2. Experience Managing OHVs**

| BLM | USFS | State Parks | Dept. of Forestry |
|---|---|---|---|
| 10 | 7 | 2 | 1 |

**Table 3. Agency of employment**

| | |
|---|---|
| Recreation Planner/Manager | 9 |
| OHV Coordinator | 4 |
| Environmental Protection/NEPA Specialist | 2 |
| Forester | 1 |
| Park Manager | 1 |
| Public Service Staff | 1 |
| Road Manager | 1 |
| No Response | 1 |

**Table 4. Job title**

| <10% | 10%-25% | 25%-50% | 50%-75% | 75%-100% |
|---|---|---|---|---|
| 2 | 7 | 2 | 4 | 5 |

**Table 5. Time on the job dedicated to OHVs**

| Light | Moderate | Substantial | Heavy |
|---|---|---|---|
| 0 | 5 | 6 | 9 |

**Table 6. OHV use in the area where respondents work**

## Surveys and Follow-Up Interviews

To increase the likelihood that criteria will be useful in terms of on-the-ground management, both surveys and in-depth interviews were conducted with OHV managers from several federal and state agencies. These interviews served both as a means to check the criteria against actual experience, and as a forum for those actively engaged in OHV management to suggest additional criteria and changes that would increase the usefulness of the final tool. This type of collaboration is cited as being key to the drafting of useful criteria (Madsen, 1983).

Initially, participants received a draft set of criteria in the form of a survey. This allowed them to indicate how important they felt it was that an OHV plan meets each criterion, and how difficult they thought it might be to do so (see Appendix B for survey instrument). This provided an initial assessment of the degree to which each criterion may or may not be useful, as well as a way to outline topic areas that could be further explored in follow-up interviews.

## Surveys: Ranking the Criteria

After completion of an initial set of criteria using the literature, copies of the draft criteria were sent to participants in survey format. This survey contained 120 individual criteria, sorted by subject area, that allowed respondents to indicate the degree to which they felt it was important to meet each criterion, and how difficult they thought it would be to do

so in terms of funding, manpower, or other considerations. Participants were asked to rank the importance and difficulty of each criteria on a scale from 1 to 5 with 1 being not important or not difficult and 5 being very important or difficult. A copy of the survey tool and a summary of responses are presented in their entirety in Appendices B and C respectively. Responses from the survey were used to establish the relative importance of topics and individual criteria, and to identify aspects of OHV management that could prove extremely problematic. Criteria with a mean importance above 4 and a difficulty above 3 were paid particular attention during subsequent interviews. These represent criteria issues that are both very important and very difficult to achieve.

## Interviews: Strengthening the Criteria

Interviews with 6 selected participants were used to gain further insight into issues that surfaced during the analysis of survey results. Interviews were conducted over the phone and participants were assured that their identities would be kept completely anonymous. Both assurance of anonymity and the telephone interview format helped ensure candid responses where participants could express their views without the pressure of peers, coworkers, or employers interpreting what they said.

The participants (4 from Oregon and 2 from Utah) represent a diverse array of management situations. Three were employees of the BLM, one the USFS, one from State Parks and one from a state Department of Forestry. A diverse array of physical settings were represented including coastal forests, high sagebrush and pine deserts, and red rock areas. Three of the respondents had greater than 5 years experience and the others had 2-5 years. Four ranked OHV use in their area as heavy, and two others as substantial. Participants were selected based on several factors including experience, amount of time currently spent on OHV management, and geographic distribution. Respondents whose answers differed markedly on points where consensus was otherwise apparent were also chosen. In-depth interviews about 1 hour in length were conducted in person or by phone during the summer of 2003 and recorded on audiotape for further analysis. Individual survey responses were generally not used during the interviews; rather the overall results of the survey were used to identify important topics or particularly problematic criteria. Interviews were based on an initial set of 10 questions

but were of an open nature. The purpose of these interviews was twofold. First, the interviewees provided feedback on the initial set of criteria developed from the sources mentioned above. This provided a critical check against the day-to-day reality of OHV management that was essential in developing criteria that are not only valid, but useful to people who are currently engaged in OHV planning. Second, the interviewees were given an opportunity to expand on the criteria to provide additional insight on the usefulness and applicability of the criteria. A summary of the questions used during interviews is available in Appendix D.

## PUTTING THE INFORMATION TO USE

A synthesis of the information gathered in surveys and interviews was used to shape and refine the final criteria. This process of refinement was largely qualitative in nature, comparing responses against each other as well as against the literature. The following situations are examples of how the information gathered from participants was used to alter the initial criteria.

1. Criteria that were ranked very low in importance were omitted.
2. Items that ranked as both very important and very difficult were discussed in interviews to attempt to understand why it might be difficult to meet these criteria.
3. Criteria that ranked lower than predicted by the literature (such as enforcement, or rider certification) were focused on during interviews and subsequently altered or deleted
4. Criteria that received comments pointing to an underlying theme (such as the balance between plan detail and flexibility) were discussed during interviews. These broader themes were then considered in the finalization of criteria. Many of these broader themes are considered in the discussion following each topic in the next section.
5. For items that were widely held to be very important (ranked as a 5) by almost all respondents, but for which there was one or two surveys that ranked them as not important (a 1 or 2), further inquiries were made

during interviews to find out what it was about that persons particular context that made their responses different from the rest.

As seen in items 4 and 5 above, many of the criteria were not changed or deleted even though several people may have ranked them as unimportant. Again, the uniqueness of each individual management setting in terms of topography, climate, design, and political or social context will largely determine the usefulness of each criterion. The overall goal of this study is to provide planning guidelines that will be as useful as possible to the widest majority of people. To this end, it was considered preferable to include a discussion of the contextual factors that might determine the applicability of variable criteria, than to delete them altogether.

## STUDY LIMITATIONS

This study has several limitations. First, the number of participants is quite low. Using a limited number of participants increases the likelihood that certain planning contexts will not be represented. For instance, I was not able to interview mangers from sand dune type riding areas (although several did participate in the survey). These areas likely have different needs and concerns because of their unconstrained nature. Utah and Oregon certainly are not the only states dealing with OHV management issues. Eastern states such as Minnesota and Tennessee are also experiencing heavy OHV use. Broadening the study to include such states would help ensure that variables that might be specific to their planning contexts would be addressed. Also having a higher number of participants from a variety of locations would have increased the likelihood that all of the pertinent issues would surface during surveys and interviews.

Second, there was little opportunity to interact with participants before and after the survey. More useful contextual information could have been gained by interviewing experts prior to compilation of the survey. A second round of interviews would have allowed much more focused questions about the applicability of certain criteria and the reasons for variability.

Finally, examining several case studies in depth may have revealed more insights into how contextual factors effect OHV planning. Looking closely at areas that already have OHV plans and examining the degree to which those plans meet the final criteria would provide useful comparisons of approaches to OHV management. Case studies would also provide additional information that could have been used to further refine the criteria.

# RESULTS AND DISCUSSION

## RESPONSES

### Categories

Respondents were asked to rank each criterion on a scale of 1-5 (less-more) with regards to both the importance of an OHV plan meeting the criterion, and how difficult they thought it might be in actuality to meet the criterion. The following graphs depict the mean importance and difficulty of the general categories of criteria presented in the survey. Means were calculated from individual responses to each criterion within a category.

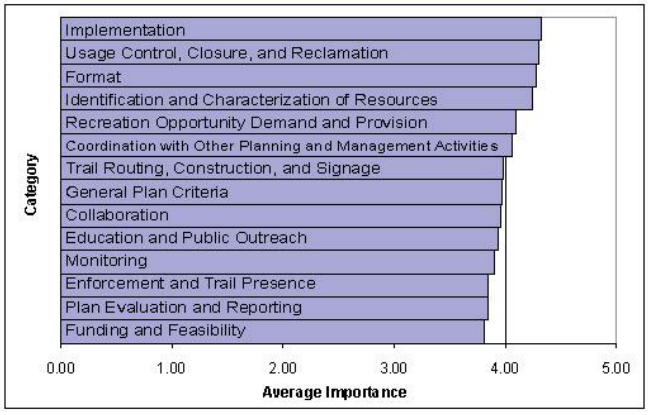


**Figure 2. Average Importance by Category (1=Not Important, 5=Very Important)**

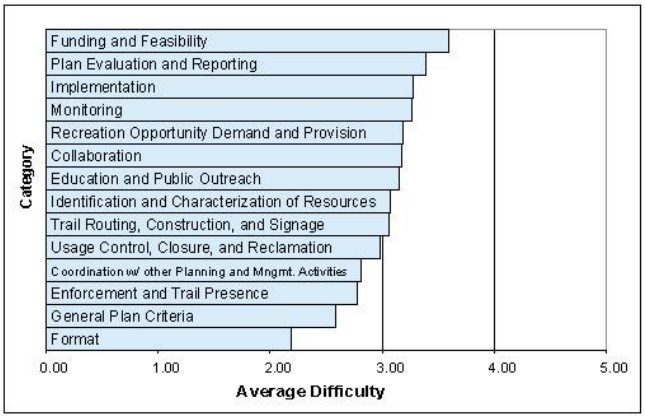


**Figure 3. Average Difficulty by Category (1=Not Difficult, 5=Very Difficult)**

Notably, very few criteria were actually deemed to be of low importance (mean below 3) and most ranked quite high (above 4). However, there was a high degree of variability in the responses to some of the criteria with respondents from different areas answering at either extreme. This is significant because it points to context specific factors that may determine the applicability of each individual item. In short, some of the criteria are applicable all of the time, and all of the criteria are applicable some of the time. This became the basis for interviews where participants were allowed to elaborate on the applicability of individual criteria given their unique management setting.

## Individual Criteria

The table in Appendix C shows the mean importance and difficulty for each individual criterion, as well as the individual responses to each question. These data were used to help shape the final set of criteria, and to guide interview discussions. Items where the mean importance was above 4, and difficulty scores were above 3.0 were paid particular attention during interviews and during the revision of the final criteria.

# FINAL CRITERIA

The set of criteria proposed here is not an attempt to develop a one-size-fits-all approach to OHV planning. The comments received from participants during surveys and

interviews stress the highly variable context in which OHV management occurs. What is critical in one area may not be a high priority in another. The two biggest variables that seem to determine the relative importance of each criterion are the physical setting, and the amount of usage that is occurring. For instance, collaboration between agencies may not be critical to the success of an OHV area that is under the management of a single agency, but is vital to the success of cross jurisdictional trail systems. Trail design is very important in coastal areas in order to avoid the runoff problems associated with steep slopes and high rainfall, but of less consequence in arid rocky areas where the trails have been established through historical use. Where appropriate, a discussion of these contextual factors is included with each set of criteria in the following section.

The discussion that follows details the finalized set of criteria and examines the efficacy of criteria in the possible contexts in which they might be applied. Criteria are arranged under thirteen broad topic headings. These are:

1. **Implementation:** criteria related to putting the plan into action

2. **Usage Control, Closure, and Reclamation:** deals with keeping OHVs where they are supposed to be, closing areas or trails, and reclaiming damaging areas

3. **Identification and Characterization of Resources:** creating resource, trail, and usage inventories

4. **Recreation Opportunity, Demand, and Provision:** provision of OHV recreation facilities, meeting user expectations

5. **Coordination with other Planning and Management Activities:** increasing efficiency and effectiveness through coordination

6. **Trail Routing, Construction, and Signage:** trail development and maintenance

7. **Collaboration:** coordinating efforts both within and between agencies

8. **Education and Public Outreach:** communication with users and nonusers alike

9. **Monitoring:** keeping track of usage or resources changes

10. **Enforcement and Trail Presence:** making sure a plan "has teeth"

11. **Funding and Feasibility:** making sure a plan is doable

12. **General Plan Criteria:** the points that all good plans have in common

13. **Format:** presenting the plan effectively

Each of these topics will be discussed in detail in the following sections. Criteria in each section are arranged roughly in descending order of importance as determined from the survey results. The finalized criteria are available in checklist format in Appendix C.

## Implementation

### Background

Implementation is the process of turning a written plan into action. It is included as a primary topic heading because plans that lack an effective strategy for implementation often prove less than useful.

Planning is often considered to be a two-step process consisting of plan development and plan implementation. As the scope and scale of a plan increase, adhering to this separation can seriously decrease the likelihood that the plan will ultimately result in the intended actions. In *Tourism Planning,* Clare Gunn states the drawbacks of separating plans and implementation quite nicely.

> *"Instead of thinking of plan implementation as a two step process, there is value in integrating implementation at the outset. Unless the several involved parties see the need for planning, there is little likelihood of*

> *action taking place only because a study and report were prepared. Conversely, premature plans that appear to be too costly, grandiose, and complicated may even stimulate polarization of conflict."*

The 5 criteria presented in this section acknowledge this. They represent the key aspects of implementation that should be considered if a plan is to ultimately result in actions on the ground.

## Discussion

| | |
|---|---|
| **1.** | **The responsible agency can realistically be expected to implement the plan** |
| **2.** | **The implementation of the plan and accompanying action items are prioritized** |
| **3.** | **The rational for this prioritization is clear** |
| **4.** | **The agency or position responsible for implementation of each item is clearly identified** |
| **5.** | **There is a timeline for plan implementation that details at least the major checkpoints for progress such as completion of a trail inventory.** |

**Table 8. Implementation**

Implementation clearly ranked as one of the most important and problematic aspects of OHV planning. The responsible agency's overall ability to implement the plan was of primary concern. During interviews, participants discussed several factors that they believe may impede proper implementation of a completed plan. Four out of six cited lack of funding as the primary barrier to implementation. Many of the aspects of OHV management plans such as inventories, monitoring, and infrastructure development require considerable funding and personnel resources. This funding inadequacy can be exacerbated in very large or heavily used areas, or areas where OHV management has historically been substantially lower in priority than other activities. Because of the relatively new popularity of OHV recreation, this is often the case resulting in land mangers playing "catch up" rather than being able to manage OHVs proactively.

There seems to be a good deal of tension between the different roles that an OHV plan is expected to serve. Comments from interview respondents suggest that there is a

fine line between a plan that is too vague and one that is too detailed. One respondent commented that, "if it's not in the plan, we don't get to do it", while others gave comments suggesting that plan feasibility actually benefits from narrowness of scope. When asked whether the role of an OHV plan should be to provide general guidance or to spell out specific actions, all interviewees recognized that both are very important and that finding the right balance is critical to the success of a plan. Four out of six leaned toward requiring a more detailed plan while admitting that flexibility is necessary. Two others preferred to see a more general plan but recognized that this in some ways reduces the accountability of the managing agency. Finding the right balance between detail and flexibility requires an intimate knowledge of the factors at work in each specific planning context.

One respondent stated that, "if it's not in the plan we can't do it because somebody's going to take us to court eventually." This point will become increasingly important as the amount of OHV use and the controversy surrounding it continue to grow. Increasingly, an agency needs to be able to point to the plan as binding document that provides proof of specific actions that are being taken to manage OHV use. Coupling this fact with the variability in funding for OHV management creates a very tricky situation. If managers are more likely to be legally held to what they say they are going to do in the plan, they are probably less likely to include very ambitious projects. The effect that this situation will have on OHV planning over time is unknown, but land managers will increasingly need to consider funding and legal considerations when developing their plans.

One way to reduce the complexity and to increase the likelihood that a plan will be implemented is pointed to by the following comments received during interviews.

> *"Include route designations and all related environmental review in the land use plan so that when it's approved, you can go forward with travel maps. Otherwise, [plan] approval can take years, by which time, you're out of the spotlight for planning money and you have to fight those battles all over again"*

and

> *"NEPA(National Environmental Policy Act) and T&E (threatened and endangered species) issues really need to be addressed in the larger forest plan. [The plan] shouldn't try to be comprehensive. If your goal is to*

> *develop a trail plan as a pathway for improving and upgrading a trail system, then that's what your plan needs to be about. To try and include it all in one plan will tend to dilute the overall purpose that you are trying to accomplish."*

Thus, it may be advantageous to deal with general policies, route designations and larger environmental issues at a higher level rather than tackling them in the OHV plan. As the first comment states, if you're already going through the process of getting your land use plan approved, it's probably best to include the larger OHV issues in that process. Depending on the review schedule for these broader plans, and the OHV situation in the area, it may or may not be feasible to wait for this review process to come up before tackling OHV planning issues.

In some cases, agencies have followed this route and drafted OHV management plans (often in the form of travel management or route designation plans) without including implementation as part of the package. In one particular instance, the creation of a route designation plan without a management or implementation strategy was the product of an explosion of OHV use in the area that caught the managing agency off-guard. Because route inventories and designations are often the first step in creating an OHV plan, and because this is the step most likely to be held up by appeal and litigation, this was the task that was tackled first. However, it left managers with a set of policies that they essentially had no strategy for enforcing, nor was it easily integrated into the larger overall task of managing OHVs in the area.

Another suggestion for tackling OHV management in especially large areas was to break the area down and begin managing OHVs at the watershed or subbasin level. Prioritizing basins based on the amount of use, resource damage, and user conflicts can facilitate the development of a series of smaller "mini" trail plans. This more strategic approach recognizes that "some areas just have to wait their turn". Ideally this process of prioritization would include extensive public involvement.

OHV recreation is a contentious issue and many respondents felt that public ignorance, opposition, and litigation were serious impediments to successful implementation. Several respondents stated that one of the main reasons that it takes so long (often up to 10 years) to go from planning to implementation is because as soon as the plan is approved, it gets appealed or the agency gets dragged into a prolonged legal

conflict. A feeling of "no matter what we do, somebody's going to sue us" is prevalent amongst land mangers when it comes to OHV management. Understanding the legal environment that the plan will operate in is critical to drafting a plan that avoids as many legal challenges as possible.

Generally, respondents agreed that prioritization of future actions is very important, but were somewhat less adamant about the need for a detailed timeline. Comments received during interviews stressed the need for flexibility, stating that things often get done as money and personnel become available, a situation that is often hard to predict. Still, most felt that it was important to at least attempt to layout a timeline for implementation of prescribed actions, and to use it more as general guidance than as a set of deadlines that must be met.

Based on survey results, in many areas, specifying the agency responsible for each action is not always necessary. This may be true if the area is under the management of a single agency. In situations where more than one agency are working together to manage an area or trail system, specifying who will be responsible for each action item becomes more critical.

In summary, several specific actions that increase an agencies ability to implement the plan are pointed to by this study. First, larger policy based issues such as environmental review and route designations should often be included as part of the agencies larger land use plan approval process. Second, integration and coordination between such planning efforts and the implementation of future OHV plans needs to be considered at every step along the way. Third, the legal context of the plan should be considered with regards to public involvement and other planning issues. Fourth, large or very complex areas should be managed in a more strategic way, creating smaller subunits and prioritizing management activities based on level of use and level of resource damage.

