PART ONE

The Building Blocks of Great Trails

Riding off-highway vehicles is a great way that families explore the great outdoors together.

Chapter One
Principles of Successful OHV Management

The 4Es: Engineering, Education, Enforcement, Evaluation

The process of creating great OHV trails starts with an understanding of the fundamental principles of OHV management. These principles need to be carried through planning, design, implementation, maintenance, and program management and they apply to existing trails and new trails.

The Need for Management

The first underlying principle is that OHV recreation needs to be managed. The use is not going to go away and it cannot be ignored. The days of having a block of land where they go and ignoring what is really going on there are no longer possible. The ostrich approach to management is prone to failure. Unmanaged OHV recreation can lead to user-created trails, unacceptable resource impacts, poor recreation experiences, conflict with other stakeholders or other recreationists, antagonistic community and media relations, and litigation. The target of most of this negativity is usually the group of riders who really just want their share of the recreational resource, a place to ride responsibly, and to be left alone. Too often, the eventual result is closure and a reduction of riding opportunities.

When OHV use is managed, trails are designed to provide high-quality recreation experiences, resources are protected, past impacts are rehabilitated, there is a positive working relationship with stakeholders and other recreationists, there is community and media acceptance, if not support, and the riders are seen as partners rather than the enemy. Ultimately this leads to continued or increased riding opportunities.

A motivation for and a benefit from recreation is an escape and a release. Endorphins and adrenalin are released. All of this is beneficial, but needs to occur in a managed setting, not an unmanaged setting. Certainly, two questions that arise are: "Can an unmanaged setting be transformed into a managed one?" and "How do I accomplish that?" The simplistic answer to the first question is: "In most cases, yes." This book gives the answer to the second question.

Management includes parking, signing, kiosk, maps, barriers to control and direct use, and a clean toilet for customer service

A Case in Point…

In 2007, the Bear Creek OHV area in Kelowna, British Columbia, was on the verge of closure. Unmanaged OHV use had been occurring there for 35 years; there was a maze of user-created trails, hillclimbs, significant resource impacts, angry stakeholders, and upset residents. The community and media were up in arms. The local club, the Okanagan Trail Riders Association, saw the writing on the wall and started taking action by seeking advice from experts. Not long after, Recreation Sites & Trails BC declared the area a Recreation Site and began active management. At 35,000 hectares (110,000 acres), it is the largest recreation site in the province. There was a lot at stake.

By 2012, the accomplishments included: 224 km (139 miles) of sustainable, well-designed trails; a trail ranger program; a camp host program; a massive closure and rehabilitation effort was completed; riders were compliant with sound and spark arrester requirements; a new trail pass was being overwhelmingly accepted; a sensitive grassland ecosystem had been protected; and the stakeholders, media, and residents were appeased.

Bear Creek is the first designated, managed OHV trail system in BC and it is now being used as an OHV model for the province.

Bear Creek Before Management…

Bear Creek Today...

The Three Key Elements for Success

The creation of any successful trail, trail system, or OHV park involves the successful application of three key elements: provide for the riders' needs; design for sustainability; and develop an effective operations and maintenance (O&M) program. These three elements form the basis for the Great Trail Continuum.

1. Provide for the Riders' Needs. What does this mean? If the riders want hillclimbs or other potentially high-impact activities, does a manager give it to them? Not necessarily. It means that the manager evaluates the site to determine what experiences can be reasonably and sustainably provided. Then the manager can ensure that whatever experiences can be provided are delivered as high-quality, high-fun factor opportunities. A key point here that cannot be overemphasized is that if riders get the experience they want ON the trail, they will not look for it OFF the trail. From an OHV management standpoint, this is huge. There are those who are skeptical, including some riders, but this theory has been validated in project after project.

Tip, Trick or Trap?

Tip: Three Key Elements for Success
- Provide for the riders' needs
- Design for sustainability
- Develop an effective O&M program

High Quality Opportunities + Varied Opportunities = Success

When riders have a high-quality recreation experience, they are smiling at the end of the day. What does that mean to the OHV manager? The riders recognize they have something good. This means they become proud of it and want to protect it. Compliance with the rules and regulations increases. Peer pressure to make others compliant goes up. Volunteerism increases. Vandalism goes down. The need for enforcement goes down. There is an increased willingness to accept trail fees. And management spends less time and money dealing with problems on the "have to" list and more time working on the "want to" list.

Tip, Trick or Trap?

