Principles of Effective Trail Management

The 4 Es

The 4 E's

Engineering

Education

Enforcement

Evaluation

Engineering

Happens on the ground

Education

Happens in the Mind

Enforcement

Happens in the Wallet!

Evaluation

What is Really Happening?

The 4 E's

- **They are inter-related and co-dependent**
- **None can successfully stand alone**
- **Success is possible only if we effectively apply all 4 E's together**

1. Engineering

Applying Engineering

- Trail and facility design and construction
- Structures for resource protection or mitigation
- Signing
- Maintenance
- Equipment

Engineering structures that can help mitigate impacts

- Bridges
- Cattleguards
- Puncheon
- Turnpike
- Trail hardening
- Rolling Dips
- Retaining walls
- French drains
- Culverts
- Fencing, Barriers
- Effective Signing

Signing:


REQUIRED TO RIDE
ATV STICKER
SPARK ARRESTER
SILENCER (MAX 96db)
PLEASE
STAY ON THE
DESIGNATED ROUTES
THE FUTURE OF
THIS TRAIL SYSTEM
DEPENDS ON YOU
VEHICLE TRAVEL
OFF DESIGNATED
ROUTES/AREAS
IS
PROHIBITED
MAPS
ROAD 25 STAGING AREA
MAPS

Signing Needs to Be Clear and Simple!

Signing- Needs to be Clear!

What's Wrong Here?

Maintenance

Hand Maintenance

Equipment Maintenance

All of These Require Proper Engineering

How can enthusiasts help with Engineering?

- **We can provide input to system planning & design**
- **We can help with construction operations**
- **We can help build structures & barriers**
- **We can help install signs**
- **We can help perform maintenance**

A Volunteer Tractor Operator

Education

Education Tools

- Quality mapping
- Portal signs, kiosks, route signs
- Public contacts
- Interpretation
- Printed materials
- Websites