# Usage Control, Closure, and Reclamation

## Background

Criteria in this section deal primarily with controlling the physical movement and effects of OHV use. Keeping OHVs on designated routes clearly is the first step to controlling resource damage. If this cannot be accomplished or is insufficient to protect resources, then exclusion of OHVs from trails or areas must be considered as a last resort. A high quality plan needs to address these issues in a way that is reasonable, fair, and transparent to the public.

| | |
|---|---|
| **6.** | **The plan clearly defines under what circumstances trails will be considered for closure** |
| **7.** | **The plan provides a strategy for the reclamation of damaged areas** |
| **8.** | **The plan describes ways to control OHV use in and around camping areas** |
| **9.** | **The plan provides ways to inform the public of access and designation changes** |
| **10.** | **The plan clearly states who will ultimately make trail closure decisions** |

**Table 9. Usage Control, Closure, and Reclamation Criteria**

## Discussion

Closure of trails or areas is one of the most contentious issues surrounding OHV management. An apparently arbitrary closure can lead to public outrage and possible litigation. In many cases, trails being used by OHVs are not designated routes, having been created by OHV users or other historical uses. Persuading users of the necessity of a route closure can be a very difficult task. As one respondent put it, “OHV users have a huge sense of entitlement” when it comes to where they are allowed to ride. Past policies that left all areas (including off trail travel) open unless otherwise designated have

created user attitudes and behaviors that are clearly at odds with managing OHVs given the increase in ridership in recent years. As one land manager put it,

> *"As the number of riders increases and we begin to see resource damage, some activities (such as hill climbing) are simply not going to exist in that area anymore. When people are used to being able to go wherever they want, you're going to have a pretty hard time convincing them that that activity needs to stop."*

It is necessary for managing agencies to clearly spell out under what conditions trails or areas will be considered for closure. In order to maintain accountability in the eyes of the public, it is also necessary to define which position within the agency will ultimately be responsible for making closure decisions, how the process works, and how the public will be alerted of these closures or designation changes.

A high quality OHV plan deals with the issue of route closure in concrete terms. Closure procedures need to be directly related to resource monitoring efforts. In short, if you are going to close a trail because of resource damage, you need to be able to use scientifically valid monitoring data whenever possible to substantiate your claim. This may help convince users that this action is needed and aids in the defense of the decision should it be challenged in court. This requires a degree of foresight on the part of land managers in designing monitoring programs to keep track of areas where heavy use or sensitive resources make closure a significant possibility.

Salient points related to usage control include the need for areas that are just beginning to experience OHV use to become as proactive as possible. Active management must begin with the assumption that use will only increase in the future. The second important point is that decisions regarding trail closures and other forms of usage control need to be backed up by scientific evidence and clearly justified to the public when these decisions are likely to be controversial.

# Identification and Characterization of Resources

## Background

OHV management is primarily concerned with the interaction between two things, OHVs, and the landscape. The first step in creating an effective plan is to have an accurate accounting of both. Without knowing what resources are present, where they are, and their level of sensitivity to OHV use, planners risk making decisions that will ultimately result in resource degradation. Without knowing how much OHV use is present, of what type, and where it's occurring, planners risk grossly underestimating the level of active management that is required. Two key factors confound attempts to create comprehensive inventories: funding, and change. Land mangers must find creative ways to deal with both. Meeting the criteria in this section will allow land managers to get a grasp on the current OHV situation in their area, which subsequently leads to better management in the future.

| | |
|---|---|
| **11.** | **The plan clearly identifies restricted areas such as wetlands or wilderness study areas and provides for the exclusion of OHVs from these areas** |
| **12.** | **The plan provides for the use of a GIS database of trails and other features of concern such as locations of T&E species** |
| **13.** | **The plan relies on or prescribes a route inventory or series of inventories and provides a timeline for completion** |
| **14.** | **The plan clearly identifies the type, level, and location of usage that are occurring** |
| **15.** | **If the management area is to be broken up and inventoried as smaller units, the plan prioritizes the units, provides substantiating information for this prioritization, and provides for the updating of priorities given new data** |
| **16.** | **It is explicitly stated what data need to be gathered, where this data will come from, and who will gather it** |
| **17.** | **The plan addresses the concerns of adjacent landowners or owners of inholdings** |
| **18.** | **Relationships to municipalities and existing residential development are discussed** |
| **19.** | **Areas of intensive use such as staging or play areas are characterized in terms of soils, erosion, and other environmental considerations** |

**Table 10. Identification and Characterization of Resources**

## Discussion

Having a current inventory of both riding areas and current usage is critical to effective management of OHVs. As stated earlier, recreation planning is basically a spatial allocation of resources for certain uses. Without a definite idea of what resources are present and the level of demand that will be placed on them, any allocation risks overextending and damaging the resource, or not allocating sufficient resources to meet demand. Inventories are a prerequisite to any further attempts to manage both resources and users. Creating inventories is also a very time consuming and expensive task.

There are two key factors affecting an agency's ability to gather and compile information for inventories. The first is funding. Depending upon the size of the area and the extent of past inventories, creating a comprehensive database can be extremely time and personnel intensive. Doing so often requires purchasing additional equipment such as GPS units, data logging devices, and ATVs. Two interviewees noted that the trails themselves were much easier to inventory than the type and level of uses that are occurring. Again, land managers need to be creative in finding new ways to track trail usage including using data loggers and infrared-triggered recording equipment. Managers in Utah have used trail cameras designed to track activity on game trails to effectively log the type and number of vehicles using particular routes. Although such devices are often subject to vandalism, they provide a relatively effective and low cost way to gather usage statistics.

The second factor as cited by 3 of 6 interviewees, is that of change. Because so much of compiling an inventory requires on-the-ground field recording, it can take several years to complete a survey of existing trails. During this time the trail system may have changed substantially due to heavy usage, fire activities, or other factors. Trail conditions also change constantly, making an up to date inventory of difficulty level or trail condition very difficult over large areas. Other factors including inconsistent formats between data sets, and vandalism of data loggers, signs, and other equipment also pose problems when creating an inventory. To counter this problem, it is necessary to streamline the inventory process. New technology makes this increasingly possible.

An ideal inventory would utilize a GIS database to show where riding areas or trails are, and to characterize each with respect to the resources present, how much usage is occurring, and how this usage is divided between different modalities (i.e. hikers vs. ATVs, vs. trailbikes). Having such a database in place provides a rigorous structure for prioritizing and targeting management activities. An especially useful (though somewhat costly) approach to trail inventories utilizes a mapping grade GPS receiver and with built in data dictionary. This allows for personnel conducting inventories not only to collect trail location coordinates, but also to describe other features and indicators of trail condition based on a standardized Data Dictionary. Using such a device, personnel would simply scroll through menus and select the most appropriate description of the trail or feature. The following excerpt from a recent proposal for Best Management Practices (BMPs) for OHV management in Alaska shows the type of menus and selections that could be available using such a system. This reference also proposes other useful techniques for making trial condition assessments.

***LINE FEATURE***

***Feature***

| ***Attributes*** | ***Values (menu selection options)*** |
|---|---|
| TRAIL SEGMENT | |
| Trail Segment Type | Single Track, Double Track, or multi-braid 6-20, 20-40, 40-80, 80-160, 160-320, 320-480, or >480 feet wide |
| Trail Track Type | Main, secondary-active, abandoned, access, cutoff, spur |
| Trail Surface Grade | 0-6% 6-20%, 20-40%, > 40% |
| Side Slope | -20%, 20-60%, 60-100%, >100% |
| Trail Surface Char. | Vegetated, native organic, wetland vegetated, floating organic, native fine mineral, mixed fines and gravel, sand, gravel, cobble, imported gravel, wood chips, timbers/planking, corduroy, paved, geotextile, rock, water crossing, other |
| Trail Impact Rating | None<br>Loss of surface vegetation<br>Exposed roots<br><2" erosive loss or surface subsidence<br>2"-8" erosive loss or surface subsidence<br>9"-16" erosive loss or surface subsidence<br>17"-32" erosive loss or surface subsidence<br>33"-60" erosive loss or surface subsidence<br>>60" erosive loss or surface subsidence |
| Mud-Muck Index | None, muddy, extremely muddy, muck hole, multiple muck holes, seasonally impassable, impassable at all times |
| Trail Drainage | Well drained, moderately well drained, poorly drained, saturated, ponded, water running across surface |
| Stone Hindrance | None, <10%, 10%-25%, 25%-75%, 75%-100% |
| Season of Use | Winter, summer, all-season |
| Track Width | 1'-3', 3'-6', 6'-12', 12'-20', 20'-30', 30'-40', 40'-60', 60'+ |
| Vegetation Stripping | Single track, wheel track only, full width of trail |
| Type of Use | Multi-use all types; foot only; motorized only |
| Season of Use | Multi-season, winter, thaw season |

**Figure 4. Data Dictionary Selections (National Park Service River Trails and Conservation Assistance Program, 2002)**

Comments received during interviews stated that in especially large areas that are experiencing heavy or rapidly increasing OHV use, land managers might again be

advised to break up the area into smaller units. Though no quantitative data may be available, most land managers have a good idea of which areas are experiencing problem related to OHV use. Prioritizing units beginning with these areas provides a starting point for creating more targeted inventories that are quicker and less costly to compile. This approach focuses limited funds on the areas that need it most and allows for each inventory to be updated individually based on factors unique to each unit. Because this approach begins with a rather arbitrary prioritization, it is necessary to inventory all of the units as quickly as possible in order to provide solid data for the updating of priorities. Public involvement in this process can also be very important in identifying where users of all types perceive there to be a problem.

In summary, lack of funding and rapidly changing conditions often confound attempts to catalogue existing resources and usage patterns. Prioritization, and the use of technological innovations such as GIS and GPS units with Data Dictionary capabilities can help to overcome some of these obstacles.

## Recreation Opportunity Demand and Provision

### Background

Providing a range of riding experiences should be part of any OHV management program. In a recent poll of Utah OHV riders, 42.3% of respondents ranked “Having enough places to ride” as the most important issue effecting OHV use in the state (Utah Department of Natural Resources, 2001). As the number of OHVs rises, users will increasingly demand more riding options. Planners and land managers should strive to understand what users want by engaging in a direct dialogue with user groups. This not only ensures adequate provision of recreation opportunities, but can removes much of the incentive for riders to seek enjoyment in ways that jeopardize sensitive resources.

| | |
|---|---|
| **20.** | **Consideration is given to the different kinds of usage that might occur or may be desired by users (loop trails vs. open play areas, etc.)** |
| **21.** | **Attention is given to the need to provide a diversity of user experience and trail difficulty** |
| **22.** | **It is clearly stated how user input will be gathered** |
| **23.** | **Consideration is given to the separation of OHVs from other users to avoid conflicts** |
| **24.** | **The plan provides prediction of future demand according to type of vehicle** |
| **25.** | **The plan clearly identifies techniques that will be used to estimate or measure visitor numbers** |

**Table 11. Recreation Opportunity Demand and Provision**

## Discussion

Provision of recreation opportunities embodies the core of OHV management in most areas. The rationale being that providing adequate riding opportunities in terms of length, difficulty, scenery, and character, will greatly reduce the incentive for riders to travel off of designated routes or into restricted areas. Knowing what the people using the area are looking for in terms of riding opportunities is a necessary prerequisite if recreation provision is to perform adequately as a management tool. Therefore, gathering user input is of critical importance. Users in different areas often vary widely in the types of opportunities that they are looking for. For instance, in recent surveys, 91% of ATV riders in Minnesota preferred to ride on established roads and trails rather than cut trails themselves. In contrast, 49.4% of ATV riders in Utah chose traveling off of established roads and trails as their most preferred type of riding (Minnesota Department of Natural Resources, 2001, Utah Department of Natural Resources, 2001). This example shows the importance of going directly to the users to find out what kind of rides they prefer. Having a good working relationship with local OHV groups can provide direct insight into what riders are looking for. Going directly to the riders themselves not only helps insure an adequate fit between riding opportunities and user desires, but also provides a perfect opportunity to educate and inform the user community through direct interaction.

Users of different types of vehicles can have very different ideas of what constitutes a “great ride”. A trail that is wide and of a moderate grade may provide a fulfilling experience for riders on ATVs while motorcyclists will find it boring and seek adventure elsewhere. As stated in the previous section, measuring the number and type of users is often difficult. Setting up photo stations that record the number and type of vehicles using a particular trail will help planners gain quantitative insight into how the trails are being used.

In summary, knowing who your users are, what they ride, and what kind of experience they are looking for will help mangers provide opportunities that meet user expectations and help reduce off-trail travel.

## Coordination with Other Planning and Management Activities

### Background

Land under the management of different agencies is often put to very different uses. Mining, timber harvest operations, road building and decommissioning, and fire management activities all affect the landscapes where OHV recreation is occurring. Criteria in this section focus on coordinating OHV management with other activities in order to increase efficiency, and to take advantage of opportunities presented through these activities. For instance, a timber road could be routed to double as an OHV trail in between harvest operations. Fish and wildlife monitoring operations can provide valuable information about the effects of OHVs. These and other opportunities exist, and thoughtful land mangers can use them to their best advantage. Key aspects of coordination include procedural coordination, policy coordination, and interagency coordination.

| | |
|---|---|
| **26.** | **It is explicitly stated how the plan relates to and is consistent with other planning activities (RMP, Forest Plans, Land Use Plans, etc.)** |
| **27.** | **The plan clearly states any changes made to existing policies and details how the public will be alerted to these changes** |
| **28.** | **The plan explicitly states its connection to current Environmental Impact Statements, NEPA, or other studies** |
| **29.** | **The plan addresses the need to coordinate management efforts with other activities such as fire control and timber harvesting** |
| **30.** | **OHV monitoring activities are explicitly coordinated with monitoring activities for other activities such as fisheries, hydrology, and wildlife to avoid overlap** |
| **31.** | **There is planning for procedural coordination with other plans and agencies** |
| **32.** | **The plan addresses the need for consistency in data format both within and between agencies** |

**Table 12. Coordination with Other Planning and Management Activities**

## Discussion

In order for an OHV management plan to succeed, it must be realized that the plan does not exist within a vacuum, but rather, is intertwined with many other aspects of land management. Putting the plan in the proper context requires explicitly detailing how it relates to other management activities, the environmental review process, and in some cases, the activities of other agencies. Beyond stating these relationships, the ideal situation would include coordination within the managing agency in order to avoid overlap and to make the best use of agency resources. For instance, fisheries personnel performing water quality monitoring could locate their testing sites so as to provide information about the effects of OHVs on water quality directly below a stream crossing. One respondent relayed how in the case of their route inventory; they had many different groups submitting trail locations for inclusion. These submissions ranged from GPS locations and GIS files to hand drawn maps. Because there was no requirement that submissions from the public be in a consistent format, it took much longer than should have been required to compile the information and issue a completed inventory.

A second aspect of coordination lies in the relationship of the plan to other planning and policy documents. Land use planning at the Federal level is often a tangled web of statutes, memoranda of understanding, environmental reviews, and other policies

and documents that will directly affect the final OHV plan and its implementation. Placing the plan in its proper context and explicitly stating how it relates to each of these other documents is important. Respondents felt that although it was not necessary for a plan to act as a repository of all of this information, it was critical to cite applicable codes, policies, and documents when they relate directly to the OHV plan. For instance, it might be preferable to create a route designation plan as part of a larger forest or resource area management plan. This process usually requires extensive environmental review. After approval, the plan, which is essentially the implementation strategy, must cite these review documents rather than simply acknowledging that they were approved. Increasingly, people want to know how and why decisions are made, and an effective plan explicitly states where its legitimacy, directive, and supporting information come from.

In areas were multi-jurisdictional trail systems exist, it may be necessary to coordinate management activities not only within, but between agencies. The Paiute Trail in south-central Utah is a good example of such a trail, consisting of a 275 mile loop and over 1000 miles of marked side-trails that cross BLM, Forest Service, State Park, and private land. In such a case, forming a trail council, advisory committee, or other interagency group can aid in communication and coordination of activities. Inventories and monitoring data need to maintain consistency of format, and prioritizations for management activities must occur over the trail system as a whole.

Because the types of coordination described above are unlikely to occur on their own in many cases, the ideal OHV plan becomes a vehicle for pointing out these junctions where data utility and efficiency could be increased, and where a coordinated approach is required between agencies.

## Trail Routing, Construction, and Signage

### Background

Trails are often expected to serve several functions including, reducing off-road travel, and providing a quality user experience. Where trails are built, how they are constructed,

and how well they are signed are key considerations affecting how well a trail performs its intended function. Well thought out trails meet user expectations, reduce the incentive for off-trail travel, and adequately address water management and erosion issues. The criteria presented in this section help to ensure that newly constructed trails are of the highest quality in all respects.

| | |
|---|---|
| **33.** | **The plan addresses signage as an integral part of trail development and maintenance** |
| **34.** | **The plan requires that all proposals for trail or facility development include funds for signage, maintenance and enforcement** |
| **35.** | **The plan addresses the funding needed to deal with vandalism and periodic replacement of signs** |
| **36.** | **The plan clearly outlines the process for route selection and trail construction** |
| **37.** | **The need for consistency in signage with neighboring areas is addressed** |
| **38.** | **The plan requires engineering oversight in the design and construction of trails or at least addresses the engineering and design considerations of trail construction** |

**Table 13. Trail Routing, Construction, and Signage**

## Discussion

The degree to which OHV areas are actually creating trails is highly variable. One interviewee from a red rock area in Utah noted that they have never actually constructed trails, and are instead charged with managing hundreds of miles of existing trails and roads. For areas that do construct trails, layout and design are of primary concern. Much of the literature and many respondents stressed the need for engineering oversight of trail design and construction. Some respondents however, did not feel as adamant about the need for such technical oversight. As stated above, one reason for this is that some areas don't actively construct trials, relying instead on preexisting routes. Another reason is pointed to by the need for trails to provide users with the kind of experience they are looking for. For example, a land manager in Oregon commented that:

> *"It's more important to have a rider laying out the trail than it is to have an engineer working on the trail that doesn't know anything about rider*

> *experience. If you don't design the trail right, people aren't going to ride on it and they'll find other places to go."*

This sentiment was echoed several times during interviews where respondents stated that although engineering might be needed for design and construction of structures such as bridges, general trail building skills and knowledge of the habits and characteristics of riders is more important than engineering knowledge. For example, in constructing trails to minimize erosion, laying out the trail in such a way as to constrain off trail travel may be just as important as the grade or drainage of the trail itself. Respondents did recognize that the need for engineering oversight increases dramatically in areas where heavy precipitation and runoff occur in order to effectively deal with water management issues.

Several user surveys have examined the features that riders of different vehicle types prefer (Minnesota Department of Natural Resources, 2001, Utah Department of Natural Resources 2001). Interestingly, more "extreme" activities such as hill climbing and jumping ranked relatively low with ATV riders who currently form the majority of OHV users. ATV riders instead preferred easy trails through scenic areas, and trails that take them to destinations. These preferences vary according to vehicle type. The message here is twofold, 1) that planners should not make assumptions about what riders in their area want and instead, seek input directly from riders, and 2) planners need to agree on what type of recreation experience they area trying to provide. If their trail system is largely geared towards family oriented ATV riders, then perhaps they need to separately provide a few more challenging facilities to absorb the impacts of those riders that are seeking a more "extreme" experience.

One aspect that all interviewees did agree on was the importance of signage both in providing a quality user experience, and in limiting unauthorized travel. Placement and maintenance of signage can represent a significant investment of time and funding, and most respondents felt that it was important to include an estimate of such requirements as part of any development proposal. Vandalism of signs can be a significant cost in some areas. One respondent commented that, "Signing becomes a target for people. If they don't like what's going on, the first thing they're going to hit are your signs." Previous surveys have also shown that users put a high priority on signage indicating that adequate trail markers are part of what makes a "great" ride. (Minnesota Department of Natural

Resources, 2001, Utah Department of Natural Resources 2001). In short, most users want to know where they are and are not allowed to ride. They also don't want to get lost. Appropriate signing adds substantially to experience of the majority of users.