Tip: When riders find what they want ON the trail, they will not look for it OFF the trail

Happy Riders = Happy Managers

How do managers provide for the riders' needs? First of all, they need to know who the riders are and understand the various vehicle types and the experiences those riders are looking for. This book covers a wide range of vehicles and a wide range of riders, but fortunately, they all have similar recreation needs and desires.

Riders' needs and desires:
- Fun, fun, and more fun. People recreate to have fun.
- Connect with nature. Find our roots and a simpler existence.
- Escape from society
- Relieve stress
- Physical exertion and exercise
- Challenge for their vehicles and themselves
- A variety of experiences and difficulty levels
- Build camaraderie with friends and family engaged in the same activity
- A sense of belonging to a group
- A legal place to ride and feel welcome
- Enjoy quality facilities: kiosks, toilets, camping, etc.
- Enjoy quality trails, signing, and mapping
- Access to water features, scenic viewpoints, and unique features
- The opportunity to view wildlife

A skilled OHV specialist understands these desired experiences. Many planning teams however, do not have an OHV specialist or an OHV representative, and the planning team members are not expected to become OHV enthusiasts. If at all possible, put at least one OHV club, area, or state association representative on the planning and design team. Also, attend some club meetings and take the team out on a club ride. It is a great way to learn about the activity, what draws people to that activity, and the very social nature of that activity. Most important of all is go out to the project area on the weekends when the riders are there and talk to them. It will be easy to discover that they are real people and they like to talk about their activity. It is also a very effective relationship builder.

Tip, Trick or Trap?

Tip: Size Does Matter
When the demand for trails exceeds the supply, managers have lost control of the use

A word of caution when soliciting input on what riders would like to see in the project area - many times riders will say "I like it the way it is." Their answer will reflect what they've experienced. If all they know is poor quality, then there is no bar to measure it against. It is a place to ride and it's their place to ride, so it's good. It is important to recognize this so that the trail system planning and design is not swayed in the wrong direction by inaccurate input. Many riders have never ridden a designated, well-designed, or managed trail system.

There is another potential trap. If there is an unmanaged project area today, chances are that the customers are locals who have ridden there forever. It can be a mistake to base planning on that rider group and their current riding activities. Once a designated, managed trail system has been implemented, the rider base and demographics will change. As soon as a map is produced, or a website is developed (recommended), or someone puts videos on YouTube, suddenly the whole world knows about this trail system and riders will come from all over the area, state, or region to experience it. What was maybe once an all-male group of locals with a single focus, can now be a mix of singles, families, and extended families with multiple vehicle types. Where perhaps there were fifteen riders on a weekend day, there may now be 150 or more. These are changes that managers need to recognize and assimilate into the planning process.

Tip, Trick or Trap?

Trap: User-created trails meet the users' needs

Another common mistake managers make is to stop treating riders as people. Don't exclude a facility or interpretation because the area is an OHV riding area. And don't exclude trails or activities because the riders might already have enough. People will want and enjoy whatever the developers can reasonably provide: parking, camping, concession area, a wide variety of trails and difficulty, motocross (MX) tracks, youth training area, safety training area, mudding area, sand pit, 4WD trails, rock crawl, endurocross, hillclimbs, open riding areas, etc. The only limitations to amenities provided should be the size of the site, physical characteristics of the site, dollars for construction, dollars and infrastructure for O&M; and social, political, resource, and legal constraints.

OHV recreation is a family activity, so plan to provide opportunities for a variety of vehicle types, ages and skill levels

2. Design for Sustainability. Sustainability is one of those terms that many use and few really understand. In reality, there are four key aspects to sustainability: resource, experience, political, and managerial. Most people just think of resource sustainability so let's delve into that first.

There are many definitions of resource sustainability. It is one of those terms that makes a trail or project feel warm, fuzzy, and good; and the hope is that it will make the antagonists feel good also. Managers and developers say to the trail consultants: "I don't know what it is, but that's what I want."