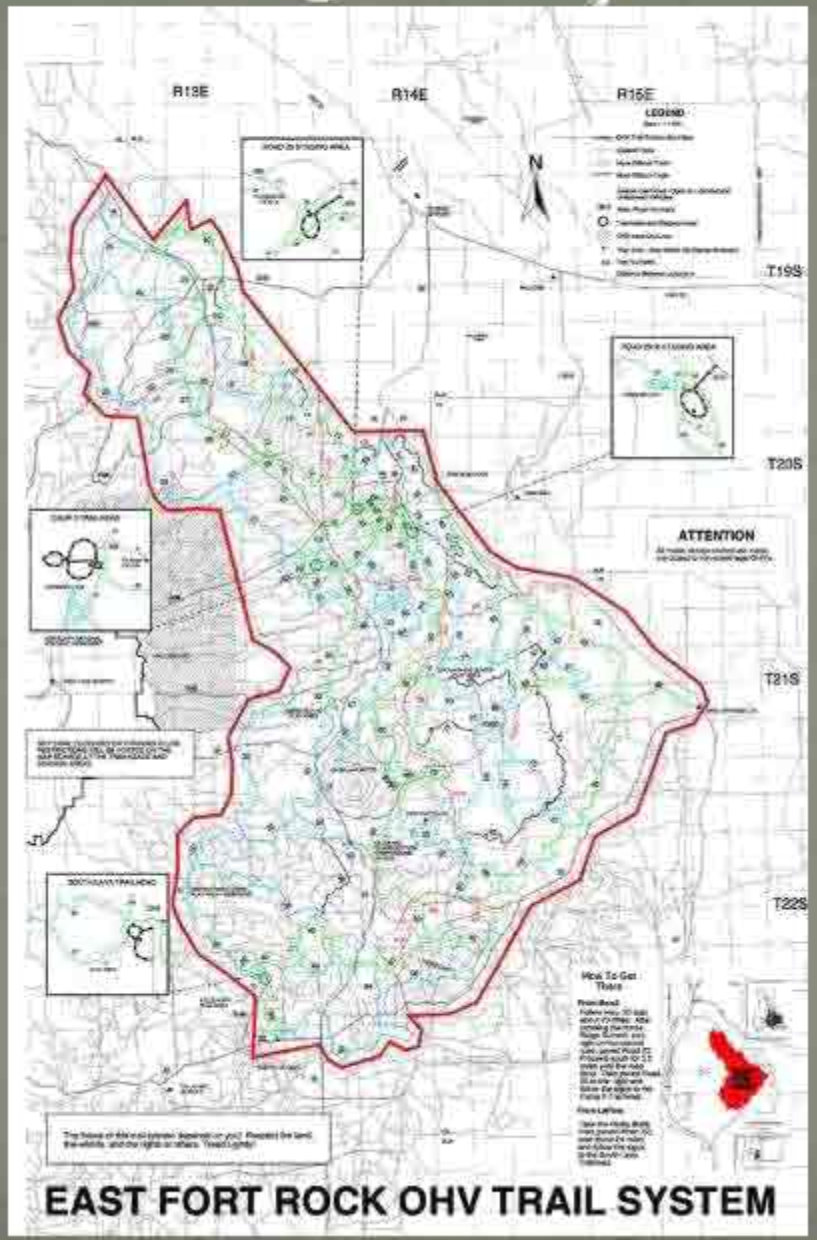
Education Results

- Set Expectations
- Inform Visitors of Rules & Regs
- Improve compliance
- Improve quality of experience
- Reduce conflicts

Set Expectations

Inform of Rules & Regs.

Provide Quality Maps



Initiate Public Contacts

Volunteer Trail Rangers

Trail Rangers at Public Events

Education Targeting the Youth

Provide Interpretation

How can enthusiasts help with Education?

- **We can become volunteer Trail Rangers**
- **We can apply peer pressure**
- **We can inform ourselves & others about responsible rider ethics**
- **We can help install & maintain signs**
- **We can help distribute maps & other educational information**

Enforcement

Enforcement Benefits

- **Increased Compliance**
- **Increased Agency Visibility**
- **Reduced Vandalism**
- **Increased Sense of Visitor Security**

How can Enthusiasts help with Enforcement?

- We can apply peer pressure
- We can inform officials of problem situations
- We can educate ourselves & others of technical & legal requirements
- Where allowed, we can do ride-alongs with Law Enforcement Personnel

If we have done a poor job engineering and a poor job educating,

We will have enforcement problems and resource impacts

Evaluation

What Do We Evaluate? (Monitoring)

Program Effectiveness

Visitor Satisfaction

Resource Protection

Are we meeting resource objectives?

Are the trail structures effective?

Are the rehab efforts successful?

Are the resource protection measures effective?

Are we providing a high level of user satisfaction?

Are We Getting Compliance?

Are Renegade Trails Developing?

How can enthusiasts help with Evaluation?

- **We can help by being the "eyes & ears" for the agency**
- **We can help perform monitoring**
- **We can help correct problems**

What's Wrong Here?

Some Solutions Are Simple!

The 4 E's

Engineering

Education

Enforcement

Evaluation

The 4 E's

Effective Application of These Basic Tools =

Sustainability =

The Big E

Environmental Protection

Great Trails:

Providing Quality OHV Trails and Experiences

A
NOHVCC
PUBLICATION

NOHVCC
National Off-Highway Vehicle Conservation Council

Caveat

A) A warning
B) Indentation
C) Exception
D) Dessert

A) A Warning

Caveat [kav-ee-at, kah-vee-at]

noun

1. A warning or admonition

2. Law. A legal notice to a court or public officer to suspend a certain proceeding until the notifier is given a hearing: *"a caveat filed against a probate of a will"*.

origin

Latin: let him beware

Most often used in the US as caveat emptor (buyer beware)

What Does Sustainable Mean?

- **The trail provides resource protection**
- **The trail can be operated & maintained efficiently and cost-effectively**
- **The trail will continue to enhance the recreation experience**
- **It does NOT mean that it is the cheapest trail to build**
- **It does NOT mean that the trail will not require maintenance**

Four Aspects of Sustainability

Resource Sustainability

Economic Sustainability

Experience Sustainability

Political Sustainability

Provide for the Users' Needs

- Understand the Users
  - Who are they
  - What do they want?
- Identify our Niche
  - What can we do the best?
  - Can't have every use on every acre
  - Must provide resource protection
  - Must have balance

Who Are OHV Recreationists?

Mom, Dad & the Kids

4WDs on a Technical Trail

ATVs on a Club Ride

Single-track Riders

They are:

- Well Educated
- Incomes higher than the national average
- Access the internet more frequently than others

The percentage of female riders is rising rapidly





And so are the number of riders who are 50 years of age or older

OHV riders seek the same opportunities and experiences as any other recreation group

Why do we ride?

- Personal Challenge
  - Sense of Accomplishment and achievement
- Excitement
- Adventure
- See what is around the next bend
- Physical fitness
- Camaraderie

Riding is fun!