The need for consistency in signage within a single area is clear. In some circumstances, consistency (if not uniformity) in signage between adjacent areas is also a concern. Trails or recreation areas that cross jurisdictional boundaries benefit greatly from such consistency. Again, this is an example of where joint management of an area by a multi agency workgroup can improve the overall management of a trail system. Having OHV use managed by a single entity with members from all involved agencies allows for an entire system to maintain consistency in signing.

## Collaboration

### Background

Criteria in this section address the need for agencies, personnel, and the public to work together on OHV management. Effective collaboration increases the efficiency, consistency, and overall quality of OHV management efforts. Although guidelines for such collaboration should be detailed in the plan, managers should retain a high degree of freedom when undertaking collaborative ventures.

| | |
|---|---|
| **39.** | **The plan provides for the involvement of nongovernmental stakeholders in advisory groups** |
| **40.** | **The plan stresses the need for collaboration between agencies and provides general guidelines for cooperation and communication.** |
| **41.** | **The plan provides a framework for agencies and other parties to pool or share resources** |
| **42.** | **The plan addresses the administrative barriers to such collaboration** |
| **43.** | **The plan details how interagency collaboration will take place (i.e. work groups, joint hiring, sharing of vehicles, etc)** |

**Table 14. Collaboration**

### Discussion

Collaboration is being increasingly stressed as key to the success of land management efforts. As the number of public land users, private landowners, and other stakeholders grows, decisions made concerning OHV management will affect an increasing number of people. Involvement of nongovernmental stakeholders, and collaboration between agencies can increase efficiency and effectiveness, and decrease mistrust and litigation.

Although respondents felt that it was very important for an OHV plan to stress collaboration, they felt it was not necessary to detail exactly how this collaboration will take place, instead stressing the need for flexibility. This division of structure and process is important. Collaborative structures include stakeholder boards and advisory committees. An OHV plan should go some distance towards stating what these structures will be, what role they will play, and what responsibilities they will have. The process of collaboration, such as the exact makeup of committees, what exact tasks they will tackle, and how they will perform their duties, require a high degree of flexibility and are unnecessary to spell out in the plan. For instance, it could be stated in a plan that contact be made with the state fish and wildlife office regarding certain aspects of the plan without specifying who will be contacted, when, and how. A notable exception where more process detail is advantageous occurs where a trail system or area is under joint management by more than one agency. In such a case, it becomes advantageous to create a more detailed plan that includes process guidelines for cooperative actions such as joint hiring of personnel, or sharing of OHV equipment. This increased level of detail can help ensure that working relationships between personnel at different agencies will continue after turnover occurs at those key positions.

## Education and Public Outreach

### Background

Education and public outreach criteria address the need to convey information to users, as well as to gain input from the public regarding OHV management issues. Both this and

previous studies point to user education as the most important aspect of any OHV program.

| | |
|---|---|
| **44.** | **The plan provides a rigorous public education program** |
| **45.** | **The plan addresses map production and distribution** |
| **46.** | **The plan outlines several avenues through which the public can be involved the planning process** |
| **47.** | **Education activities are coordinated with other agencies** |
| **48.** | **The plan provides a structure through which volunteer labor can be utilized** |
| **49.** | **The plan provides clearly defined methods for disseminating educational materials to the public** |
| **50.** | **The plan addresses the safety implications of OHV use** |
| **51.** | **The plan addresses "hold harmless" liability statutes if OHVs will operate on private lands in the area** |

**Table 15. Education and Public Outreach**

## Discussion

Public education was cited by the literature and by survey and interview respondents as the key ingredient to effective OHV management. In a survey of OHV riders in Minnesota, 60% of respondents felt that the rules for riding on public lands were unclear. They also felt that if the rules were clearly communicated, most users would obey them. (Minnesota Department of Natural Resources 2001)

According to respondents in this study, the best plans will provide a multifaceted approach to public education, rather than relying on a single tactic. Knowing that opportunities for educating users are limited, planners and mangers should create plans that not only utilize existing education methods, but create new opportunities for communicating with users.

Mangers in many areas have very little opportunity to contact or educate users due to the high percentage of riders that arrive from out of the area. Managers from

central Oregon stated that 60-70% of their riders come from several hours away. In this situation, educational opportunities are limited to signs and informational kiosks at the trailhead. Many respondents stated that they rely solely on signage from campaigns such as Right Rider and Tread Lightly as their form of public education. These nationwide campaigns emphasize riding within the law, showing consideration for other users, and exercising a leave-no-trace outdoors ethic. The following is an example of the type of signing these programs provide.


**Figure 5. Example of Educational Signage**

Although such campaigns no doubt have some impact, they are probably not sufficient by themselves to change people's attitudes and behaviors. Direct contact between agency personnel and riders needs to be established. Contact at trailheads or on the trail can play an important role in creating a good working relationship with users. Having a trail host program where riders, working in cooperation with the managing agency and OHV recreation groups, make contact with other riders on the trail can also bolster relations and encourage riders to obey the rules. The following is description of what a trail host program provides (San Bernardino National Forest Association, 2003).

.

> *OHV Hosts are a group of specially trained volunteers riding motorcycles, all terrain vehicles or driving their 4x4 vehicle in the National Forest. They are responsible for greeting fellow OHV enthusiasts, handling emergencies and passing along information about backcountry travel on public land managed by the Forest Service. Operating under a volunteer agreement with the San Bernardino National Forest Association (SBNFA) the OHV volunteer, or host, represents the U.S. Forest Service. They are*

> *official representatives of the Forest Service, but carry no law enforcement authority to enforce regulations beyond that of any other citizen. Their influence is felt through their knowledge, friendliness, and willingness to help others. They are a vital part of the Forest Service who have a high degree of commitment to responsible use of off-highway travel on public lands.*

A trail host program of this nature, where citizens on OHVs make contact with other riders can be very effective. Trail hosts are viewed as fellow riders rather than as enforcement personnel. In previous interviews with OHV managers in Utah, trail host programs were stated to be very effective means for educating riders, as well as for providing an additional presence on the trail at very little cost to the agency.

Several areas have set up websites and 1-800 hotlines that provide up to date reporting on trail conditions, and provide an additional opportunity to disseminate educational materials to the public. As one respondent noted, not all people are dialed in to the Internet, but providing this sort of one-stop-shopping for those seeking OHV information is certainly worth pursuing, especially if information is updated daily. Such sites can also provide a means of public involvement in the planning process for riders who travel from out of the area.

A good volunteer program can serve not only to mobilize manpower, but can also act as an education and public relations forum. Respondents felt that it was not necessary for an OHV plan to detail the workings of a volunteer program. Because of the variability of funding, projects, and availability of volunteer labor, respondents felt that although the plan should specify that a volunteer program should exist, it should not go into too much detail about how it will function or what it should do.

Involving the public in the planning process is a requirement for all federal agencies. With the contention and litigation that often surrounds OHV planning, it is advantageous for personnel engaged in the planning processes to go above and beyond the requirements set forth in the Code of Federal Regulations. The rationale being that the more public involvement and education you have during plan development, the less likely it is for the plan to be litigated afterward.

# Monitoring

## Background

Monitoring is the process through which mangers can track changing conditions. Conditions that require monitoring include the effects of OHVs on fish, wildlife, soil, and vegetation. Monitoring is also used to track changes in trail condition, user numbers, and other topics of interest. Monitoring is included here because a rigorous monitoring regime is necessary to prevent unacceptable resource impacts, to prioritize maintenance work, and to conduct other OHV management activities outlined by the plan.

| | |
|---|---|
| **52.** | **The plan addresses the impacts of OHVs on fish, wildlife, water quality, air quality, noise, historic and archeological sites** |
| **53.** | **The monitoring methods are clearly detailed** |
| **54.** | **A timeline is given for monitoring frequency (i.e. biannually, every ten years, etc.)** |
| **55.** | **Monitoring methods are supported by references to scientific literature** |
| **56.** | **A timeline is given for gathering additional data** |
| **57.** | **The plan addresses the need for consistency in monitoring methods between agencies** |

**Table 16. Monitoring**

## Summary

Monitoring programs suffer from many of the same difficulties encountered when compiling initial inventories. Again, depending on area size and level of use, monitoring can be extremely time consuming. For instance, monitoring the impacts of a stream crossing on downstream fish populations can take several years. Care must be taken at

the outset to structure monitoring regimes in such a way that they yield greatest amount of useful information.

Establishing a scientifically defensible monitoring plan is critical to the success of any OHV plan, especially in areas of high environmental concern. Plans that put forth decisions and propose actions that do not have substantiating data are sure to be appealed. Stating what will be monitored, how the data will be collected, over what time period, and how this data is useful and valid is important. OHV use has significant potential to cause environmental damage. The public must be sure the managing agency is keeping track of the effects of OHVs and protecting natural resources accordingly. Only scientifically valid monitoring information can do this. It is important to workwith the public to ensure that areas if critical concern are being monitored.

In these instances, maintaining complete inventories of resources and usage patterns become vital. Knowing where critical resources such as federally listed species are in relation to existing trails is essential to establishing a monitoring program that yields useful data. Some factors such as trail condition require the use of novel monitoring techniques. An example of such a technique is establishing permanent benchmarks for photos of areas of concern. A tree, rock or other semi permanent landmark can be used as a reference point for taking photos of an area or trail section. Such a photo series can provide dramatic evidence of how a trail or area is changing over time

Again, in instances where trails systems traverse jurisdictional boundaries, a higher degree of coordination and consistency is desirable in monitoring activities and having joint management organized under a semi-independent body is helpful.

## Enforcement and Trail Presence

### Background

If all riders obeyed the rules and regulations, OHV management would be a much simpler task. Unfortunately, all riders do not obey the rules. As one manager put it:

*"People have to have some reasonable expectation that if they decide to engage in something that's not allowed, that there's some potential for getting caught and having consequences for it"*

Policy and education efforts need to be backed up by law enforcement and fines. Criteria in this section deal with the aspects of enforcement that should be covered in an OHV plan.

| | |
|---|---|
| **58.** | **Procedures for the permitting and management of major gatherings and events are clearly defined** |
| **59.** | **The plan coordinates enforcement activities with other land management and law enforcement agencies** |
| **60.** | **The plan considers the use of a trail host program** |
| **61.** | **The plan considers the use of trail rangers patrolling on OHVs** |
| **62.** | **The plan explores ways to increase the effectiveness of fines such as requiring that offenders appear before a local judge.** |

**Table 17. Enforcement and Trail Presence**

## Discussion

When asked how important enforcement was to successful OHV management, almost all respondents stated that it was very important. They also saw it as a last resort, recognizing that when education, trail design, and recreation provision fail to stop illegal activities, citations are necessary. Users themselves appear conflicted in their feeling towards law enforcement. In a recent user survey, users were asked whether there should be more, less, or the same amount of law enforcement in their area. 35.1% thought there should be more, and 57.5% thought current levels were about right. However, law enforcement issues ranked dead last in the same survey when users were asked to rank the importance of funding expenditures (Utah Department of Natural Resources, 2001). A second survey also showed law enforcement ranking near the bottom in terms of funding priority (Crimmins, 1999) Interestingly, in the Utah survey, when asked where they thought OHV registration and tax money were being spent, a high percentage (13.3%) said law enforcement.

One thing mangers and users do agree on is that fines for OHV violations are too low. Fine amounts that most users view as trivial are not likely to deter illegal behavior. When asked what would be a reasonable fine for infractions such as illegal hill climbing or cutting new trails, responses ranged from $150 to $1000. In a Minnesota survey where ATV riders were asked to indicate a reasonable fine for going through a stream or wetland, the mean response was $198 (Minnesota Department of Natural Resources, 2001). Fines for OHV infractions are set at the federal or state level and raising them at the local level is not generally possible. One option in lieu of raising fines is to require violators to appear before a local magistrate. In areas where most users are visiting from some distance, the inconvenience of having to travel to appear in front of a local judge can become a considerable penalty in itself.

Coordination of enforcement activities with local and regional law enforcement personnel was also considered to be important. In one case, BLM furnished 50% of the funding to hire a deputy sheriff for a county in Utah. This deputy was then trained in enforcing OHV laws. Comments regarding coordination stated that both law enforcement officers and judges should be better educated when it comes to OHV laws and violations. Enforcement is particularly important in family oriented areas to maintain safe riding conditions.

Having an on-the-ground OHV presence, either in the form of “trail rangers” (agency personnel with law enforcement authority), or private citizens acting as trail hosts, can be very effective. The trail host programs described earlier utilize volunteer labor and foster collaboration between management agencies and local citizens. These programs provide a significant trail presence at virtually no cost to the agency. Trail host programs can be particularly useful because riders are confronted not by armed law enforcement, but by their fellow riders. Trail hosts are direct points of contact where education can take place and a certain amount of peer pressure can be brought to bare.

# Funding and Feasibility

## Background

Four out of six interview respondents cited funding as the biggest barrier to plan implementation. Because of the relationship between funding and feasibility, a high quality plan provides careful consideration of the monetary requirements of proposed actions.

| | |
|---|---|
| **63.** | **The plan addresses the number of personnel or FTE that are required to adequately address OHV management in the area** |
| **64.** | **The plan addresses the feasibility of each proposed action in terms of funding, personnel requirements, or other constraints** |
| **65.** | **Funding sources for activities are clearly identified** |
| **66.** | **Alternative funding sources are identifies such as local business or industry contributions, and organization of fund-raising events** |

**Table 18. Funding and Feasibility**

## Discussion

Knowing that funding is one of the main barriers to effective implementation of OHV plans, it becomes all the more critical to examine the funding required to complete any proposed actions. Estimating costs, and identifying sources of funding increases the likelihood that a proposed action will be completed. Quantifying the amount of funds needed to adequately address OHV management gives leverage to areas seeking additional funding for this task. This occurs directly by showing actual costs, but also indirectly by way to the riders themselves. If OHV enthusiasts are aware that lack of funding for maintenance and enforcement will result in closure of trails, they are more likely to push for increased funding for OHV programs.

Because managing OHV is costly, literature sources advise working towards making OHV programs largely self-sustaining. As one study (Tennessee Department of Environment and Conservation, 2002) states,

> *"An OHV program [must] be funded by its users. The state should not use existing resources to support OHV activities. This includes agency*

> *resources related, but not limited to, hunting, fishing, sporting, state parks, or public lands funds. California's program has been in place for 25 years and has demonstrated that an OHV program can sustain itself. This program has been successful because it balances the demand for a recreational experience with the inherent cost of providing that experience."*

The issue of user fees is likely to be very unpopular with OHV enthusiasts. In the Colorado survey of OHV users, the number one preferred attribute of a riding area on public lands was that it remains free of charge (Crimmins, 1999). Although this idea of a self-sufficient program is more applicable to state and local lands than to Federally administered areas, it is advisable for managers in both instances to seek avenues of funding outside of the general budget. Fund raising OHV events can generate significant revenue that can be put directly back into the trail system and OHV manufacturers, retailers and other businesses that have a vested interest in the success of OHV recreation should be encouraged to contribute to OHV programs. A Tennessee study showed that in 1998, three OHV events put a total of $931,000 into the state's economy. (Tennessee Department of Environment and Conservation, 2002) Business and communities need to see that they stand to gain substantially from effective and thoughtful OHV management and be encouraged to contribute towards this end.

## General Plan Criteria

### Background

What makes a high quality plan? Since it has been shown that higher quality plans do indeed lead to better outcomes, it should pay to examine the traits that all "good" plans have in common (Burby, 2003, Dalton & Burby, 1994). The criteria in this section represent those traits as they pertain to OHV plans.

| | |
|---|---|
| **67.** | **Preliminary drafts were circulated for public comment** |
| **68.** | **Proposals, recommendations, and conclusions are consistent with objectives** |
| **69.** | **The problems the plan is meant to address are specifically identified** |
| **70.** | **Rationales behind the decisions are effectively presented** |
| **71.** | **Feasibility in the larger political context has been addressed** |
| **72.** | **Purpose of the plan is explained** |
| **73.** | **Alternatives are listed or at least considered** |
| **74.** | **The legal implications of the plan have been considered** |
| **75.** | **The plan is sufficiently flexible to permit new data and findings to be fed in** |
| **76.** | **The type of plan and it's scope are reported early on, to alert the reader about what to expect** |
| **77.** | **The political/ legal context of the plan is explained (e.g. meeting state mandates, public discussion and consideration, top priority issues)** |
| **78.** | **Administrative authority for preparation is indicated (CFR, state law, RMP, national management plan etc.)** |
| **79.** | **An overview and summary are provided** |
| **80.** | **Role of the preparing agency or firm is adequately explained** |
| **81.** | **The plan states who was involved in its' formulation. If nongovernmental personnel (such as stakeholder groups or an advisory committee) were involved, the plan states how participants were chosen and what role they played** |
| **82.** | **Data sources are cited** |
| **83.** | **The plan clearly defines both the costs and benefits of OHV recreation** |
| **84.** | **Background information is presented (how the plan came about, events leading up to the drafting of the plan)** |
| **85.** | **The capacity and adequacy of existing infrastructure and organizational systems is examined** |

| | |
|---|---|
| **86.** | **The plan is based on a wide spectrum of data where feasible** |
| **87.** | **It is clear how data, models, goals, and other pertinent information were used in recommending policy action** |
| **88.** | **Methodology sources are cited** |
| **89.** | **It's clear whom the plan is for (citizens, agency heads, etc.)** |
| **90.** | **The distribution of costs and benefits among different groups and interests has been considered, and issues of efficiency, equity, and predictability have been considered** |

**Table 19. General Plan Criteria**

## Discussion

Although some of the criteria in this section may seem trivial, each plays a role in creating a robust and effective OHV plan. For instance, if a plan does not state how advisory committee members were chosen, this can cause considerable suspicion by members of the public. During evaluation of the initial criteria by land mangers, these criteria were considered to be quite important with a mean response of 3.97. Criteria in this section that mangers felt were particularly important included circulating drafts for public comment, maintaining consistency between proposals and objectives, clearly stating what problems the plan is meant to address, and several others. (Please see Appendix C for mean importance figures. Note, question numbers in Appendix C refer to questions on the original survey tool found in Appendix B, NOT to the questions as they appear in the body of this report or the final checklist.)

The crafters of OHV management plans are under significant pressure to justify every decision they make. Meeting the criteria presented in this section will help focus the planning process, helping to avoid confusion and future litigation.

# Format

## Background

A great deal of time and money goes into preparing an OHV plan. Presenting this effort in a professional looking format is very important. It is said that you never get a second chance to make a first impression. Meeting the following criteria helps ensure that that impression is a good one. It will also help ensure that the plan is user-friendly and remains useful as a working document rather than gathering dust on a shelf.

| | |
|---|---|
| **91.** | **The tone of the document is consistent with the message conveyed and apparently free of bias** |
| **92.** | **The ideas are convincingly presented, given the nature of the audience** |
| **93.** | **There is a table of contents** |
| **94.** | **Graphics are used to best advantage** |
| **95.** | **The plan is attractively laid out** |
| **96.** | **Pages are numbered** |
| **97.** | **The size and format of the plan are conducive to the use intended** |
| **98.** | **The authors are shown, to indicate professional responsibility** |
| **99.** | **The date of publication is shown** |

**Table 20. Format**

## Discussion

Respondents ranked formatting issues as very important. The layout and formatting of an OHV plan must convey a sense of the time and consideration that were taken in its preparation. Creating a professional looking document that presents a consistent message free of apparent bias imparts confidence that all involved took care in its preparation and considered all the issues carefully.