A sustainable trail:
- Flows and harmonizes with the landscape
- Lays lightly on the ground and maintains natural drainage patterns to minimize impact and reduce erosion
- Provides resource protection over the long term when properly managed and maintained
- Provides a high-quality recreation experience now and in the long term
- Can be managed and maintained efficiently and cost-effectively
- Minimizes conflicts between stakeholders and other recreationists
- Minimizes political and media controversy by having the right activity in the right place

A sustainable trail does not mean that:
- It is the cheapest trail to construct or the least costly means to upgrade an existing trail to achieve durability
- The trail will not require maintenance since every trail requires some degree of maintenance every year
- The trail will not require adaptive management
- The trail will continue to be sustainable if use patterns or use types change

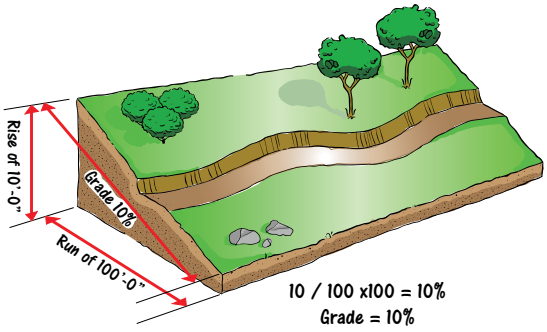
A sustainable trail has constant flow and roll. Tangents are minimized and grade reversals force water off the trail at regular intervals. Flow is the rhythm of the trail, which is usually created by a very curvilinear horizontal alignment. Roll is the vertical rise and fall of the trail grade. Roll also contributes to the rhythm of the trail, but its key role is providing natural drainage points through grade reversals, which significantly reduce the potential for soil movement. Trail hardening is used where needed and a multitude of trail design and engineering structures are incorporated where applicable. The tread is durable and the trail offers a high quality recreation experience within the intended difficulty level without the difficulty changing over time due to unintended degradation.

Horizontal Flow + Vertical Roll = Increased Sustainability

Let's take one more step in this discussion. Listed under *Providing for the Riders' Needs* are hillclimbs, mudding areas, and open areas. How sustainable are these? They may not be, but every trail section or challenge area does not have to be sustainable. The value of the recreation experience may outweigh any potential impacts or the value of the resource may not warrant any special mitigations. The key is that management understands that a trail or area may not be sustainable and makes a conscious decision to manage it that way. There are some steep, gnarly, rutted trails that are going to run water when it rains. Often these are the trails that provide the WOW and are highly valued by the riders. If that runoff does not have direct connectivity to a stream or if that connectivity can be mitigated with something like a sediment basin, management can decide to accept the tread impacts and more frequent maintenance costs, and keep the trail for its recreation value.

This ATV trail rolls and flows with the landscape.

Calculating grade or sideslope



Grade is the vertical rise and fall of the trail. Rolling the grade means frequent transitions from positive (up) grades to negative (down) grades. We also talk about the steepness of the ground referred to as slope or sideslope. Both grade and sideslope are calculated the same way.

3. Develop an Effective Operations and Maintenance (O&M) Program. As stated previously, OHV recreation needs to be managed and this means ongoing management. The trail or trail system needs to be maintained and evaluated on a regular basis, and adaptive management applied in a timely manner to keep indicators from becoming problems (i.e., effective application of the 4Es described later in this chapter). This takes personnel, materials, the proper equipment, and funding. Too often, project planners and developers focus on the design and construction and overlook the critical elements of management and maintenance.

Having shop and storage space, the proper equipment, and skilled personnel are key to an effective O&M program.

For someone new to OHV O&M, it is hard to envision that ATVs, ROVs, or motorcycles will be needed just to access the trails and haul tools and materials where needed. All of these usually require trailers and tow-vehicles to move them around.

The team will also need much of the same equipment and materials needed for non-motorized trails. They will need hand tools and power tools plus signing, fencing, culvert, and barrier materials. They may need a small backhoe, mini-excavator, trail dozer, tracked dumpers, and other equipment. They will need stockpiles of dirt and various gradations of rock, silt fence, filter cloth, and a place to store all of this. Vehicles and equipment always have something broken, so a place for repairs with hoists and tools is also needed. Then, of course, there is the need for personnel trained and qualified to perform the work and operate the equipment. Much of this can be acquired over time while renting, contracting, or using volunteer resources until the O&M program is fully implemented.

Elements of a successful O&M program:
- Multi-year maintenance plan
- Comprehensive management plan
- Dedicated and knowledgeable personnel
- Management commitment at all levels
- Dependable funding
- Positive attitudes
- Pro-active management
- Strong volunteer program
- Adaptive management techniques

Effective Application of the 4Es

The 4Es are the most basic and most essential principles in the successful implementation of an OHV project, or any project for that matter. They are inter-related, co-dependent, and all must be considered and applied to ensure success. They are:
- Engineering
- Education
- Enforcement
- Evaluation

These well engineered signs provide clear, simple and effective education messages

Success will be achieved by utilizing the 4Es in conjunction with commitment, persistence, firm resolution, and hands-on management. It isn't enough to put up a sign and walk away. Signs make good targets or garage wall decorations. It is important to stay in the ring for all 10 rounds. Persistence leads to success. The message will get through.