Spend time with family and friends

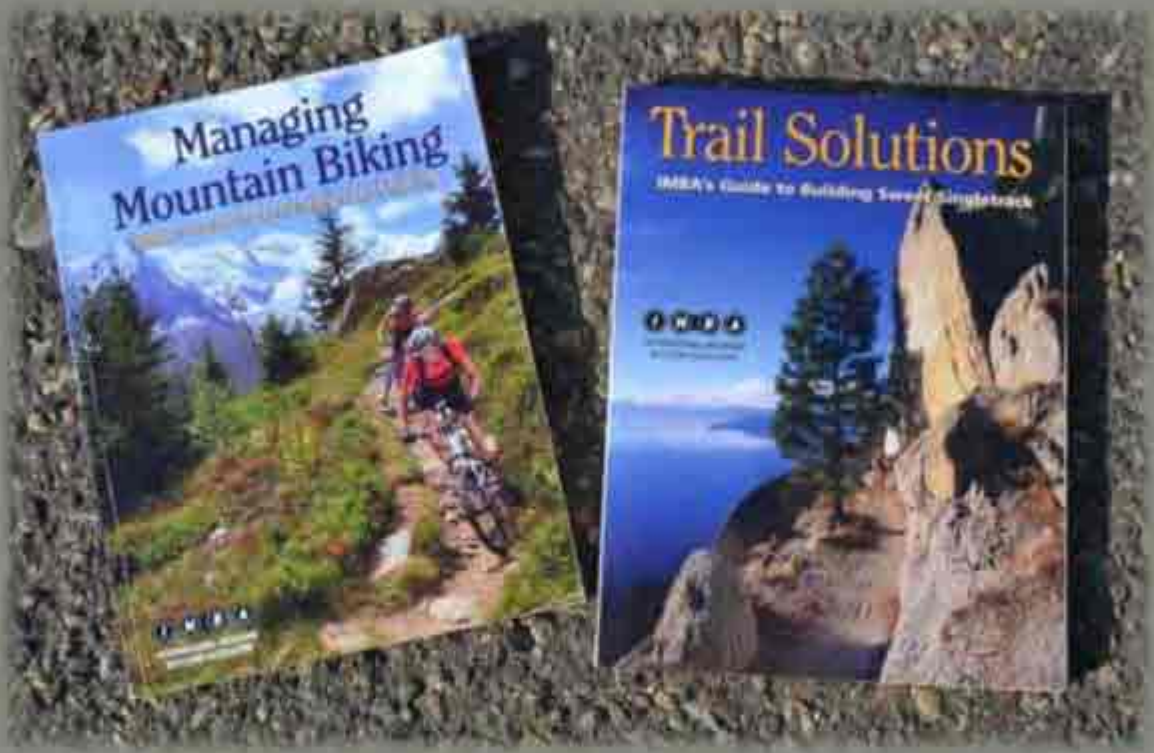
Enjoying Nature

Trail Design Basic Principle #1

People come to public lands or park to have fun and

THEY WILL HAVE FUN

Why do we need a guide?



Why do we need a guide?

- To Provide OHV Specific Design Guidelines
- OHV Best Management Practices
- OHV Tools & Techniques