It should be taken into account who will be using the document and for what purpose. Maps, graph, charts, and text should be as simple and user-friendly as possible. The layout of the document should be concise, easy to follow and logical.

## Plan Evaluation and Reporting

### Background

The point of planning is not to create a plan, but to create action. Whether this action is to create more OHV trails, to stop environmental damage, or to lay out agency policies, there needs to be some way to assess how the plan is performing. Criteria in this section deal with assessing the effectiveness of OHV plans.

| | |
|---|---|
| **100.** | **The plan gives a timeline for evaluation and review** |
| **101.** | **The plan clearly states the measures by which the effectiveness of the plan will be judged** |

**Table 21. Plan Evaluation and Reporting**

### Discussion

Every plan has a useful life span and every plan must suggest a timeline for evaluation and revision. Due to the context specific nature of OHV planning, this interval can vary widely. In interviews, respondents stated that it took anywhere from 1 to 10 years from the beginning of the planning process to the time implementation was actually begun. The length of time seemed to depend largely on the size of the area, the amount of litigation surrounding OHV recreation, and the kinds of issues that the OHV plan encompassed. However, if a plan takes several years to reach the implementation phase, many of the conditions upon which it is based may have changed drastically.

Amount of OHV use, rate of change in usage, and other factors will determine the useful life of the plan. Although it can't be know for sure, it is necessary for planners to

estimate the useful life of the plan and schedule reviews accordingly. When asked how often a plan should be reviewed and revised, the most common answer was 5-10 years. Respondents gave different reasons for their answers ranging from reluctance to once again open the plan up to litigation, to timing review to coincide with required review of larger land use plans. In smaller areas where inventories and monitoring are much easier, a shorter revision interval might be more feasible. Mangers working with state forestry departments or state parks indicated that because their organizations were smaller and somewhat less bureaucratic than federal agencies, they were able to move faster, creating and implanting a plan over a period of 2-3 years. These managers also felt that plan review should be schedule every 6-10 years. In larger areas where inventories alone take several years to complete, mangers felt that reviewing the plan every ten years was a realistic goal.

Planners also need to identify by what measures the plan will be judged. Recognizing that judgments will come not only from within the agency, but from the public as well, will help planners focus on measures that are feasible, and are relatively easy to quantify. Most often evaluation is done in terms of meeting the goals set forth in the plan. This requires that clear goals be stated from the outset. It also would be advised to state what indicators and measures will be used. For example, the Superior National Forest Draft Trail Management Plan states objectives relating to signing as follows: (Superior National Forest, 2002)

> **Signing**
> **Objective:** *All trails will have adequate signing commensurate with the targeted recreational experience.*
> **Strategy:** *A sign plan will assess the need for and location of signs along trails. Signs will be made and placed in appropriate locations on trails. They exist on a continually updated sign inventory and are maintained on a regular basis.*
> **Indicator:** *Signs exist in appropriate locations on trails, and are in good condition. Sign inventory shows dimensions, location, date erected, etc.*
> **Measure:** *The percent of needed signs on the ground and in good condition.*

This style of laying out objectives, indicators, and measures is drawn directly from the management frameworks such as the VERP and VRM processes used as criteria sources

for this study. Explicitly stating goals, objectives, and a detailed plan to meet them will greatly increase the quality of an OHV plan.

# CONCLUSION

## Summary

The purpose of this study is to develop a set of criteria that can be used to assist in the preparation of OHV management plans. These same criteria can also be used to evaluate the quality of existing plans. Drawn from a wide variety of sources and shaped by input directly from land managers, such a checklist of elements of plan quality provides an important framework for the creation of plans that are well written, robust, and useful.

Sources for initial criteria included academic literature related to plan quality, OHV user surveys, reports by federal and state OHV programs, and management frameworks used by federal agencies to guide land management decisions. Although academic literature relating directly to OHV recreation is almost nonexistent, a substantial body of research has been amassed over the years by federal and state agencies and OHV programs. One goal of this study was to collect the salient points from this body of work and compile them in such a way that planners and land managers could easily see what criteria their plans need to meet to be successful.

Although surveys and interviews were used in this study, the intent was not to gain statistically valid data. Rather, the methods employed more closely resemble the Delphi process where experts are fed information individually and allowed to comment and revise as they see fit. The ultimate goal was to come to a consensus on what a "good" OHV plan should include.

A draft set of criteria was mailed to participants in the form of a survey (see Appendix B). The survey was sent to 24 land managers in Utah and Oregon who deal with OHV recreation and management on a daily basis such as OHV coordinators and recreation planners. Utah and Oregon are states where OHV recreation is extremely popular. Participants were chosen to gain insights from a wide variety of environmental,

geological, and political settings. Most participants had more than 5 years experience working with OHVs and were located in areas where use was described as “heavy”.

The mailed survey allowed respondents to rate 120 criteria based on how important they felt it was that a plan meet the criteria, and how difficult they thought it was to actually do so. Twenty surveys were returned, and answers were analyzed to refine the criteria.

This analysis included identifying respondents that had markedly different answers on questions where there was a generally consensus, areas where respondents ranked items different in importance than was suggested by the literature, and areas where further elaboration on an answer or written comment was desired.

After identifying these items, 6 participants, including those whose answers to certain questions were considered outliers, were interviewed by phone. Survey responses, written comments, and comments received during interviews were used to revise the criteria and create a final checklist that planners could use (presented at the end of this section). Criteria are broken into 13 categories including,

1. **Implementation**
2. **Usage Control, Closure, and Reclamation**
3. **Identification and Characterization of Resources**
4. **Recreation Opportunity, Demand, and Provision**
5. **Coordination with other Planning and Management Activities**
6. **Trail Routing, Construction, and Signage**
7. **Collaboration**
8. **Education and Public Outreach**
9. **Monitoring**
10. **Enforcement and Trail Presence**
11. **Funding and Feasibility**
12. **General Plan Criteria**
13. **Format**

The following table is the final checklist of criteria that should be addressed in a high quality OHV plan.

| | | |
|---|---|---|
| | | **IMPLEMENTATION** |
| | **1.** | **The responsible agency can realistically be expected to implement the plan** |
| | **2.** | **The implementation of the plan and accompanying action items are prioritized** |
| | **3.** | **The rational for this prioritization is clear** |
| | **4.** | **The agency or position responsible for implementation of each item is clearly identified** |
| | **5.** | **There is a timeline for plan implementation that details at least the major checkpoints for progress such as completion of a trail inventory.** |

| | | |
|---|---|---|
| | | **USAGE CONTROL, CLOSURE, AND RECLAMATION** |
| | **6.** | **The plan clearly defines under what circumstances trails will be considered for closure** |
| | **7.** | **The plan provides a strategy for the reclamation of damaged areas** |
| | **8.** | **The plan describes ways to control OHV use in and around camping areas** |
| | **9.** | **The plan provides ways to inform the public of access and designation changes** |
| | **10.** | **The plan clearly states who will ultimately make trail closure decisions** |

| | | |
|---|---|---|
| | | **IDENTIFICATION AND CHARACTERIZATION OF RESOURCES** |
| | **11.** | **The plan clearly identifies restricted areas such as wetlands or wilderness study areas and provides for the exclusion of OHVs from these areas** |
| | **12.** | **The plan provides for the use of a GIS database of trails and other features of concern such as locations of T&E species** |
| | **13.** | **The plan relies on or prescribes a route inventory or series of inventories and provides a timeline for completion** |
| | **14.** | **The plan clearly identifies the type, level, and location of usage that are occurring** |
| | **15.** | **If the management area is to be broken up and inventoried as smaller units, the plan prioritizes the units, provides substantiating information for this prioritization, and provides for the updating of priorities given new data** |
| | **16.** | **It is explicitly stated what data need to be gathered, where this data will come from, and who will gather it** |
| | **17.** | **The plan addresses the concerns of adjacent landowners or owners of inholdings** |
| | **18.** | **Relationships to municipalities and existing residential development are discussed** |
| | **19.** | **Areas of intensive use such as staging or play areas are characterized in terms of soils, erosion, and other environmental considerations** |

| | | |
|---|---|---|
| **RECREATION OPPORTUNITY DEMAND AND PROVISION** | | |
| | **20.** | **Consideration is given to the different kinds of usage that might occur or may be desired by users (loop trails vs. open play areas, etc.)** |
| | **21.** | **Attention is given to the need to provide a diversity of user experience and trail difficulty** |
| | **22.** | **It is clearly stated how user input will be gathered** |
| | **23.** | **Consideration is given to the separation of OHVs from other users to avoid conflicts** |
| | **24.** | **The plan provides prediction of future demand according to type of vehicle** |
| | **25.** | **The plan clearly identifies techniques that will be used to estimate or measure visitor numbers** |

| | | |
|---|---|---|
| **COORDINATION WITH OTHER PLANNING AND MANAGEMENT ACTIVITIES** | | |
| | **26.** | **It is explicitly stated how the plan relates to and is consistent with other planning activities (RMP, Forest Plans, Land Use Plans, etc.)** |
| | **27.** | **The plan clearly states any changes made to existing policies and details how the public will be alerted to these changes** |
| | **28.** | **The plan explicitly states its connection to current Environmental Impact Statements, NEPA, or other studies** |
| | **29.** | **The plan addresses the need to coordinate management efforts with other activities such as fire control and timber harvesting** |
| | **30.** | **OHV monitoring activities are explicitly coordinated with monitoring activities for other activities such as fisheries, hydrology, and wildlife to avoid overlap** |
| | **31.** | **There is planning for procedural coordination with other plans and agencies** |
| | **32.** | **The plan addresses the need for consistency in data format both within and between agencies** |

| | | |
|---|---|---|
| | | **TRAIL ROUTING, CONSTRUCTION, AND SIGNAGE** |
| | **33.** | **The plan addresses signage as an integral part of trail development and maintenance** |
| | **34.** | **The plan requires that all proposals for trail or facility development include funds for signage, maintenance and enforcement** |
| | **35.** | **The plan addresses the funding needed to deal with vandalism and periodic replacement of signs** |
| | **36.** | **The plan clearly outlines the process for route selection and trail construction** |
| | **37.** | **The need for consistency in signage with neighboring areas is addressed** |
| | **38.** | **The plan requires engineering oversight in the design and construction of trails or at least addresses the engineering and design considerations of trail construction** |

| | | |
|---|---|---|
| | | **COLLABORATION** |
| | **39.** | **The plan provides for the involvement of nongovernmental stakeholders in advisory groups** |
| | **40.** | **The plan stresses the need for collaboration between agencies and provides general guidelines for cooperation and communication.** |
| | **41.** | **The plan provides a framework for agencies and other parties to pool or share resources** |
| | **42.** | **The plan addresses the administrative barriers to such collaboration** |
| | **43.** | **The plan details how interagency collaboration will take place (i.e. work groups, joint hiring, sharing of vehicles, etc)** |

| | | |
|---|---|---|
| | **EDUCATION AND PUBLIC OUTREACH** | |
| | **44.** | **The plan provides a rigorous public education program** |
| | **45.** | **The plan addresses map production and distribution** |
| | **46.** | **The plan outlines several avenues through which the public can be involved the planning process** |
| | **47.** | **Education activities are coordinated with other agencies** |
| | **48.** | **The plan provides a structure through which volunteer labor can be utilized** |
| | **49.** | **The plan provides clearly defined methods for disseminating educational materials to the public** |
| | **50.** | **The plan addresses the safety implications of OHV use** |
| | **51.** | **The plan addresses "hold harmless" liability statutes if OHVs will operate on private lands in the area** |

| | | |
|---|---|---|
| | **MONITORING** | |
| | **52.** | **The plan addresses the impacts of OHVs on fish, wildlife, water quality, air quality, noise, historic and archeological sites** |
| | **53.** | **The monitoring methods are clearly detailed** |
| | **54.** | **A timeline is given for monitoring frequency (i.e. biannually, every ten years, etc.)** |
| | **55.** | **Monitoring methods are supported by references to scientific literature** |
| | **56.** | **A timeline is given for gathering additional data** |
| | **57.** | **The plan addresses the need for consistency in monitoring methods between agencies** |

| | | |
|---|---|---|
| | | **ENFORCEMENT AND TRAIL PRESENCE** |
| | **58.** | **Procedures for the permitting and management of major gatherings and events are clearly defined** |
| | **59.** | **The plan coordinates enforcement activities with other land management and law enforcement agencies** |
| | **60.** | **The plan considers the use of a trail host program** |
| | **61.** | **The plan considers the use of trail rangers patrolling on OHVs** |
| | **62.** | **The plan explores ways to increase the effectiveness of fines such as requiring that offenders appear before a local judge.** |

| | | |
|---|---|---|
| | | **FUNDING AND FEASIBILITY** |
| | **63.** | **The plan addresses the number of personnel or FTE that are required to adequately address OHV management in the area** |
| | **64.** | **The plan addresses the feasibility of each proposed action in terms of funding, personnel requirements, or other constraints** |
| | **65.** | **Funding sources for activities are clearly identified** |
| | **66.** | **Alternative funding sources are identifies such as local business or industry contributions, and organization of fund-raising events** |

| GENERAL PLAN CRITERIA | | |
|---|---|---|
| | **67.** | **Preliminary drafts were circulated for public comment** |
| | **68.** | **Proposals, recommendations, and conclusions are consistent with objectives** |
| | **69.** | **The problems the plan is meant to address are specifically identified** |
| | **70.** | **Rationales behind the decisions are effectively presented** |
| | **71.** | **Feasibility in the larger political context has been addressed** |
| | **72.** | **Purpose of the plan is explained** |
| | **73.** | **Alternatives are listed or at least considered** |
| | **74.** | **The legal implications of the plan have been considered** |
| | **75.** | **The plan is sufficiently flexible to permit new data and findings to be fed in** |
| | **76.** | **The type of plan and it's scope are reported early on, to alert the reader about what to expect** |
| | **77.** | **The political/ legal context of the plan is explained (e.g. meeting state mandates, public discussion and consideration, top priority issues)** |
| | **78.** | **Administrative authority for preparation is indicated (CFR, state law, RMP, national management plan etc.)** |
| | **79.** | **An overview and summary are provided** |
| | **80.** | **Role of the preparing agency or firm is adequately explained** |
| | **81.** | **The plan states who was involved in its' formulation. If nongovernmental personnel (such as stakeholder groups or an advisory committee) were involved, the plan states how participants were chosen and what role they played** |

| | | |
|---|---|---|
| | **82.** | **Data sources are cited** |
| | **83.** | **The plan clearly defines both the costs and benefits of OHV recreation** |
| | **84.** | **Background information is presented (how the plan came about, events leading up to the drafting of the plan)** |
| | **85.** | **The capacity and adequacy of existing infrastructure and organizational systems is examined** |
| | **86.** | **The plan is based on a wide spectrum of data where feasible** |
| | **87.** | **It is clear how data, models, goals, and other pertinent information were used in recommending policy action** |
| | **88.** | **Methodology sources are cited** |
| | **89.** | **It's clear whom the plan is for (citizens, agency heads, etc.)** |
| | **90.** | **The distribution of costs and benefits among different groups and interests has been considered, and issues of efficiency, equity, and predictability have been considered** |

| Format | | |
|---|---|---|
| | **91.** | **The tone of the document is consistent with the message conveyed and apparently free of bias** |
| | **92.** | **The ideas are convincingly presented, given the nature of the audience** |
| | **93.** | **There is a table of contents** |
| | **94.** | **Graphics are used to best advantage** |
| | **95.** | **The plan is attractively laid out** |
| | **96.** | **Pages are numbered** |
| | **97.** | **The size and format of the plan are conducive to the use intended** |
| | **98.** | **The authors are shown, to indicate professional responsibility** |
| | **99.** | **The date of publication is shown** |

| **PLAN EVALUATION AND REPORTING** | | |
|---|---|---|
| | **100.** | **The plan gives a timeline for evaluation and review of the plan** |
| | **101.** | **The plan clearly states the measures by which the effectiveness of the plan will be judged** |

**Table 22. Checklist of Final Criteria**

During this study, it became readily apparent that OHV planning occurs within a wide variety of contexts and settings. These contextual factors will largely determine the applicability of many of the criteria. Very few of the initial criteria were considered to be

unimportant by participants, and there was a high degree of variability in responses for a great many items. This variability is a reflection of the diversity of OHV planning contexts. The most important factor affecting the applicability to the criteria appears to be the physical setting of the area being managed. Rocky regions with little precipitation have very different needs and opportunities than do forested coastal areas. The criteria presented here are designed to be as widely applicable as possible. A discussion of how they might be applied in different contexts is given when necessary.

This study resulted in a checklist of 101 criteria. These criteria represent the points that the ideal OHV plan should consider. By meeting as many of these criteria as possible, planner and land mangers can help ensure that their plans will be of the highest possible quality, and will result in the desired outcomes.

# Lessons

## Overview

Based on an extensive review of the literature and interactions with land mangers in surveys and interviews, 5 major lessons became apparent related to OHV use: 1) OHV use has increased at a dramatic rate which funding, and planning efforts have failed to match. This has left many areas constantly playing catch-up rather than dealing with OHV use proactively. 2) A more strategic approach is required in very large or complex areas. 3) Understanding users and what kinds of opportunities they are looking for is key if unauthorized travel is to be curtailed through trail or facility provision. 4) OHV planning is highly context specific. Variables unique to each area will largely determine the applicability of the criteria presented here. 5)There is a very fine line between the need for specifics and details and the need for flexibility and general guidance in an OHV plan

## Discussion

### Managing Increased Usage

OHV use is on the rise. In many areas, this increase in OHV activity has caught land managers off guard and left them scrambling to find ways to manage it. Often, the impetus and funding for OHV planning does not exist until resource damage is already occurring and the public begins to bring heavy pressure in the form of lawsuits. Very few areas have been able to be proactive in managing OHV use. This must change. The rate at which OHV use is rising is not likely to decrease in the near future. Areas that are likely to see substantial use must have the funding and direction to plan for this growth. Areas that are already seeing high levels of use need to make OHV planning a priority and initiate a more organized and strategic approach to managing this activity. This may mean dividing large areas into smaller more manageable subunits and prioritizing management activities, addressing the most critical needs first.

### Key Factors: The Education, Design and Enforcement

As stated by one interview participant, there are three key factors to managing OHV use. These are, in order of importance, Education, Trail Design, and Enforcement. An effective OHV program relies on all three of these strategies to manage use. Education was cited again and again as being the most important element in any OHV program. It was also cited as being extremely difficult to accomplish. OHV users are a highly mobile and independent group and it can be difficult to create effective points of contact where educational activities can occur. Mangers stressed the need for a multi-pronged approach to user education. This requires working cooperatively with OHV dealers, local businesses, user groups, and others to increase the number of opportunities to contact users.