Engineering happens on the ground. It is applied during trail and facility location, design, and construction. It is using structures for resource protection or mitigation. Engineering is using effective signing, fencing and barriers to control and direct use. It is having proper tools and equipment for operation and maintenance.

Education happens in the mind. It is used to welcome the public, set expectations, inform visitors of the rules and regulations, inform riders of open trails and areas and the allowable vehicle types, and inform the rationale for closed or restricted trails. These messages are conveyed through effective signing, quality mapping, websites, kiosks, conducting complimentary tech checks, and face-to-face communications with the riders. It can be done by managing agency personnel, volunteer trail patrollers, or campsite hosts.

Signing and mapping are the primary media by which management communicates with their customers. Both must be clear, concise, effective, and agree with each other. Properly engineered signs significantly increase rider compliance and reduce the need for the third E: Enforcement. The overwhelming majority of riders want to ride legally. When they get lost or confused due to poor signing or mapping, management has lost control of the use and must live with the consequences.

Effective education results in:
- Improved compliance
- Improved quality of the rider experience
- Reduced conflicts
- Reduced resource impacts

Enforcement happens in the wallet. But it is not just about writing tickets and assessing fines. Effective enforcement uses a variety of tools such as face-to-face communication, warnings, and just being seen. Of course there are those people who only respond to citations and fines. But the majority of the riders feel more secure in areas with visible enforcement and may feel the agency cares about the area. Riders have seen too many riding areas closed due to a few irresponsible people and understand the agency is working to keep these trails open.

Effective enforcement results in:
- Increased compliance
- Increased agency and management visibility
- Less vandalism
- Increased visitor security
- Support for field personnel or volunteers

The area with the least resources is always enforcement. However, by doing a thorough job of engineering and education, the need for enforcement can be vastly diminished, although it can never go away.

A Case in Point…

At the Bear Creek Recreation Site in Kelowna, British Columbia, a major effort was launched to change rider behavior and ethics from go anywhere/do anything to designated routes only and to convert from no rules to spark arresters and 96dbA sound limit required. A trail ranger group was formed by the club and they diligently educated and patrolled every weekend for two years. After that period, the riders who would conform did and the riders who refused to conform knew that the trail rangers had no enforcement teeth. Those riders showed up weekend after weekend and flaunted the rules in the trail rangers' faces. The trail rangers needed enforcement to back them up, but the enforcement was in a different Ministry and protocols had not been established for OHV enforcement. The trail rangers became discouraged and participation waned. The education program was at a critical point and without all of the 4Es, failure loomed on the horizon. Too much had been invested and too much had been gained to risk failure. Riders had sustainable trails, resources were protected, past impacts had been stabilized and rehabilitated, and stakeholders were gaining acceptance. All of this hard work and positive results were about to be negated by the lack of the ability to implement all of the 4Es.

Evaluation tells us what is happening. It tells us how well the managers have achieved the other Es. Monitoring is the component that ties all of the Es together. How is the manager doing? What is working and what isn't? Are the closure and rehab efforts successful? Is the signing effective, fading, shot up, or still in place? Are riders compliant with the rules and regulations? Is there a high level of customer satisfaction? What feedback is coming back from the riders, law enforcement, stakeholders, or general public? Are the erosion control measures in place and effective? Are the trail structures in place, sound, and effective? Is the trail starting to degrade from poor design, lack of maintenance, or increased use?

Tip, Trick or Trap?

Trap: To think an issue, such as enforcement, is one department's issue. If it's a management problem, it's everyone's problem. All 4Es and all personnel must work together.

For the best results, have everyone perform the evaluation. Yes, everyone. Anyone involved in the project site should be involved in the monitoring of the site. This includes the riders, all field personnel, law enforcement, trail patrollers, management, etc.

How often does evaluation occur? At some level, it occurs daily. It is a team effort and everyone should have their eyes and ears open whenever they are on site.