Trial design and layout are critical in effectively managing OHVs. Many mangers felt that although engineering oversight is required for structures and for trial design in areas with high runoff potential, having trails laid out by people with riding experience is much more important in the majority of instances. This need for riding experience stems from the fact that OHV management efforts on public lands are fully invested in the idea

that the easiest and most effective way to control OHV use is through adequate provision of recreational opportunities. The reasoning is that providing riders with adequate opportunities to have fun will reduce the amount of undesirable and illegal riding activity. This does not simply mean making trails. It means making trials that users will enjoy and that are constructed in such a way as to prevent off-trail travel. To accomplish this, managers must have an accurate accounting of whom their users are, and what kinds of experiences they are looking for. Direct interaction with user groups and the riding public must be established if recreation facilities are to meet the demands of users.

Enforcement is the last piece of the puzzle in preventing misuse of OHVs. Riders must know that they stand a good chance of being caught and receiving a substantial fine if they engage in unlawful activities. Both land mangers and OHV users agree that fines are not presently sufficient to deter destructive behaviors. Previous surveys and interactions with land managers in this study suggest that fines of at least $200 are needed. Requiring a court appearance before a local magistrate can also be an affective deterrent if a significant number of riders are traveling from out of the area. Other strategies such as coordinating law enforcement efforts with local and county authorities, and implementing a trail host program are also needed to provide a significant presence on the ground.

Whether this strategy of control through provision can keep up with the rate at which OHV ownership is increasing remains to be seen. One respondent referred to what he called the “ten-percenters”, or the 10% of riders that don’t obey the rules and cause the majority of resource damage. Although this is clearly an arbitrary figure, there is a fraction of users who simply will not obey the rules. Whether or not the landscape in many areas can handle the effects of a doubling or tripling of these “bad apples” remains to be seen. This points to the need to step up efforts to reach new riders before their riding behaviors have become ingrained. Education efforts that target new riders stand a decent chance of shaping user behavior in a positive way. One thing is for certain. OHV use is gaining popularity. To twist a familiar movie line, they will continue to come whether you build it or not, and areas that hope to manage OHV use must create opportunities for them to recreate in a way that reduces potential resource damage.

**Context**

OHV planning is highly context specific. Differences in the physical setting, the type and level of use that are occurring, and the agencies themselves, largely determine the applicability of each of the final criteria. The fact that very few of the 120 initial criteria were deemed to be unimportant points out that OHV planning is a very complex task with many vital considerations. Planners and mangers need to be knowledgeable and skilled in many different areas as diverse as public involvement and collaboration, public relations, education, scientific monitoring, trail construction, and resource protection. In this study, every effort was made to develop a set of criteria that were as useful as possible in the greatest number of situations. Many times during interviews, participants stressed both the need to maintain flexibility, as well as the need to achieve a sufficient level of detail in the actions and policies spelled out in the plan. Where this balance point lies is largely determined by factors unique to each management setting. A plan that does not include specific actions and details risks being ineffective. Although the idea that "if it's not in the plan, it won't get done" may not be entirely true, it is necessary to provide sufficient detail to create a clear roadmap to achieving the goals stated in the plan. OHV plans are likely to face legal challenges as well. Providing detailed objectives and actions that are supported by valid data is necessary for any plan to be able to hold its own under such contentious scrutiny.

**Feasibility**

The main issues confronting OHV plans are mostly a function of lack of funding and the time it takes to create and implement a plan. Time is always working against land mangers. In many cases, OHV plan development and approval has been 10 years in the making. Several more years of litigation and appeal can follow before implementation begins. All the while, resource damage, and rider dissatisfaction increase, and plan utility, planning enthusiasm, and consistency between the plan and the situation on the ground decrease. Planners must look at the reality of their situation before the planning process begins. Can they really tackle their entire area, or would breaking it up and planning based on where the most use and resource damage are occurring create a better outcome? Do they have the information they need and if not, do they have the time and funding needed to gather this information? Will they likely have the funding needed to implement

the plan? Planners who do not address these considerations are likely to create a plan that is less than useful.

The final criteria presented here represent an attempt to identify the components that a high quality OHV plan should contain. Realizing that crafting the ideal plan is not always reasonable, planners should look to these criteria as ways to generate ideas for improving the quality of their finished plans.

## CONCLUDING COMMENTS

The criteria presented here represent the key elements of high quality OHV plans. This list of points is a tool designed to be used by planners and land mangers before, during, and after plan development. Using the results of this study as a checklist, planners can ensure that their plans address the elements that are crucially important to OHV management.

But planners should go beyond using this tool simply as a yes or no checklist. Planners should attempt to determine *why* the criteria are not being met. Planners should ask themselves *why* the criteria were included in the first place. Each criterion represents an underlying theme. If several criteria are not met, its possible that a major OHV planning aspect is being overlooked. For instance, if one answers "NO" to criteria 60 "The plan considers the use of a trail host program", they may feel that they do not need a trail host program because law enforcement is adequate in the area. However, such programs serve important educational and public relations functions as well. By not having a trail host program in place, they may be missing out on more than just increased trail presence. These underlying themes are examined in the discussion of each topic.

This study represents the first attempt to compile the OHV planning information presented in numerous reports, user surveys, and management documents written over a period of thirty years. It is also an attempt to integrate the theory and practice of planning and plan evaluation with that of OHV management. Recognizing that no two management situations are the same, the criteria presented here offer a fairly comprehensive list of points that any OHV management plan should in some way address. Hopefully, using this list as guidance in the planning process will help to

generate ideas leading to better, more consistent, and more effective planning efforts. For planners who thoughtfully consider both the criteria and their underlying themes, the results of this study provide a powerful tool for increasing the quality of OHV plans and, in turn, the effectiveness of OHV management efforts.

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# APPENDIX A

| Source | Education and Public Outreach | Use and Impact Monitoring | Recreation Opportunity Demand and Provision | Enforcement, Fines, and Trail Presence | Separation of Uses, User Conflicts | Collaboration | Trail Design, Construction, and Signage | Identification and Characterization of Resources and Trails | Usage Control, Restriction | Safety and User Certification | OHV Program | Designating Routes or Creating Areas | Mixed Use Primitive Roads, Trail Systems | Funding and Feasibility | Volunteers | Coordination with Other Planning and Management Activities | Vehicle Registration | Advisory Committee | Training for Land Managers | Liability | Plan Evaluation and Reporting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tennessee Department of Environment and Conservation, 2002 | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | X | X | X | X | X |
| Minnesota Department of Natural Resources, 1997 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | | | X | | |
| USDA Forest Service, 1986 | X | X | X | X | X | X | X | | X | | X | X | | X | X | X | X | | X | | |
| US Department of the Interior, Heritage Conservation and Recreation Service, 1980 | X | X | X | | X | X | X | | X | X | X | X | X | X | X | | X | | | | |
| Minnesota Department of Natural Resources Motorized Trail Task Force, 2003 | X | X | X | X | X | X | X | X | | X | | X | | X | | | X | X | | X | |
| Minnesota Department of Natural Resources, 2001 | X | X | X | X | X | X | X | X | | | | X | X | | X | | | X | | | |
| Makel, William J., 1987 | X | X | X | X | | X | X | | X | | | | X | | X | X | | | | | |
| Pierce, Terry R., 1987 | X | | X | | X | | | | X | X | | | X | X | X | X | | | | | |
| California Off-Highway Motor Vehicle Recreation Division, 1996 | | | | | | X | | | | X | X | | | X | | | X | X | | X | X |
| Schwecke, Dietrich A., 1996 | X | | | X | | X | | X | | X | | X | X | | | | | | | | |
| Schwinck, Kirby W., 1985 | X | X | | X | X | | X | X | | | | | | | | X | | | | | |
| State of Colorado and Colorado OHV Coalition, 1999 | X | | X | | | X | | | | | X | | | X | | | | | | | |
| Utah Department of Natural Resources, 2001 | X | | X | X | | | | | | X | X | | | | | | | | | | |
| NPS-River, Trail and Conservation Assistance Program, 2002 | | X | | | X | | X | X | X | | | | | | | | | | | | |
| Chilman, et.al., 1991 | X | X | X | | X | | | | | | | | | | | | | | | | |
| Uribe and Associates, 1989 | X | X | | X | | | | | X | | | | | | | | | | | | |
| Conley, et.al., 1991 | | X | | | | | | X | | | | | | | | | | | | | |
| TOTAL | **14** | **12** | **11** | **10** | **10** | **10** | **9** | **8** | **8** | **8** | **7** | **7** | **6** | **8** | **6** | **5** | **5** | **4** | **3** | **3** | **2** |

**Table 23. Common Themes**

# APPENDIX B

Survey #_____

# OHV PLAN EVALUATION STUDY

## INTERVIEW PARTICIPATION

☐Check here if you would be willing to participate in a follow-up interview.

## BACKGROUND INFORMATION

Which agency do you work for? ☐BLM ☐USFS ☐State Parks ☐NPS
☐Other_____

What is your position or title? _____

How many years have you been involved in OHV management?
☐<2years ☐2-5years ☐>5years

On average, what percentage of your time at work is spent on OHV management?
☐<10% ☐10-25% ☐25-50% ☐50-75% ☐75-100%

How would you characterize OHV use in your area?
☐ Light ☐Moderate ☐Substantial ☐Heavy

Please list other areas where you have done OHV related work

_____

_____

_____

☐ Check here if you would like to receive a copy of the findings of this study.

**DIRECTIONS:**

Please review the following criteria and indicate how important you feel it is that OHV plans meet each criterion. Also indicate how difficult it might be in actuality to meet each criterion. The response scale ranges from 1 to 5, with 1 being not important or not difficult, and 5 being very important or very difficult.

**Please Note:** You are not evaluating any particular plan. You are evaluating the criteria in terms of their application to a wide variety of OHV planning situations. Based on your experience, try to think of what criteria would help you if you were developing an OHV management plan. Remember, a plan is both a written document and the culmination of a larger process. Try to consider both when making your assessment.

Space is provided at the end of the survey for you to suggest any changes or additional criteria that you feel are critical to the success of OHV management plans. Feel free to write on the survey as well.

Please contact me if you have any questions,

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2160 West 16th Ave
Eugene, OR 97402
541-342-3070 or 541-543-4137
bissa@darkwing.uoregon.edu (best contact is by e-mail)

**Thanks again for taking the time to participate in this study.**

| Identification and Characterization of Resources | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 102. | It is explicitly stated what data need to be gathered, where this data will come from, and who will gather it | 1 2 3 4 5 | 1 2 3 4 5 |
| 103. | The plan relies on or prescribes a comprehensive trail and usage inventory | 1 2 3 4 5 | 1 2 3 4 5 |
| 104. | The plan provides a timeline for completing these inventories? | 1 2 3 4 5 | 1 2 3 4 5 |
| 105. | The plan provides for the use of a GIS database of trails and other features of concern | 1 2 3 4 5 | 1 2 3 4 5 |
| 106. | The plan clearly identifies the type and level of usage that are occurring | 1 2 3 4 5 | 1 2 3 4 5 |
| 107. | Areas of intensive use such as staging or play areas are characterized in terms of soils, erosion, and other environmental considerations | 1 2 3 4 5 | 1 2 3 4 5 |
| 108. | The plan clearly identifies restricted areas such as wetlands or wilderness study areas and provides for the exclusion of OHVs from these areas | 1 2 3 4 5 | 1 2 3 4 5 |
| 109. | The plan prioritizes areas of protection (Critical habitat vs. scenic value etc.) | 1 2 3 4 5 | 1 2 3 4 5 |
| 110. | The plan provides for the updating of priorities given new data | 1 2 3 4 5 | 1 2 3 4 5 |
| 111. | The plan provides a characterization of all areas within the region covered by the plan in terms of use, and environmental sensitivity. If not, the plan provides a timeline for completion of such a characterization | 1 2 3 4 5 | 1 2 3 4 5 |
| 112. | It is clearly defined who will perform the characterization and what guidelines they will use to make their determinations | 1 2 3 4 5 | 1 2 3 4 5 |
| 113. | Relationships to municipalities and existing residential development are discussed | 1 2 3 4 5 | 1 2 3 4 5 |
| 114. | The plan addresses the concerns of adjacent landowners or owners of inholdings | 1 2 3 4 5 | 1 2 3 4 5 |

| Recreation Opportunity Demand and Provision | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 115. | The plan clearly identifies techniques that will be used to estimate or measure visitor numbers | 1 2 3 4 5 | 1 2 3 4 5 |
| 116. | The plan provides prediction of future demand | 1 2 3 4 5 | 1 2 3 4 5 |
| 117. | The plan characterizes current and future usage according to type (i.e. four wheelers, motorcycles, etc) | 1 2 3 4 5 | 1 2 3 4 5 |
| 118. | Consideration is given to the different kinds of usage that might occur or may be desired by users (loop trails vs. open play areas, etc.) | 1 2 3 4 5 | 1 2 3 4 5 |
| 119. | Consideration is given to the separation of OHVs from other users to avoid conflicts | 1 2 3 4 5 | 1 2 3 4 5 |
| 120. | It is clearly stated how user input will be gathered | 1 2 3 4 5 | 1 2 3 4 5 |
| 121. | Attention is given to the need to provide a diversity of user experience and trail difficulty | 1 2 3 4 5 | 1 2 3 4 5 |

| Monitoring | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 122. | The plan addresses the impacts of OHVs on fish, wildlife, water quality, air quality, noise, historic and archeological sites | 1 2 3 4 5 | 1 2 3 4 5 |
| 123. | The monitoring methods are clearly detailed | 1 2 3 4 5 | 1 2 3 4 5 |
| 124. | Monitoring methods are supported by references to scientific literature | 1 2 3 4 5 | 1 2 3 4 5 |
| 125. | The plan addresses the need for consistency in monitoring methods between agencies | 1 2 3 4 5 | 1 2 3 4 5 |
| 126. | A timeline is given for gathering additional data | 1 2 3 4 5 | 1 2 3 4 5 |
| 127. | A timeline is given for monitoring frequency (i.e. biannually, every ten years, etc.) | 1 2 3 4 5 | 1 2 3 4 5 |

| Education and Public Outreach | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 128. | The plan provides a rigorous public education program | 1 2 3 4 5 | 1 2 3 4 5 |
| 129. | The plan provides clearly defined methods for disseminating educational materials to the public | 1 2 3 4 5 | 1 2 3 4 5 |
| 130. | Education activities are coordinated with other agencies | 1 2 3 4 5 | 1 2 3 4 5 |
| 131. | The plan outlines several avenues through which the public can be involved the planning process | 1 2 3 4 5 | 1 2 3 4 5 |
| 132. | The plan address the licensing or certification of riders | 1 2 3 4 5 | 1 2 3 4 5 |
| 133. | The plan addresses the safety implications of OHV use | 1 2 3 4 5 | 1 2 3 4 5 |
| 134. | The plan addresses map production and distribution | 1 2 3 4 5 | 1 2 3 4 5 |
| 135. | The plan addresses “hold harmless” liability statutes if OHVs will operate on private lands in the area | 1 2 3 4 5 | 1 2 3 4 5 |
| 136. | The plan points out opportunities where volunteers could perform management activities | 1 2 3 4 5 | 1 2 3 4 5 |
| 137. | The plan provides a structure through which volunteer labor can be utilized | 1 2 3 4 5 | 1 2 3 4 5 |

| Enforcement and Trail Presence | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 138. | The plan considers the use of a trail host program | 1 2 3 4 5 | 1 2 3 4 5 |
| 139. | The plan provides for trail rangers to patrol on OHVs | 1 2 3 4 5 | 1 2 3 4 5 |
| 140. | Procedures for the permitting and management of major gatherings and events are clearly defined | 1 2 3 4 5 | 1 2 3 4 5 |
| 141. | The plan addresses registration of OHVs | 1 2 3 4 5 | 1 2 3 4 5 |
| 142. | The plan coordinates enforcement activities with other land management and law enforcement agencies | 1 2 3 4 5 | 1 2 3 4 5 |

| Usage Control, Closure, and Reclamation | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 143. | The plan provides a strategy for the reclamation of damaged areas | 1 2 3 4 5 | 1 2 3 4 5 |
| 144. | The plan clearly defines under what circumstances trails will be considered for closure | 1 2 3 4 5 | 1 2 3 4 5 |
| 145. | The plan clearly defines the procedures for trail closures including public involvement, barriers, and signage | 1 2 3 4 5 | 1 2 3 4 5 |
| 146. | The plan clearly states who will ultimately make trail closure decisions | 1 2 3 4 5 | 1 2 3 4 5 |
| 147. | The plan provides ways to inform the public of access and designation changes | 1 2 3 4 5 | 1 2 3 4 5 |
| 148. | The plan describes ways to control OHV use in and around camping areas | 1 2 3 4 5 | 1 2 3 4 5 |

| **Trail Routing, Construction, and Signage** | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 149. | The plan clearly details the process for route selection and trail construction | 1 2 3 4 5 | 1 2 3 4 5 |
| 150. | The plan addresses the engineering and design considerations of trail construction (i.e. routing trails to limit off trail travel) | 1 2 3 4 5 | 1 2 3 4 5 |
| 151. | The plan requires engineering oversight in the design and construction of trails | 1 2 3 4 5 | 1 2 3 4 5 |
| 152. | The plan addresses signage as an integral part of trail development and maintenance | 1 2 3 4 5 | 1 2 3 4 5 |
| 153. | The plan addresses the funding needed to deal with vandalism and periodic replacement of signs | 1 2 3 4 5 | 1 2 3 4 5 |
| 154. | The need for consistency in signage with neighboring areas is addressed | 1 2 3 4 5 | 1 2 3 4 5 |
| 155. | The plan requires that all proposals for trail or facility development include funds for signage, maintenance and enforcement | 1 2 3 4 5 | 1 2 3 4 5 |

| **Collaboration** | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 156. | The plan provides for the involvement of nongovernmental stakeholders in advisory groups | 1 2 3 4 5 | 1 2 3 4 5 |
| 157. | The plan stresses the need for collaboration between agencies | 1 2 3 4 5 | 1 2 3 4 5 |
| 158. | The plan details how interagency collaboration will take place (i.e. work groups, joint hiring, sharing of vehicles, etc) | 1 2 3 4 5 | 1 2 3 4 5 |
| 159. | The plan addresses the administrative barriers to such collaboration | 1 2 3 4 5 | 1 2 3 4 5 |
| 160. | The plan provides a framework for agencies and other parties to pool or share resources | 1 2 3 4 5 | 1 2 3 4 5 |
| 161. | Feasibility in the larger political context has been addressed | 1 2 3 4 5 | 1 2 3 4 5 |

| Funding and Feasibility | | ' important is it that a meets this criterion? ---------- Very | ' difficult do you feel to meet this rion? ---------- Very |
|---|---|---|---|
| 162. | The plan addresses the feasibility of each proposed action in terms of funding, personnel requirements, or other constraints | 1 2 3 4 5 | 1 2 3 4 5 |
| 163. | Funding sources for activities are clearly identified | 1 2 3 4 5 | 1 2 3 4 5 |
| 164. | The plan addresses the number of personnel or FTE that are required to adequately address OHV management in the area | 1 2 3 4 5 | 1 2 3 4 5 |
| 165. | The cost of implementation versus nonimplementation of the plan is considered | 1 2 3 4 5 | 1 2 3 4 5 |
| 166. | The plan prioritizes how tax and registration dollars will be spent in the area | 1 2 3 4 5 | 1 2 3 4 5 |

| Coordination with Other Planning and Management Activities | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 167. | The plan considers the next level of government or context | 1 2 3 4 5 | 1 2 3 4 5 |
| 168. | There is planning for procedural coordination with other plans and agencies | 1 2 3 4 5 | 1 2 3 4 5 |
| 169. | The plan explicitly states its connection to current Environmental Impact Statements, NEPA, or other studies | 1 2 3 4 5 | 1 2 3 4 5 |
| 170. | The plan clearly states any changes made to existing policies | 1 2 3 4 5 | 1 2 3 4 5 |
| 171. | The plan details ways to inform the public of these changes | 1 2 3 4 5 | 1 2 3 4 5 |
| 172. | The plan addresses the need for consistency in data format both within and between agencies | 1 2 3 4 5 | 1 2 3 4 5 |

| | | | |
|---|---|---|---|
| 173. | It is explicitly stated how the plan relates to and is consistent with other planning activities (RMP, Forest Plans, etc.) | 1 2 3 4 5 | 1 2 3 4 5 |
| 174. | The plan addresses the need to coordinate management efforts with other activities such as fire control and timber harvesting | 1 2 3 4 5 | 1 2 3 4 5 |
| 175. | OHV monitoring activities are explicitly coordinated with monitoring activities for other activities such as fisheries, hydrology, and wildlife to avoid overlap | 1 2 3 4 5 | 1 2 3 4 5 |

| **Implementation** | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 176. | The implementation of the plan and accompanying action items are prioritized | 1 2 3 4 5 | 1 2 3 4 5 |
| 177. | The rational for this prioritization is clear | 1 2 3 4 5 | 1 2 3 4 5 |
| 178. | There is a timeline for plan implementation | 1 2 3 4 5 | 1 2 3 4 5 |
| 179. | The agency or position responsible for implementation of each item is clearly identified | 1 2 3 4 5 | 1 2 3 4 5 |
| 180. | The responsible agency can realistically be expected to implement the plan | 1 2 3 4 5 | 1 2 3 4 5 |

| **General Plan Criteria** | | How important is it that a plan meets this criterion? Not ---------- Very | How difficult do you feel it is to meet this criterion? Not ---------- Very |
|---|---|---|---|
| 181. | Administrative authority for preparation is indicated (CFR, state law, RMP, national management plan etc.) | 1 2 3 4 5 | 1 2 3 4 5 |
| 182. | Role of the preparing agency or firm is adequately explained | 1 2 3 4 5 | 1 2 3 4 5 |
| 183. | Background information is presented (how the plan came about, events leading up to the drafting of the plan) | 1 2 3 4 5 | 1 2 3 4 5 |

| | | | |
|---|---|---|---|
| 184. | It's clear whom the plan is for (citizens, agency heads, etc.) | 1 2 3 4 5 | 1 2 3 4 5 |
| 185. | Purpose of the plan is explained | 1 2 3 4 5 | 1 2 3 4 5 |
| 186. | The type of plan and it's scope are reported early on, to alert the reader about what to expect | 1 2 3 4 5 | 1 2 3 4 5 |
| 187. | An overview and summary are provided | 1 2 3 4 5 | 1 2 3 4 5 |
| 188. | The source of funding for the plan is shown | 1 2 3 4 5 | 1 2 3 4 5 |
| 189. | The amount of time in preparation is shown | 1 2 3 4 5 | 1 2 3 4 5 |
| 190. | The plan formulators are clear about the criteria they used to assess progress during plan formulation | 1 2 3 4 5 | 1 2 3 4 5 |
| 191. | The problems the plan is meant to address are specifically identified | 1 2 3 4 5 | 1 2 3 4 5 |
| 192. | The capacity and adequacy of existing infrastructure and organizational systems is examined | 1 2 3 4 5 | 1 2 3 4 5 |
| 193. | Alternatives are listed or at least considered | 1 2 3 4 5 | 1 2 3 4 5 |
| 194. | The plan states who was involved in its' formulation | 1 2 3 4 5 | 1 2 3 4 5 |
| 195. | The plan states how participants were chosen | 1 2 3 4 5 | 1 2 3 4 5 |
| 196. | The plan states how they were involved | 1 2 3 4 5 | 1 2 3 4 5 |
| 197. | It is clear how data, models, goals, and other pertinent information were used in recommending policy action | 1 2 3 4 5 | 1 2 3 4 5 |
| 198. | Preliminary drafts were circulated for public comment | 1 2 3 4 5 | 1 2 3 4 5 |
| 199. | Issues of efficiency, equity, and predictability have been considered | 1 2 3 4 5 | 1 2 3 4 5 |
| 200. | The legal implications of the plan have been considered | 1 2 3 4 5 | 1 2 3 4 5 |
| 201. | The plan is based on a wide spectrum of data where feasible | 1 2 3 4 5 | 1 2 3 4 5 |
| 202. | The plan is sufficiently flexible to permit new data and findings to be fed in | 1 2 3 4 5 | 1 2 3 4 5 |
| 203. | Data sources are cited | 1 2 3 4 5 | 1 2 3 4 5 |

| | | | |
|---|---|---|---|
| 204. | Methodology sources are cited | 1 2 3 4 5 | 1 2 3 4 5 |
| 205. | Levels of data aggregation used are relevant or meaningful to the study | 1 2 3 4 5 | 1 2 3 4 5 |
| 206. | Rationales behind the decisions are effectively presented | 1 2 3 4 5 | 1 2 3 4 5 |
| 207. | Proposals, recommendations, and conclusions are consistent with objectives | 1 2 3 4 5 | 1 2 3 4 5 |
| 208. | The political/ legal context of the plan is explained (e.g. meeting state mandates, public discussion and consideration, top priority issues) | 1 2 3 4 5 | 1 2 3 4 5 |
| 209. | The plan clearly defines both the costs and benefits of OHV recreation | 1 2 3 4 5 | 1 2 3 4 5 |
| 210. | The distribution of costs and benefits among different groups and interests has been considered | 1 2 3 4 5 | 1 2 3 4 5 |

| **Plan Evaluation and Reporting** | | How important is it that a plan meets this criterion?<br>Not ---------- Very | How difficult do you feel it is to meet this criterion?<br>Not ---------- Very |
|---|---|---|---|
| 211. | The plan clearly states the measures by which the effectiveness of the plan will be judged | 1 2 3 4 5 | 1 2 3 4 5 |
| 212. | The plan gives a timeline for evaluation and review of the plan | 1 2 3 4 5 | 1 2 3 4 5 |

| **Format** | | How important is it that a plan meets this criterion?<br>Not ---------- Very | How difficult do you feel it is to meet this criterion?<br>Not ---------- Very |
|---|---|---|---|
| 213. | Graphics are used to best advantage | 1 2 3 4 5 | 1 2 3 4 5 |
| 214. | The plan is attractively laid out | 1 2 3 4 5 | 1 2 3 4 5 |
| 215. | The size and format of the plan are conducive to the use intended | 1 2 3 4 5 | 1 2 3 4 5 |

| | | | |
|---|---|---|---|
| 216. | The date of publication is shown | 1 2 3 4 5 | 1 2 3 4 5 |
| 217. | The authors are shown, to indicate professional responsibility | 1 2 3 4 5 | 1 2 3 4 5 |
| 218. | There is a table of contents | 1 2 3 4 5 | 1 2 3 4 5 |
| 219. | Pages are numbered | 1 2 3 4 5 | 1 2 3 4 5 |
| 220. | The ideas are convincingly presented, given the nature of the audience | 1 2 3 4 5 | 1 2 3 4 5 |
| 221. | The tone of the document is consistent with the message conveyed and apparently free of bias | 1 2 3 4 5 | 1 2 3 4 5 |

## Suggestions for changes or additional criteria:

1. _____
2. _____
3. _____

## Have you seen any OHV management plans that you felt were particularly well done? If so, please list them below.

_____

_____

## Thanks!

Please return your completed survey along with the signed consent form in the envelope provided by **June 16th**. Thanks again for taking the time to participate in this study, your help is greatly appreciated.

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# APPENDIX C

| | | | RESPONDENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | Mean | Mode | Median | Avg Imp | Avg Diff |
| Identification and Characterization of Resources | Q1 | Importance | 4 | | 5 | 5 | 2 | 4 | | 5 | | 3 | 5 | 4 | 5 | | 4 | 3 | 5 | 4 | 4 | | 5 | 4 | 5 | 5 | 4.26 | 5 | 4 | | |
| | | Difficulty | 4 | | 2 | 3 | 1 | 3 | | 4 | | 2 | 2 | 4 | 3 | | 4 | 5 | 3 | 3 | 3 | | 3 | 3 | 5 | 3 | 3.16 | 3 | 3 | | |
| | Q2 | Importance | 5 | | 4 | 5 | 5 | 5 | | 5 | | 4 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 5 | 5 | | 4 | 5 | 5 | 5 | 4.65 | 5 | 5 | | |
| | | Difficulty | 5 | | 2 | 2 | 2 | 4 | | 4 | | 2 | 2 | 4 | 4 | 4 | 3 | 4 | 2 | 4 | 5 | | 2 | 4 | 4 | 2 | 3.25 | 4 | 4 | | |
| | Q3 | Importance | 5 | | 3 | 4 | 1 | 5 | | 4 | | | 3 | 5 | 5 | 3 | 4 | 3 | 5 | 4 | 5 | | 3 | 3 | 5 | 5 | 3.95 | 5 | 4 | | |
| | | Difficulty | 5 | | 2 | 4 | 5 | 4 | | 5 | | | 3 | 4 | 4 | 2 | 3 | 3 | 3 | 3 | 5 | | 2 | 5 | 3 | 2 | 3.53 | 3 | 3 | | |
| | Q4 | Importance | 5 | | 4 | 4 | 5 | 4 | | 5 | | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | | 5 | 5 | 4 | 5 | 4.70 | 5 | 5 | | |
| | | Difficulty | 3 | | 2 | 2 | 1 | 4 | | 4 | | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 2 | 2 | 3 | | 2 | 4 | 3 | 2 | 2.95 | 4 | 3 | | |
| | Q5 | Importance | 4 | | 4 | 4 | 4 | 5 | | 4 | | 5 | 5 | 5 | 5 | 3 | 4 | 3 | 5 | 5 | 3 | | 5 | 4 | 5 | 5 | 4.35 | 5 | 4.5 | | |
| | | Difficulty | 2 | | 1 | 5 | 5 | 3 | | 4 | | 5 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | | 4 | 4 | 4 | 2 | 3.55 | 4 | 4 | | |
| | Q6 | Importance | 2 | | 5 | 5 | 4 | 3 | | 4 | | 4 | 5 | 5 | 4 | | 3 | 4 | 3 | 5 | 4 | | 5 | 4 | 4 | 4 | 4.05 | 4 | 4 | | |
| | | Difficulty | 1 | | 1 | 1 | 2 | 3 | | 4 | | 2 | 1 | 3 | 3 | | 3 | 3 | 2 | 2 | 4 | | 3 | 2 | 3 | 3 | 2.42 | 3 | 3 | | |
| | Q7 | Importance | 4 | | 5 | 4 | 4 | 5 | | 5 | | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | | 5 | 5 | 5 | 5 | 4.80 | 5 | 5 | 4.26 | 3.02 |
| | | Difficulty | 1 | | 1 | 2 | 2 | 1 | | 1 | | 5 | 1 | 3 | 2 | 4 | 4 | 1 | 1 | 1 | 1 | | 2 | 2 | 4 | 2 | 2.05 | 1 | 2 | | |
| | Q8 | Importance | 1 | | 5 | 5 | 4 | 5 | | 3 | | 4 | 5 | 5 | 3 | 4 | 3 | 3 | 4 | 5 | 5 | | 5 | 4 | 4 | 4 | 4.05 | 5 | 4 | | |
| | | Difficulty | 1 | | 2 | 1 | 4 | 1 | | 4 | | 2 | 1 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | | 4 | 2 | 4 | 2 | 2.60 | 3 | 3 | | |
| | Q9 | Importance | 5 | | 4 | 4 | 4 | 4 | | 5 | | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | | 4 | 3 | 5 | 4 | 4.45 | 5 | 4.5 | | |
| | | Difficulty | 5 | | 4 | 3 | 2 | 1 | | 3 | | 5 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | | 4 | 3 | 4 | 2 | 3.35 | 3 | 3 | | |
| | Q10 | Importance | 3 | | 5 | 3 | 2 | 5 | | 4 | | | 5 | 4 | 5 | | 3 | 3 | 5 | 4 | 2 | | 4 | 4 | 4 | 4 | 3.83 | 4 | 4 | | |
| | | Difficulty | 3 | | 2 | 3 | 5 | 3 | | 4 | | | 1 | 3 | 4 | | 3 | 3 | 4 | 3 | 4 | | 3 | 5 | 4 | 3 | 3.33 | 3 | 3 | | |
| | Q11 | Importance | 4 | | 3 | 4 | 2 | 3 | | 4 | | | 2 | 4 | 5 | | 4 | 3 | 5 | 4 | 2 | | 4 | 3 | 4 | 4 | 3.56 | 4 | 4 | | |
| | | Difficulty | 5 | | 2 | 4 | 5 | 3 | | 3 | | | 1 | 3 | 3 | | 3 | 4 | 2 | 3 | 4 | | 3 | 2 | 5 | 2 | 3.17 | 3 | 3 | | |
| | Q12 | Importance | 5 | | 4 | 5 | 5 | 5 | | 3 | | 4 | 5 | 3 | 5 | 4 | 4 | 3 | 4 | 5 | 5 | | 5 | 3 | 5 | 4 | 4.30 | 5 | 4.5 | | |
| | | Difficulty | 1 | | 4 | 4 | 4 | 1 | | 2 | | 4 | 2 | 3 | 3 | 2 | 3 | 4 | 1 | 2 | 1 | | 3 | 2 | 4 | 2 | 2.60 | 4 | 2.5 | | |
| | Q13 | Importance | 5 | | 4 | 4 | 5 | 5 | | 4 | | 5 | 5 | 3 | 5 | 4 | 4 | 5 | 3 | 5 | 4 | | 5 | 4 | 5 | 4 | 4.40 | 5 | 4.5 | | |
| | | Difficulty | 5 | | 4 | 3 | 4 | 3 | | 3 | | 5 | 4 | 3 | 3 | 3 | 4 | 2 | 2 | 2 | 4 | | 4 | 2 | 4 | 3 | 3.35 | 4 | 3 | | |
| Recreation Opportunity Demand and Provision | Q14 | Importance | 5 | | 3 | 5 | 3 | 3 | | 4 | | 5 | 3 | 5 | 3 | 3 | 4 | 3 | 5 | 2 | 3 | | 5 | 3 | 5 | 5 | 3.85 | 3 | 3.5 | | |
| | | Difficulty | 5 | | 4 | 3 | 5 | 3 | | 3 | | 5 | 5 | 3 | 3 | 5 | 3 | 3 | 1 | 2 | 3 | | 4 | 3 | 5 | 2 | 3.50 | 3 | 3 | | |
| | Q15 | Importance | 2 | | 4 | 5 | 4 | 5 | | 4 | | 5 | 4 | 5 | 2 | 3 | 3 | 3 | 5 | 4 | 3 | | 5 | 4 | 4 | 5 | 3.95 | 4 | 4 | | |
| | | Difficulty | 5 | | 4 | 1 | 5 | 4 | | 3 | | 5 | 5 | 4 | 2 | 4 | 3 | 5 | 2 | 4 | 2 | | 5 | 2 | 5 | 3 | 3.65 | 5 | 4 | | |
| | Q16 | Importance | 5 | | 4 | 4 | 4 | 5 | | 3 | | 4 | 5 | 5 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | | 5 | 3 | 5 | 5 | 4.05 | 4 | 4 | | |
| | | Difficulty | 1 | | 1 | 3 | 4 | 5 | | 3 | | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | | 5 | 2 | 4 | 3 | 3.25 | 3 | 3 | | |
| | Q17 | Importance | 5 | | 5 | 5 | 5 | 5 | | 5 | | 3 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 4 | | 5 | 5 | 4 | 4 | 4.65 | 5 | 5 | 4.09 | 3.20 |
| | | Difficulty | 4 | | 3 | 1 | 2 | 3 | | 3 | | 2 | 2 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 2 | | 2 | 4 | 5 | 2 | 2.80 | 3 | 3 | | |
| | Q18 | Importance | 5 | | 4 | 5 | 5 | 5 | | 3 | | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | | 4 | 4 | 5 | 4 | 4.05 | 4 | 4 | | |
| | | Difficulty | 5 | | 4 | 1 | 2 | 4 | | 3 | | 5 | 3 | 3 | 5 | 5 | 4 | 2 | 3 | 4 | 5 | | 3 | 4 | 5 | 3 | 3.65 | 5 | 4 | | |
| | Q19 | Importance | 3 | | 3 | 4 | 3 | 3 | | 2 | | 5 | 3 | 5 | 3 | 3 | 3 | 4 | 5 | 4 | 3 | | 4 | 5 | 5 | 5 | 3.75 | 3 | 3.5 | | |
| | | Difficulty | 1 | | 2 | 3 | 4 | 1 | | 3 | | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 4 | 2 | | 3 | 3 | 3 | 2 | 2.50 | 3 | 3 | | |
| | Q20 | Importance | 5 | | 5 | 5 | 5 | 5 | | 3 | | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | | 3 | 3 | 3 | 4 | 4.35 | 5 | 5 | | |
| | | Difficulty | 2 | | 4 | 3 | 3 | | | 3 | | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 3 | 2 | 4 | | 2 | 3 | 3 | 3 | 3.05 | 3 | 3 | | |
| Monitoring | Q21 | Importance | 5 | | 5 | 5 | 5 | 5 | | 4 | | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 4 | | 5 | 5 | 4 | 5 | 4.60 | 5 | 5 | 3.86 | 3.22 |
| | | Difficulty | 1 | | 3 | 2 | 5 | | | 5 | | 3 | 1 | 2 | 4 | 5 | 4 | 3 | 3 | 3 | 2 | | 3 | 3 | 5 | 2 | 3.11 | 3 | 3 | | |
| | Q22 | Importance | 4 | | 4 | 5 | 4 | 4 | | 5 | | 4 | 3 | 5 | 5 | 4 | 4 | 3 | 5 | 3 | 4 | | 4 | 4 | 5 | 4 | 4.15 | 4 | 4 | | |
| | | Difficulty | 5 | | 3 | 5 | 1 | 3 | | 4 | | 5 | 3 | 2 | 4 | 5 | 3 | 3 | 2 | 4 | 3 | | 3 | 3 | 3 | 3 | 3.35 | 3 | 3 | | |
| | Q23 | Importance | 3 | | 4 | 3 | 4 | 4 | | 4 | | 5 | 3 | 5 | 3 | 4 | 2 | 3 | 4 | 2 | 2 | | 5 | 3 | 5 | 4 | 3.60 | 4 | 4 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Difficulty | 5 | 5 | 5 | 5 | 2 | 3 | 5 | 3 | 3 | 3 | 5 | 3 | 3 | 3 | 2 | 2 | 3 | 4 | 3 | 3 | 3.50 | 3 | 3 | | |
| | Q24 | Importance | 2 | 4 | 5 | 3 | 3 | 5 | 2 | 1 | 5 | 2 | 3 | 3 | 4 | 3 | 3 | 1 | 5 | 3 | 5 | 5 | 3.35 | 3 | 3 | | |
| | | Difficulty | 5 | 5 | 5 | 5 | 3 | 2 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 3 | 1 | 3 | 4 | 5 | 2 | 3.95 | 5 | 4 | | |
| | Q25 | Importance | 4 | 4 | 4 | 3 | | 4 | 3 | 1 | 4 | 2 | 2 | 3 | 3 | 4 | 4 | 2 | 4 | 4 | 5 | 4 | 3.37 | 4 | 4 | | |
| | | Difficulty | 5 | 2 | 4 | 1 | | 2 | 5 | 1 | 4 | 2 | 3 | 3 | 3 | 2 | 4 | 1 | 2 | 5 | 2 | 2 | 2.79 | 2 | 2 | | |
| | Q26 | Importance | 4 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 3 | 4 | 4 | 5 | 4 | 2 | 4 | 4 | 5 | 4 | 4.10 | 4 | 4 | | |
| | | Difficulty | 4 | 2 | 2 | 1 | 1 | 3 | 5 | 1 | 4 | 3 | 3 | 3 | 3 | 1 | 4 | 1 | 2 | 5 | 2 | 2 | 2.60 | 2 | 2.5 | | |
| **Education and Public Outreach** | Q27 | Importance | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 5 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 2 | 5 | 3 | 5 | 5 | 4.40 | 5 | 5 | 3.93 | 3.08 |
| | | Difficulty | 4 | 3 | 5 | 4 | 3 | 3 | 3 | 1 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 2 | 4 | 4 | 4 | 3 | 3.70 | 4 | 4 | | |
| | Q28 | Importance | 4 | 4 | 5 | 1 | 4 | 3 | 5 | 3 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 2 | 5 | 3 | 5 | 5 | 3.95 | 5 | 4 | | |
| | | Difficulty | 4 | 2 | 2 | 1 | 1 | 3 | | 3 | 5 | 5 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 3 | 3.05 | 3 | 3 | | |
| | Q29 | Importance | 1 | 4 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 3 | 5 | 5 | 4.00 | 4 | 4 | | |
| | | Difficulty | 5 | 2 | 3 | 2 | 4 | 3 | 5 | 3 | 5 | 3 | 4 | 3 | 5 | 3 | 4 | 4 | 3 | 5 | 5 | 3 | 3.70 | 3 | 3.5 | | |
| | Q30 | Importance | 5 | 5 | 4 | 3 | 5 | 4 | 5 | 2 | 5 | 4 | 3 | 3 | 4 | 3 | 5 | 3 | 5 | 5 | 5 | 4 | 4.10 | 5 | 4 | | |
| | | Difficulty | 2 | 2 | 5 | 1 | 1 | 4 | 1 | 3 | 4 | 5 | 3 | 2 | 4 | 2 | 3 | 3 | 4 | 2 | 4 | 3 | 2.90 | 2 | 3 | | |
| | Q31 | Importance | 1 | 3 | 5 | 1 | 5 | 2 | 3 | 5 | 5 | 1 | 3 | 2 | 5 | 3 | 2 | 1 | 3 | 1 | 2 | 4 | 2.85 | 1 | 3 | | |
| | | Difficulty | 1 | 3 | 4 | 1 | 1 | 1 | 4 | 1 | 5 | 5 | 2 | 2 | 4 | 4 | 4 | 1 | 3 | 4 | 5 | 3 | 2.90 | 1 | 3 | | |
| | Q32 | Importance | 2 | 5 | 5 | 4 | 5 | 3 | 3 | 5 | 5 | 3 | 5 | 3 | 5 | 5 | 5 | 3 | 3 | 2 | 5 | 3 | 3.95 | 5 | 4.5 | | |
| | | Difficulty | 1 | 3 | 1 | 1 | 4 | 2 | 5 | 3 | 4 | 5 | 4 | 2 | 5 | 3 | 2 | 3 | 3 | 4 | 3 | 3 | 3.05 | 3 | 3 | | |
| | Q33 | Importance | 5 | 4 | 5 | 1 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 4.40 | 5 | 5 | | |
| | | Difficulty | 5 | 1 | 1 | 1 | 5 | 3 | 5 | 1 | 5 | 3 | 4 | 4 | 3 | 2 | 4 | 2 | 4 | 3 | 3 | 2 | 3.05 | 3 | 3 | | |
| | Q34 | Importance | 5 | 4 | 5 | 3 | 5 | 3 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 2 | 1 | 4 | 2 | | 4 | 3.95 | 5 | 4 | | |
| | | Difficulty | 5 | 2 | 3 | 1 | 1 | 1 | 3 | 1 | 5 | 2 | 4 | 2 | 3 | 4 | 4 | 1 | 5 | 4 | | 3 | 2.84 | 1 | 3 | | |
| | Q35 | Importance | 5 | | 5 | 1 | | 4 | 5 | 5 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3.89 | 5 | 4 | | |
| | | Difficulty | 3 | | 1 | 1 | | 3 | 3 | 1 | 2 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 5 | 3 | 2.94 | 3 | 3 | | |
| | Q36 | Importance | 5 | 5 | 5 | 1 | | 4 | 5 | 1 | 5 | 4 | 5 | 3 | 4 | 5 | 4 | 2 | 3 | 4 | 4 | 4 | 3.84 | 5 | 4 | | |
| | | Difficulty | 3 | 2 | 1 | 1 | | 3 | 3 | 1 | 2 | 4 | 4 | 3 | 3 | 1 | 4 | 2 | 3 | 3 | 4 | 3 | 2.63 | 3 | 3 | | |
| **Enforcement and Trail Presence** | Q37 | Importance | 5 | 3 | 1 | 1 | 3 | 4 | 5 | 3 | 5 | 5 | 5 | 5 | 3 | 5 | 3 | 3 | 4 | 3 | 4 | 4 | 3.70 | 5 | 4 | 3.84 | 2.76 |
| | | Difficulty | 5 | 2 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 3 | 4 | 3 | 4 | 2 | 5 | 4 | 3 | 4 | 5 | 3 | 3.00 | 3 | 3 | | |
| | Q38 | Importance | 5 | 3 | 5 | 1 | 5 | 3 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 3 | 4 | 2 | 4 | 4 | 5 | 5 | 3.95 | 5 | 4 | | |
| | | Difficulty | 4 | 1 | 3 | 1 | 3 | 3 | 5 | 3 | 1 | 3 | 4 | 4 | 4 | 2 | 5 | 5 | 3 | 4 | 2 | 2 | 3.10 | 3 | 3 | | |
| | Q39 | Importance | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 3 | 4 | 4 | 5 | 5 | 4.65 | 5 | 5 | | |
| | | Difficulty | 5 | 3 | 2 | 1 | 3 | 3 | 1 | 2 | 2 | 4 | 3 | 3 | 4 | 1 | 2 | 1 | 3 | 2 | 1 | 2 | 2.40 | 3 | 2 | | |
| | Q40 | Importance | 1 | 3 | 3 | 1 | 5 | 1 | 2 | 5 | 5 | 1 | 3 | 2 | 5 | 3 | 1 | 1 | 3 | 1 | 5 | 4 | 2.75 | 1 | 3 | | |
| | | Difficulty | 1 | 1 | 2 | 1 | 1 | 1 | 4 | 1 | 3 | 5 | 2 | 2 | 4 | 2 | 1 | 1 | 3 | 4 | 2 | 2 | 2.15 | 1 | 2 | | |
| | Q41 | Importance | 5 | 5 | 5 | 1 | | 3 | 5 | 3 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 2 | 5 | 4 | 5 | 5 | 4.16 | 5 | 5 | | |
| | | Difficulty | 4 | 2 | 2 | 5 | | 3 | 5 | 3 | 2 | 3 | 4 | 3 | 4 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 3.16 | 3 | 3 | | |
| **Usage Control, Closure, and Reclamation** | Q42 | Importance | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 4.40 | 4 | 4 | 4.30 | 2.93 |
| | | Difficulty | 1 | 2 | 2 | 2 | 4 | 4 | 5 | 2 | 4 | 2 | 5 | 3 | 3 | 2 | 4 | 5 | 3 | 4 | 4 | 2 | 3.15 | 2 | 3 | | |
| | Q43 | Importance | 5 | 5 | 5 | 4 | 5 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4.55 | 5 | 5 | | |
| | | Difficulty | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 1 | 4 | 3 | 5 | 3 | 4 | 1 | 4 | 5 | 3 | 4 | 4 | 2 | 3.05 | 4 | 3 | | |
| | Q44 | Importance | | 3 | 4 | 1 | 5 | 5 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 2 | 5 | 4 | 5 | 5 | 4.05 | 5 | 4 | | |
| | | Difficulty | | 1 | 2 | 1 | 3 | 4 | 3 | 2 | 5 | 4 | 5 | 3 | 4 | 1 | 4 | 2 | 3 | 4 | 4 | 2 | 3.00 | 4 | 3 | | |
| | Q45 | Importance | 5 | 4 | 5 | 1 | 2 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 4.15 | 5 | 4.5 | | |
| | | Difficulty | 1 | 1 | 3 | 1 | | 2 | 1 | 3 | 2 | 3 | 2 | 3 | 4 | 1 | 2 | 3 | 3 | 4 | 4 | 2 | 2.37 | 3 | 2 | | |
| | Q46 | Importance | 5 | 4 | 5 | 1 | 5 | 5 | 4 | 5 | 4 | 5 | 3 | 4 | 4 | 5 | 5 | 2 | 5 | 5 | 5 | 5 | 4.30 | 5 | 5 | | |
| | | Difficulty | 1 | 2 | 2 | 1 | 1 | 4 | 2 | 1 | 5 | 5 | 3 | 4 | 4 | 1 | 4 | 1 | 4 | 4 | 4 | 2 | 2.75 | 4 | 2.5 | | |