The 4Es are a process of adaptive management. Implement, observe, and then make any necessary corrections in a timely manner. With experience in OHV management and behavior, the observers will be able to predict what will or could occur before a problem or issue even starts. Management then has the unique opportunity to make pro-active adjustments. It's also a process of recognizing reality and understanding human nature. Managers will always be more effective if they can work with human nature rather than against it.

Design and Management Strategies for the 4Es

Here are a few strategies for using all of the 4Es.

- Conduct education prior to any rule changes, closures, or restrictions.
- If there is a trail through an area to be restricted, never close it before an alternative route around the area is open.
- Never just put a fence across a trail to close it.
- Never just put a sign on a trail or off to the side of the trail to close it.
- Don't invest in expensive rehab and native seeding until rider behavior has changed.
- If a sign gets stolen, replace it. If it gets stolen again, replace it again. Persistence and resolution will eventually prevail.

- When tracks appear where they shouldn't be, go back to the 4Es and ask why. Is it errant rider behavior, or is there a problem with trail alignment, signing, or mapping; is the trail not meeting the riders' needs?
- If a closure gets breached, fix it. If it gets breached again, fix it and install more barriers or signs.

Effective Application of the 4Es = Successful Project Implementation = Successful OHV Management

The 3Ds: Dispersal, Dispersal, Dispersal

Dispersing the riders is a key to successful OHV management because it spreads the riders out over a larger area. Why is this a benefit? By providing dispersal, there are fewer riders on any given section of trail. While this can reduce trail maintenance costs and potential wildlife disturbances, it primarily reduces the number of encounters with other riders and enhances the quality of the recreation experience. Like any other trail recreationist, OHV riders value stopping and enjoying the natural environment. OHV recreation is a very social activity, but just because the riders enjoy being with their group doesn't mean that the riders enjoy being with all of the other groups on the trail system.

Having a large acreage to work with and a high-mileage trail system is certainly an advantage in providing the opportunity for dispersal, but dispersal is actually achieved by providing multiple loops or trail junctions. Each trail junction serves as a decision point, a rider can go left or right. The more decision points there are the more effective the dispersal. From a trail planning and design standpoint, the more decision points that can be provided in the proximity of the trailhead or staging area, the more quickly the riders can be dispersed. Even on small trail systems or OHV parks, though the trails may be more concentrated and the available mileage reduced, some level of dispersal can still be achieved by providing more trail junctions. As a general rule, as the opportunity for dispersal goes down, the need for site hardening goes up to increase durability.

Tip, Trick or Trap?

Tip: Having several junctions in the vicinity of the trailhead will disperse riders more quickly

Trail Junctions = Decision Points = Dispersal

Seat Time and Recreation Activity Time

Recreation time is highly valued and often very limited. It is important to understand that OHV recreationists have come to a managed OHV park or trail system to ride. The sooner they can get onto their OHVs and the longer they can stay on their OHVs, the happier they will be (remember: Happy Riders = Happy Managers). Seat time, or riding time, is the primary component of the recreation activity time in which a rider participates or experiences in a given day.

The more seat time, the better the recreation experience. Why is seat time important to the OHV manager? If someone comes to an OHV park to spend 6 hours and they've done everything in 2 hours, what are they going to do for the rest of the time? The same applies to a trail system. Suppose there is a destination trail system with a campground. It will not be uncommon for an ATV group to come and camp for 2 to 5 days over a long weekend. If an ATV rider can ride 50 miles in a day on the trails and there are only 50 miles of trail, there is one day of riding provided. What will the rider do for the other days of their stay?

"Design it like a rifle and they will ride it like a bullet"
– Jim Schmid

More Recreation Activity Time = Higher Quality Recreation Experience

Remember the discussion on providing for the riders' needs. If riders find what they want ON the trail, they won't look for it OFF the trail. Having adequate mileage while still protecting resources is essential, but the other part of the equation in determining seat time is speed. If there are 20 miles of trail and it can be ridden at 20 miles per hour, one hour of seat time has been provided. If the designer is creative and makes the trails tighter, more serpentine, and reduces tread width so that the trails can now only be ridden at 10 miles per hour, the seat time has doubled. The advantages to the OHV manager are obvious. The challenge for the system planner and trail designer then is to maximize the mileage and reduce the speed.

Tip, Trick or Trap?

Tip: Speed causes issues

Reducing speed:
- Increases safety
- Increases seat time
- Reduces tread impacts and maintenance needs and costs
- Generally increases the fun factor and the recreation experience

Reducing the maximum possible speed does not eliminate the challenge or experience for the riders. They can still ride a trail at their fastest possible speed regardless of whether that speed is 2mph or 20mph.