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| | Q47 | Importance | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 4.35 | 5 | 4 | | |
| | | Difficulty | 1 | 2 | 1 | 2 | 2 | 4 | 5 | 2 | 5 | 3 | 5 | 4 | 4 | 2 | 4 | 5 | 5 | 4 | 3 | 2 | 3.25 | 2 | 3.5 | | |
| Trail Routing, Construction, and Signage | Q48 | Importance | 3 | 4 | 5 | 4 | 4 | 2 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 3 | 3 | 5 | 4 | 4 | 5 | 3.90 | 4 | 4 | 3.94 | 3.03 |
| | | Difficulty | 5 | 2 | 1 | 2 | 3 | 4 | 2 | 3 | 2 | 4 | 3 | 3 | 3 | 2 | 2 | 5 | 3 | 3 | 4 | 2 | 2.90 | 2 | 3 | | |
| | Q49 | Importance | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 3 | 2 | 3 | 2 | 4 | 5 | 3.85 | 4 | 4 | | |
| | | Difficulty | 3 | 2 | 1 | 2 | 2 | 3 | 1 | 3 | 2 | 4 | 4 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 4 | 2 | 2.70 | 3 | 3 | | |
| | Q50 | Importance | 2 | 4 | 5 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 4 | 2 | 1 | 5 | 4 | 1 | 4 | 2 | 4 | 5 | 3.10 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 1 | 5 | 5 | 3 | 1 | 1 | 2 | 2 | 4 | 4 | 3 | 3 | 4 | 2 | 3 | 3 | 4 | 2 | 3.00 | 3 | 3 | | |
| | Q51 | Importance | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 4.80 | 5 | 5 | | |
| | | Difficulty | 1 | 2 | 1 | 2 | 3 | 4 | 5 | 1 | 3 | 3 | 4 | 4 | 3 | 2 | 2 | 1 | 3 | 3 | 3 | 2 | 2.60 | 3 | 3 | | |
| | Q52 | Importance | 5 | 5 | 5 | 1 | 4 | 4 | 5 | 3 | 5 | 2 | 4 | 5 | 4 | 4 | 5 | 1 | 4 | 3 | 5 | 5 | 3.95 | 5 | 4 | | |
| | | Difficulty | 3 | 2 | 1 | 1 | 1 | 2 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 2 | 3 | 2 | 3 | 3 | 5 | 2 | 2.90 | 3 | 3 | | |
| | Q53 | Importance | 1 | 4 | 5 | 4 | 3 | 5 | 5 | 3 | 5 | 5 | 3 | 5 | 4 | 5 | 4 | 1 | 5 | 2 | 4 | 5 | 3.90 | 5 | 4 | | |
| | | Difficulty | 5 | 3 | 2 | 2 | 4 | 3 | 3 | 3 | 5 | 5 | 3 | 4 | 3 | 1 | 4 | 5 | 4 | 3 | 5 | 2 | 3.45 | 3 | 3 | | |
| | Q54 | Importance | 4 | 5 | 5 | 4 | | 4 | 5 | 3 | 5 | 5 | 4 | 4 | 3 | 3 | 4 | 1 | 5 | 3 | 5 | 5 | 4.05 | 5 | 4 | | |
| | | Difficulty | 5 | 3 | 1 | 4 | | 4 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 2 | 4 | 5 | 4 | 3 | 5 | 2 | 3.68 | 4 | 4 | | |
| Collaboration | Q55 | Importance | 5 | 4 | 5 | 5 | 5 | 3 | 5 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 4.45 | 5 | 5 | 3.91 | 3.22 |
| | | Difficulty | 2 | 3 | 3 | 2 | 3 | 3 | 1 | 5 | 3 | 3 | 5 | 3 | 3 | 2 | 4 | 5 | 4 | 3 | 5 | 2 | 3.20 | 3 | 3 | | |
| | Q56 | Importance | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 3 | 5 | 2 | 5 | 3 | 5 | 5 | 4.40 | 5 | 5 | | |
| | | Difficulty | 5 | 3 | 2 | 2 | 4 | 4 | 3 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 4 | 3 | 4 | 3 | 5 | 2 | 3.45 | 4 | 3.5 | | |
| | Q57 | Importance | 1 | 4 | 5 | 1 | 5 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 3 | 5 | 2 | 1 | 4 | 2 | 5 | 5 | 3.35 | 4 | 3.5 | | |
| | | Difficulty | 5 | 4 | 3 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 3 | 2 | 4 | 1 | 4 | 3 | 4 | 2 | 3.15 | 3 | 3 | | |
| | Q58 | Importance | 5 | 3 | 4 | 2 | 5 | 4 | 4 | 1 | 5 | 4 | 2 | 3 | 3 | 5 | 2 | 1 | 4 | 4 | 4 | 5 | 3.50 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 3 | 1 | 2 | 4 | 3 | 5 | 4 | 4 | 2 | 3 | 4 | 1 | 4 | 1 | 3 | 4 | 4 | 2 | 3.10 | 4 | 3 | | |
| | Q59 | Importance | 4 | 2 | 5 | 1 | | 4 | 5 | 3 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 1 | 5 | 2 | 5 | 5 | 3.84 | 5 | 4 | | |
| | | Difficulty | 3 | 4 | 1 | 1 | | 3 | 5 | 3 | 5 | 5 | 4 | 3 | 3 | 2 | 4 | 3 | 4 | 3 | 3 | 2 | 3.21 | 3 | 3 | | |
| Funding and Feasibility | Q60 | Importance | 4 | 5 | 4 | 4 | 3 | 2 | 5 | 5 | 5 | 3 | 4 | 3 | 4 | 3 | 5 | 5 | 5 | 3 | 4 | 4 | 4.00 | 4 | 4 | 3.80 | 3.57 |
| | | Difficulty | 5 | 4 | 5 | 3 | 5 | 2 | 5 | 4 | 1 | 5 | 4 | 4 | 4 | 3 | 4 | 5 | 4 | 3 | 3 | 3 | 3.80 | 4 | 4 | | |
| | Q61 | Importance | 1 | 4 | 5 | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 4 | 3 | 4 | 4 | 5 | 1 | 4 | 4 | 5 | 4 | 3.75 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 1 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3.50 | 3 | 3 | | |
| | Q62 | Importance | 5 | 4 | 4 | 1 | 4 | 3 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 1 | 3 | 4 | 5 | 4 | 3.75 | 4 | 4 | | |
| | | Difficulty | 1 | 2 | 3 | 5 | 3 | 5 | 5 | 2 | 1 | 4 | 5 | 5 | 4 | 3 | 3 | 4 | 3 | 5 | 5 | 3 | 3.55 | 5 | 3.5 | | |
| | Q63 | Importance | 5 | 5 | 5 | 3 | 5 | 5 | 5 | 3 | 5 | 5 | 3 | 4 | 4 | 4 | 5 | 2 | 4 | 4 | 5 | 5 | 4.30 | 5 | 5 | | |
| | | Difficulty | 3 | 2 | 2 | 5 | 5 | 4 | 5 | 3 | 1 | 4 | 5 | 5 | 5 | 2 | 5 | 3 | 3 | 5 | 5 | 2 | 3.70 | 5 | 4 | | |
| | Q64 | Importance | 1 | 3 | 5 | 4 | 1 | 5 | 4 | 3 | 5 | 1 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 3.60 | 4 | 4 | | |
| | | Difficulty | 5 | 5 | 2 | 5 | 5 | 4 | 3 | 3 | 1 | 5 | 3 | 4 | 4 | 4 | 4 | 1 | 5 | 5 | 5 | 2 | 3.75 | 5 | 4 | | |
| | Q65 | Importance | 3 | 4 | 5 | 1 | 1 | 4 | 5 | 4 | 5 | 3 | 2 | 4 | 4 | 3 | 4 | 2 | 4 | 2 | 5 | 3 | 3.40 | 4 | 4 | | |
| | | Difficulty | 4 | 2 | 2 | 5 | | 3 | 2 | 3 | 1 | 5 | 5 | 3 | 4 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 3.11 | 3 | 3 | | |
| Coordination with Other Planning and Management Activities | Q66 | Importance | 5 | 5 | 2 | 4 | 3 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 3 | 5 | 4 | 1 | 3 | 4 | 5 | 4 | 3.25 | 3 | 3 | 4.05 | 2.86 |
| | | Difficulty | 1 | 1 | 3 | 4 | 1 | 2 | 2 | 3 | 3 | 2 | 5 | 3 | 4 | 3 | 4 | 1 | 3 | 3 | 4 | 3 | 2.75 | 3 | 3 | | |
| | Q67 | Importance | 5 | 4 | 4 | 4 | | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 3 | 5 | 5 | 1 | 4 | 4 | 5 | 4 | 3.89 | 4 | 4 | | |
| | | Difficulty | 3 | 2 | 2 | 4 | | 2 | 2 | 5 | 3 | 2 | 5 | 3 | 4 | 3 | 3 | 1 | 4 | 3 | 5 | 3 | 3.11 | 3 | 3 | | |
| | Q68 | Importance | 1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 2 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4.45 | 5 | 5 | | |
| | | Difficulty | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 4 | 3 | 3 | 4 | 2 | 2 | 1 | 3 | 3 | 3 | 3 | 2.60 | 2 | 2.5 | | |
| | Q69 | Importance | 5 | 5 | 5 | 5 | | 5 | 5 | 5 | 5 | 2 | 4 | 4 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4.58 | 5 | 5 | | |
| | | Difficulty | 1 | 2 | 5 | 2 | | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 3 | 3 | 2.42 | 3 | 2 | | |
| | Q70 | Importance | 5 | 3 | 5 | 1 | | 5 | 5 | 5 | 5 | 2 | 3 | 3 | 3 | 5 | | 3 | 5 | 4 | 5 | 4 | 3.94 | 5 | 4.5 | | |