Recreation Activity Time Includes...

- Seat time
- Spectating time
- Learning time (skills building, interpretaton, etc.)
- Viewing time (scenery, wildlife, etc.)
- Socializing time (trail rests, campfire gatherings, etc.)
- Eating time (including picnics)
- Other activities (fishing, group activities such as volleyball, swimming, etc.)

What if the size of the project area or OHV park does not allow for enough trail miles for one or more days? While seat time is important, spending quality time with friends and family in the outdoors also is an important aspect of recreation activity time.

Being able to ride to a desirable destination can extend and enhance the time on the ride. Viewpoints, interpretive sites, cultural or historical sites, ponds, streams, waterfalls, wildlife viewing opportunities, lunch at a lodge, photo opportunities, etc., can all extend and enhance the length of time the riders have with their group. The objective for the OHV manager is to provide sufficient recreation activities for the time the average visitor will spend at the site. OHV parks can do this nicely because they can offer many diverse activities, including trails, a variety of tracks, mudding areas, training and kiddie areas, rock crawl, endurocross and other technical features, play areas or open riding areas, concessions, fishing, and camping.

Tip, Trick or Trap?

Trap: One-way trails increase safety

One-Way Trails

This is a topic that always generates a lively discussion. Riders will often request trails be made one-way. Their argument is safety by reducing the risk of a head-on collision. In theory this may sound reasonable, but the fact is that as soon as riders are on a one-way trail, their speed will go up and their position in the trail will change because they don't have to worry about encountering any oncoming riders. Because riders will change their riding behavior if there is a possibility of another vehicle coming from the opposite direction, a two-way trail can be safer than a one-way trail.

In addition, trails ride differently in different directions. The view is different, the flow is different, and the challenges are different. In essence, having two-way trails doubles the riding opportunity. This is especially important in OHV parks or other areas with low-mileage trail systems. One-way trails should be the exception and not the rule.

That being said, there are places where it is appropriate to have one-way trails. There are two elements necessary to make them work: one is that there be a limited number of controlled access points to the one-way trail, preferably no more than two; the second is the need for increased signing to adequately warn and educate the riders as to the proper direction of travel. With the signing comes an increase in monitoring to ensure that the signs stay in place. Many learner loops and kiddie tracks are one-way. Some most difficult technical trails are one-way since the ground is so technical that encountering a rider coming up an obstacle as another rider is coming down the obstacle could leave no way to stop or pass.

A one-way trail does not guarantee safety or ensure that there isn't a rider going the wrong direction, even with adequate signing. Consider as an example, if a rider starts down a one-way trail and has some type of mechanical or personal issue, human nature will dictate that the rider will take the quickest way back even if that means going the wrong way on a trail. There is always a risk of collisions on OHV trails. However, there are much better and more effective engineering methods to decrease potential impacts with two-way trails than are possible with one-way trails. These other methods have the advantage of keeping seat time greater.

Using Existing Infrastructure: Roads and Trails

There is a tendency among managers to use existing elements in their project area, usually roads and user-created trails. The rationale is that using existing infrastructure reduces ground disturbance by using what is already there; roads and user-created trails were intended for motorized use and therefore they should serve well as designated motorized trails; reduces construction costs; possibly simplifies the environmental analysis and process; and potentially placates project critics. While all of these may be true, there can be adverse effects from a recreation and OHV management standpoint. Most roads were intended to provide a transportation experience, not a recreation experience. Many user-created trails follow the path of least resistance or maximum vehicle stability to get from Point A to Point B, which usually means that they follow the draws or ridges. These are called fall line trails and they are not desirable because they channel water, which leads to scouring, soil movement (erosion), and sedimentation. Many user-created trails just happened, they weren't designed. Many were created by competitive events, so they may satisfy that experience but they do not satisfy the needs of recreational riders. A trap that planners can fall into is to assume that since users made the user-created trails they must provide a quality experience for the users. Some do, but most do not.

Trails and roads that are not properly designed can have unwanted characteristics, giving unwanted results.

Tip, Trick or Trap?

Tip: Create a recreation experience, not a transportation experience

This user-created fall line runs right up the bottom of a swale, so water drains in from both sides and has no place to go except down the trail. As the water gains velocity, it starts to scour the tread surface and carry sediment to the bottom. This is evident by the trench eroded down the middle of the trail.

Many existing roads and trails are likely to be non-sustainable and offer a low or poor recreation experience. This is directly counter to two of the three elements for success: provide for the riders' needs and design for sustainability.

Is the solution not to use existing roads and trails? Absolutely not. Let's be realistic. Most trail systems use existing infrastructure to some degree because it's there and no one can afford to start from scratch. The challenge for the planners is to creatively explore what they have, but not automatically be married to it. The key is separating out the roads, trails, or segments that are sustainable, provide variety, and contribute to a quality experience, and can be incorporated without incurring increased maintenance. Utilizing existing infrastructure can be a useful trick or an expensive trap.

This straight trail following a seismic line does not provide a quality experience

This trail segment has both quality and sustainability

This road provides a recreation experience

This existing trail segment is not sustainable. Being confined to this existing corridor is creating resource impacts.

This road provides a transportation experience

Existing roads can:	Existing trails can:
Be too straight (poor flow)	Be too straight (poor flow)
Be too fast (Reduced seat time)	Be too fast (Reduced seat time)
Be too boring (poor experience)	Utilize the fall line (ruts and erosion)
Have long, sustained grades (no roll)	Have long, sustained grades (no roll)
Have poor drainage (not sustainable)	Have poor drainage (not sustainable)
	Provide inconsistent difficulty (poor experience)

Variety

Variety and its benefits have been mentioned several times in this chapter because it is an important management tool. Riding on the trails is the primary reason OHV riders visit a riding area. Expanding the variety, and thus, the experience adds to the quality of the riders' experience. Planners can expand the variety by adding loops, narrow trails, trails on roads, changes in difficulty, changes in topography and vegetation, youth training areas and learner loops, mudbogs, play areas, or technical challenge courses.

Providing variety is an effective OHV planning and design tool that will help ensure management success.

This rest was during a 'group' ride. It was a beautiful day and a beautiful setting. The different machine types took different routes. They used trails, roads, road to trail conversations; encountered flat terrain and steep terrain; experiences smooth and rough trails; and went through areas of high vegetation and no vegetation. There was great variety and lots of smiles; a WOW experience.

Quality

The final tool is quality. Quality doesn't mean expensive, it means simple, effective, well-maintained, and well-managed trails and facilities that meet the riders' needs. Quality is created when there are trails with adequate mileage, a high fun factor, and creative variety; a simple well-organized kiosk that has maps in the map box; the information on the map matches the signing on the ground; a toilet that looks and smells clean and is stocked with paper and sanitizer; and the trails and the signing look professional and are well-maintained. Quality is the effective application of all of the components of the Great Trail Continuum: planning, design, implementation, maintenance, management.

Breaking News! Always use quality materials (for OHV trail systems)

Need more? Learn more here...

Designing Sustainable Off-Highway Vehicle Trails, Kevin G. Meyer, USDA Forest Service, Technology & Development Program, 1123-2804P-MTDC, 2013

Management Guidelines for OHV Recreation, Tom M. Crimmins, National Off-Highway Vehicle Conservation Council, 2006

A Look Back

Here are some of the OHV management elements discussed in this chapter:
- The need for managed recreation

The three key elements for success:
- Provide for the Riders' Needs
- Design for Sustainability
- Develop an Effective O&M Program

Understanding the riders' needs and desires:
- Fun, fun, and more fun. People recreate to have fun.
- Connect with nature. Find our roots and a simpler existence.
- Escape from society
- Relieve stress
- Physical exertion and exercise
- Challenge for their vehicles and themselves
- A variety of experiences and difficulty levels
- Build camaraderie with friends and family engaged in the same activity
- A sense of belonging to a group
- A legal place to ride and feel welcome
- Enjoy quality facilities: kiosks, toilets, camping, etc.
- Enjoy quality trails, signing, and mapping
- Access to water features, scenic viewpoints, and unique features
- The opportunity to view wildlife

The 4Es: Engineering, Education, Enforcement, Evaluation =
successful project implementation = successful OHV management

Sustainability defined: sustainable trails flow & roll with the landscape
The 3 Ds: Dispersal, Dispersal, Dispersal
Understanding seat time and recreation activity time
The trap of one-way trails
- Using existing infrastructure: roads and trails
- Creating a recreation experience, not a transportation experience
- Variety = high-quality recreation experience = successful OHV management
- Quality = control = effective OHV management