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| | | Difficulty | 1 | 1 | 5 | 1 | | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | | 1 | 4 | 3 | 3 | 3 | 2.39 | 3 | 2.5 | | |
| | Q71 | Importance | 5 | 3 | 4 | 3 | 2 | 3 | 2 | 2 | 5 | 4 | 3 | 4 | 3 | 5 | 4 | 1 | 4 | 5 | 5 | 4 | 3.55 | 4 | 4 | | |
| | | Difficulty | 4 | 2 | 3 | 5 | 4 | 4 | 2 | 5 | 2 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 3.35 | 3 | 3 | | |
| | Q72 | Importance | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4.65 | 5 | 5 | | |
| | | Difficulty | 2 | 1 | 2 | 2 | 1 | 2 | 3 | 5 | 2 | 3 | 2 | 3 | 4 | 1 | 3 | 1 | 3 | 3 | 5 | 2 | 2.50 | 2 | 2 | | |
| | Q73 | Importance | 5 | 5 | 5 | 4 | 5 | 4 | 3 | 3 | 5 | 5 | 3 | 4 | 4 | 5 | 5 | 3 | 4 | 5 | 4 | 4 | 4.25 | 5 | 4 | | |
| | | Difficulty | 2 | 3 | 2 | 1 | 4 | 3 | 5 | 3 | 4 | 4 | 3 | 3 | 4 | 1 | 3 | 3 | 3 | 4 | 5 | 2 | 3.10 | 3 | 3 | | |
| | Q74 | Importance | 3 | 5 | 4 | 3 | 3 | 5 | 3 | 3 | 5 | 5 | 4 | 3 | 4 | 5 | 2 | 3 | 5 | 4 | 4 | 4 | 3.85 | 3 | 4 | | |
| | | Difficulty | 5 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | 3 | 4 | 2 | 4 | 5 | 4 | 5 | 5 | 2 | 3.55 | 3 | 3.5 | | |
| **Implementation** | Q75 | Importance | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4.55 | 5 | 5 | 4.32 | 3.20 |
| | | Difficulty | 5 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 5 | 4 | 5 | 3 | 3 | 2 | 3 | 1 | 4 | 4 | 4 | 2 | 3.00 | 2 | 3 | | |
| | Q76 | Importance | 5 | 4 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 2 | 5 | 4 | 4 | 4 | 4.25 | 4 | 4 | | |
| | | Difficulty | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 4 | 5 | 3 | 3 | 3 | 2 | 3 | 1 | 4 | 3 | 5 | 3 | 2.85 | 3 | 3 | | |
| | Q77 | Importance | 2 | 4 | 5 | 3 | 5 | 4 | | 3 | 5 | 4 | 4 | 3 | 4 | 5 | 3 | 3 | 4 | 5 | 5 | 4 | 3.95 | 4 | 4 | | |
| | | Difficulty | 5 | 2 | 2 | 5 | 2 | 2 | | 3 | 3 | 4 | 3 | 5 | 4 | 3 | 4 | 1 | 4 | 5 | 4 | 3 | 3.37 | 3 | 3 | | |
| | Q78 | Importance | 5 | 4 | 5 | 3 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 1 | 4 | 4 | 5 | 4 | 4.25 | 5 | 4 | | |
| | | Difficulty | 1 | 2 | 2 | 5 | 1 | 3 | 2 | 1 | 3 | 4 | 3 | 4 | 3 | 2 | 3 | 2 | 3 | 4 | 4 | 3 | 2.75 | 3 | 3 | | |
| | Q79 | Importance | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 3 | 5 | 5 | 4 | 5 | 4 | 4.60 | 5 | 5 | | |
| | | Difficulty | 4 | 3 | 2 | 5 | | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 3 | 2 | 5 | 5 | 3 | 5 | 4 | 3 | 4.05 | 5 | 5 | | |
| **General Plan Criteria** | Q80 | Importance | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 1 | 4 | 5 | 5 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4.15 | 4 | 4 | 3.96 | 2.59 |
| | | Difficulty | 1 | 1 | 3 | 2 | 1 | 2 | 1 | 1 | 3 | 3 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 1.85 | 1 | 2 | | |
| | Q81 | Importance | 4 | 5 | 4 | 4 | 5 | 4 | 5 | 1 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 3 | 4 | 3 | 5 | 4 | 4.05 | 4 | 4 | | |
| | | Difficulty | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 1.85 | 1 | 2 | | |
| | Q82 | Importance | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 2 | 3 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4.00 | 4 | 4 | | |
| | | Difficulty | 2 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 2.05 | 2 | 2 | | |
| | Q83 | Importance | 1 | 4 | 4 | 4 | 4 | 5 | 5 | 3 | 4 | 3 | 4 | 3 | 4 | 5 | 4 | 1 | 4 | 4 | 5 | 4 | 3.75 | 4 | 4 | | |
| | | Difficulty | 5 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2.30 | 2 | 2 | | |
| | Q84 | Importance | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 5 | 4.55 | 5 | 5 | | |
| | | Difficulty | 4 | 1 | 2 | 2 | 2 | 4 | 1 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 2 | 2.30 | 3 | 2 | | |
| | Q85 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 | 4 | 3 | 4 | 5 | 5 | 2 | 5 | 5 | 5 | 5 | 4.45 | 5 | 5 | | |
| | | Difficulty | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 2.15 | 2 | 2 | | |
| | Q86 | Importance | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 2 | 5 | 3 | 5 | 4 | 4.30 | 4 | 4 | | |
| | | Difficulty | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 4 | 1 | 3 | 3 | 1 | 2 | 1 | 3 | 3 | 2 | 2 | 2.05 | 2 | 2 | | |
| | Q87 | Importance | 1 | 3 | 3 | 2 | 1 | 4 | 5 | 5 | 5 | 2 | 4 | 4 | 4 | 5 | 5 | 4 | 3 | 1 | 5 | 3 | 3.45 | 5 | 4 | | |
| | | Difficulty | 5 | 1 | 3 | 4 | 1 | 5 | 5 | 3 | 1 | 2 | 4 | 5 | 3 | 1 | 4 | 5 | 3 | 3 | 2 | 3 | 3.15 | 3 | 3 | | |
| | Q88 | Importance | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 5 | 2 | 1 | 4 | 4 | 4 | 1 | 1 | 3 | 2 | 4 | 3 | 2.25 | 1 | 2 | | |
| | | Difficulty | 1 | 2 | 1 | 1 | 1 | 1 | 5 | 1 | 1 | 2 | 1 | 4 | 3 | 2 | 4 | 1 | 3 | 3 | 2 | 3 | 2.10 | 1 | 2 | | |
| | Q89 | Importance | 4 | 3 | 2 | 1 | 1 | 4 | 5 | 3 | 5 | 3 | 3 | 4 | 3 | 5 | 2 | 1 | 5 | 3 | 4 | 3 | 3.20 | 3 | 3 | | |
| | | Difficulty | 4 | 2 | 2 | 2 | 1 | 4 | 1 | 3 | 3 | 4 | 4 | 4 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 2.75 | 3 | 3 | | |
| | Q90 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4.55 | 5 | 5 | | |
| | | Difficulty | 5 | 1 | 3 | 2 | 3 | 4 | 2 | 3 | 1 | 4 | 3 | 4 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | 2 | 2.65 | 3 | 3 | | |
| | Q91 | Importance | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 3 | 4 | 3 | 3 | 4 | 5 | 3 | 4 | 2 | 4 | 4 | 4.00 | 4 | 4 | | |
| | | Difficulty | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 4 | 1 | 4 | 4 | 4 | 4 | 3 | 3 | 1 | 4 | 3 | 2 | 2 | 2.75 | 3 | 3 | | |
| | Q92 | Importance | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4.55 | 5 | 5 | | |
| | | Difficulty | 5 | 4 | 3 | 5 | 3 | 4 | 1 | 4 | 2 | 2 | 3 | 3 | 3 | 2 | 1 | 4 | 3 | 3 | 2 | 2 | 2.95 | 3 | 3 | | |
| | Q93 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 | 5 | 4 | 1 | 3 | 4 | 5 | 4 | 4.20 | 5 | 4 | | |
| | | Difficulty | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 2 | 1.60 | 1 | 1 | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q94 | Importance | 3 | 3 | 4 | 2 | 4 | 3 | 5 | 1 | 5 | 3 | 3 | 3 | 3 | 5 | 2 | 1 | 3 | 1 | 4 | 4 | 3.10 | 3 | 3 | | |
| | | Difficulty | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 2 | 1.75 | 1 | 1.5 | | |
| | Q95 | Importance | 3 | 3 | 4 | 3 | 5 | 2 | 5 | 1 | 5 | 3 | 3 | 3 | 3 | 5 | 2 | 1 | 3 | 2 | 4 | 3 | 3.15 | 3 | 3 | | |
| | | Difficulty | 3 | 1 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 3 | 1.90 | 1 | 2 | | |
| | Q96 | Importance | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 2 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 2 | 4 | 5 | 5 | 3 | 3.80 | 4 | 4 | | |
| | | Difficulty | 4 | 3 | 3 | 2 | 1 | 5 | 1 | 1 | 2 | 4 | 2 | 4 | 3 | 3 | 2 | 1 | 3 | 4 | 2 | 3 | 2.65 | 3 | 3 | | |
| | Q97 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.70 | 5 | 5 | | |
| | | Difficulty | 1 | 1 | 3 | 4 | 3 | 4 | 1 | 3 | 1 | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2.50 | 3 | 3 | | |
| | Q98 | Importance | 4 | 4 | 4 | 3 | | 2 | 5 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 4 | 3.32 | 3 | 3 | | |
| | | Difficulty | 4 | 4 | 3 | 4 | | 4 | 3 | 3 | 2 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 5 | 2 | 3.47 | 4 | 4 | | |
| | Q99 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 4.50 | 5 | 5 | | |
| | | Difficulty | 5 | 5 | 3 | 2 | 3 | 3 | 2 | 4 | 2 | 5 | 3 | 2 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 2 | 3.25 | 3 | 3 | | |
| | Q100 | Importance | 2 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 3 | 5 | 4 | 4 | 3 | 3 | 4 | 2 | 4 | 4 | 4 | 5 | 4.00 | 4 | 4 | | |
| | | Difficulty | 5 | 4 | 4 | 5 | 2 | 4 | 2 | 4 | 2 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 3 | 5 | 2 | 3.50 | 4 | 4 | | |
| | Q101 | Importance | 5 | 4 | 5 | 5 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4 | 3 | 5 | 4 | 4.45 | 5 | 5 | | |
| | | Difficulty | 1 | 3 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 5 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 2 | 3.40 | 4 | 3.5 | | |
| | Q102 | Importance | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 3 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 1 | 3 | 4 | 5 | 4 | 4.00 | 4 | 4 | | |
| | | Difficulty | 5 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 3 | 3 | 1 | 2 | 2.25 | 3 | 2 | | |
| | Q103 | Importance | 2 | 4 | 4 | 4 | 5 | 4 | 5 | 2 | 5 | 4 | 4 | 2 | 4 | 5 | 4 | 1 | 3 | 4 | 5 | 4 | 3.75 | 4 | 4 | | |
| | | Difficulty | 2 | 2 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 3 | 3 | 1 | 2 | 2.00 | 3 | 2 | | |
| | Q104 | Importance | | 3 | 3 | 4 | | 5 | 3 | 5 | 5 | 4 | 4 | 3 | 3 | 5 | 5 | 1 | 4 | 4 | 4 | 3 | 3.78 | 3 | 4 | | |
| | | Difficulty | | 2 | 3 | 2 | | 4 | 3 | 3 | 2 | 4 | 2 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 5 | 3 | 2.89 | 3 | 3 | | |
| | Q105 | Importance | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4.55 | 5 | 5 | | |
| | | Difficulty | 3 | 4 | 3 | 2 | 5 | 4 | 1 | 5 | 1 | 4 | 3 | 4 | 3 | 2 | 1 | 5 | 3 | 4 | 3 | 2 | 3.10 | 3 | 3 | | |
| | Q106 | Importance | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 4 | 5 | 4.65 | 5 | 5 | | |
| | | Difficulty | 1 | 2 | 2 | 2 | 4 | 3 | 1 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 2 | 4 | 3 | 4 | 4 | 2 | 2.60 | 3 | 3 | | |
| | Q107 | Importance | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 4 | 4.35 | 4 | 4 | | |
| | | Difficulty | 3 | 4 | 2 | 2 | 2 | 3 | 1 | 4 | 1 | 3 | 3 | 2 | 4 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2.60 | 3 | 3 | | |
| | Q108 | Importance | 5 | 5 | 4 | 4 | 4 | 5 | 3 | 4 | 5 | 3 | 4 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 4.00 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 2 | 3.65 | 4 | 4 | | |
| | Q109 | Importance | 1 | 4 | 4 | 4 | 3 | 2 | 3 | 2 | 5 | 3 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 5 | 3 | 3.20 | 3 | 3 | | |
| | | Difficulty | 5 | 4 | 3 | 4 | 5 | 4 | 4 | 3 | 3 | 3 | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 3.75 | 4 | 4 | | |
| **Plan Evaluation and Reporting** | Q110 | Importance | 2 | 4 | 4 | 3 | 3 | 5 | 5 | 1 | 5 | 3 | 4 | 4 | 3 | 5 | 2 | 4 | 4 | 3 | 5 | 5 | 3.70 | 4 | 4 | 3.75 | 3.40 |
| | | Difficulty | 5 | 4 | 3 | 5 | 3 | 3 | 5 | 4 | 4 | 5 | 5 | 3 | 4 | 2 | 4 | 5 | 3 | 5 | 3 | 2 | 3.85 | 5 | 4 | | |
| | Q111 | Importance | 4 | 5 | 4 | 4 | 3 | 5 | 2 | 3 | 5 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 5 | 4 | 3.80 | 4 | 4 | | |
| | | Difficulty | 1 | 1 | 2 | 5 | 3 | 2 | 4 | 3 | 3 | 3 | 2 | 4 | 4 | 2 | 3 | 3 | 3 | 5 | 3 | 3 | 2.95 | 3 | 3 | | |
| **Format** | Q112 | Importance | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 3 | 5 | 5 | 4 | 4 | 3 | 4 | 4 | 2 | 4 | 3 | 4 | 5 | 4.05 | 4 | 4 | 4.28 | 2.19 |
| | | Difficulty | 5 | 3 | 2 | 1 | 4 | 3 | 5 | 3 | 2 | 4 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2.90 | 3 | 3 | | |
| | Q113 | Importance | 4 | 4 | 4 | 2 | 5 | 5 | 5 | 3 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 4 | 3 | 4 | 4 | 3.85 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 2 | 1 | 3 | 4 | 1 | 3 | 2 | 4 | 2 | 4 | 3 | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 2.70 | 3 | 3 | | |
| | Q114 | Importance | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 4 | 2 | 4 | 2 | 5 | 4 | 4.00 | 4 | 4 | | |
| | | Difficulty | 5 | 3 | 2 | 2 | 3 | 2 | 5 | 3 | 2 | 4 | 2 | 4 | 3 | 1 | 2 | 1 | 3 | 4 | 5 | 2 | 2.90 | 2 | 3 | | |
| | Q115 | Importance | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 4 | 3 | 4 | 5 | 5 | 4 | 3 | 4 | 4 | 4 | 4.30 | 5 | 4.5 | | |
| | | Difficulty | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 2 | 1.50 | 1 | 1 | | |
| | Q116 | Importance | 5 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 5 | 3 | 4 | 3 | 4 | 5 | 4 | 1 | 4 | 4 | 4 | 4 | 4.10 | 4 | 4 | | |
| | | Difficulty | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 3 | 1.40 | 1 | 1 | | |
| | Q117 | Importance | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 3 | 3 | 4 | 5 | 4 | 4.55 | 5 | 5 | | |

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| | | Difficulty | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1.30 | 1 | 1 | | |
| | Q118 | Importance | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 2 | 3 | 4 | 5 | 5 | 4.50 | 5 | 5 | | |
| | | Difficulty | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 1.30 | 1 | 1 | | |
| | Q119 | Importance | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4.50 | 5 | 4.5 | | |
| | | Difficulty | 5 | 2 | 2 | 2 | 4 | 4 | 1 | 3 | 1 | 5 | 1 | 3 | 3 | 2 | 2 | 5 | 3 | 4 | 3 | 3 | 2.90 | 3 | 3 | | |
| | Q120 | Importance | 5 | 5 | 5 | 4 | | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | 4.63 | 5 | 5 | | |
| | | Difficulty | 5 | 2 | 2 | 2 | | 3 | 1 | 4 | 1 | 3 | 3 | 4 | 3 | 1 | 2 | 2 | 3 | 5 | 5 | 2 | 2.79 | 2 | 3 | | |

**Table 24. Survey Responses**

# APPENDIX D

Interview Questions

1. *"The responsible agency can realistically be expected to implement the plan"*, ranked highest in terms of being both very important and very difficult.
    a. What do you see as the major hurdles to implementation and how could a plan be crafted so as to avoid them?
2. Public education also ranked high on both importance and difficulty.
    a. What makes Public Education so difficult?
3. Inventory and characterization of existing trails and existing usage ranked as being very important and very difficult.
    a. What do you see as the barriers to creating such an inventory?
    b. What are the key ingredients of effective usage control in terms of keeping OHVs where they are supposed to be?
4. Several people commented that certain aspects that were proposed for inclusion in an OHV plan were already covered in other areas such as NEPA or broader plans such as Resource Management Plans or Forest plans. (see also 72)
    a. Do you feel that it would be advantageous to reiterate these aspects in an OHV plan where applicable, or would you maintain the separation?
5. What do you feel the overall role of an OHV plan should be? (Guidance vs. Specifics)
    a. Should it stay broad and just state general goals, or is it better for a plan to at least attempt to be comprehensive?
    b. Does the need for flexibility pretty much necessitate a more general type of plan?
6. Responses to questions 56 and 57 showed that respondents felt that it was important to stress the need for collaboration between agencies, but that it was not important to detail how such collaboration will take place.
    a. Given the turnover rate of personnel in most areas, wouldn't it be better to formalize how equipment sharing, joint hiring and the like will occur?
7. How important do you think enforcement (trail presence, fines) is to successful OHV management?
    a. How important is coordination with local law enforcement?
    b. How big of a fine is big enough for OHV violations?
8. Much of the literature stressed the need for engineering oversight in trial design and construction to avoid maintenance problems. The majority of respondents felt that this was not important.
    a. What are your views on this issue?
9. How long do you think it would take to create an OHV plan for your area?
10. How often do you think an OHV plan should be reviewed or revised to remain effective?

Preface: I noticed that your responses to a couple of questions differed significantly from the majority of responses. The following questions are trying to get at what the underlying reasons for this might be, was it a difference in the terrain in your area, geology, or a particular experience you have had, something like that. Again both your survey responses and this interview will be kept confidential.

Additional questions for "Outliers"

You ranked the importance of items related to trail closure ( 44,45,46) much lower than the other respondents. Can you give a bit more detail on why you feel these items are not high priority?

You ranked items related to signage (52, 53,54) as not important while others consistently ranked them as being very important. Can you elaborate on this?

You placed a very low priority on collaboration between agencies. Could you expand on this a little bit?

You indicated that it was not important for an OHV plan to state its relationship to current EIS, NEPA or other studies, while most others seemed to think this was critically important. Could you go into your thoughts on this?