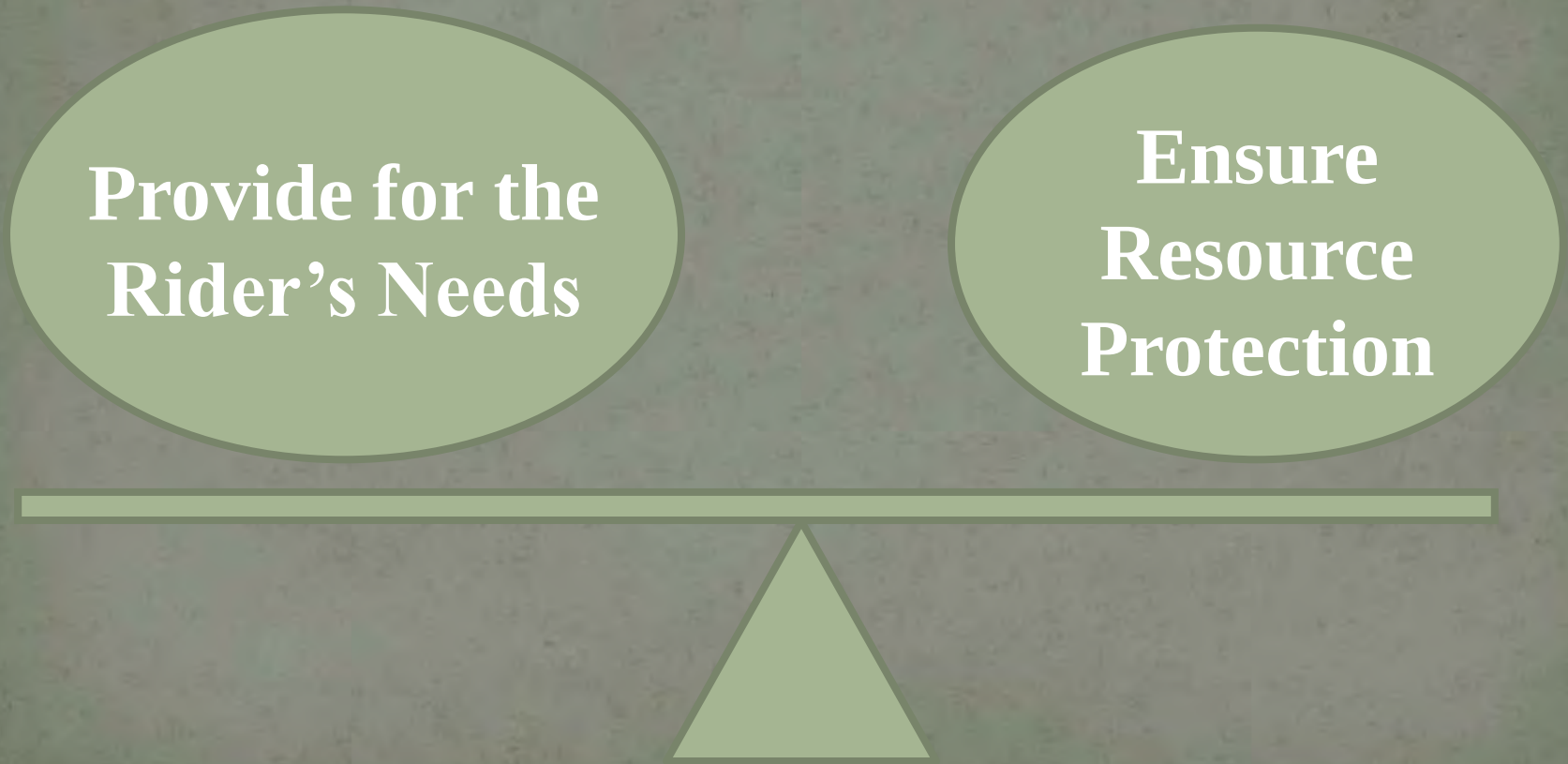
Target Audience

- Trail managers – 1st and foremost
- State/Provincial Agencies
- Federal Agencies
- Local communities
- Private clubs
- Non-profits

Contents

- Focus on OHVs: OHMs, ATVs, 4x4s, and ROVs (Side-by-Sides)
- Trail Planning
- Trail Design
- Facility Design
- Trail Construction
- Program Management
- Trail Maintenance

Theme



Elements of Great Trails

Planning
Design
Construction
Maintenance
Management

One Process, Not Five

=

Great OHV Trail

Part 1: The Building Blocks

CHAPTER ONE

Principles of Successful OHV Management

While the primary focus of this book is design and implementation, the process of creating great OHV trails starts well before that. Let's begin by reviewing some fundamental principles of OHV management since these principles need to be carried through planning, design, and implementation.

1. 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 gone. The ostrich approach to management will not work and all it creates is a time bomb waiting for the right catalyst to explode. Unmanaged OHV recreation can lead to a maze of user-created trails, unacceptable resource impacts, poor recreation experiences, conflict with stakeholders or other recreationists, volatile community and media relations, and litigation. The target of most of this negativity is usually the group of riders who really just want a place to ride and to be left alone. Too often, the result of all of this 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. All of this is positive and the result often leads to continued or enlarged riding opportunities. As stated in the Foreword, a motivation and a benefit from recreation is an escape and a release. Endorphins are released as well as adrenalin and the mind and body can become supercharged. Add in a performance vehicle and the effect can be doubled. All of these feelings are good and beneficial, but they need to occur in a managed setting, not an unmanaged setting. Certainly, two questions that arise from readers 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." Let's read on to answer the second question.

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 and there was a maze of user-created trails, hillclimbs, significant resource impacts, angry stakeholders, upset residents, and the community and media were up in arms. It was an ugly, but not uncommon situation. What was unusual was that the local club, the Okanagan Trail Riders Association, saw the handwriting on the wall and started taking action by seeking advice from consultants. 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, there were 224kms (139 miles) of sustainable designated trails, a trail ranger program, a camp host program, a massive closure and rehabilitation effort had been done, riders were compliant with sound and spark arrestor 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...

Bear Creek Today...

2. The Three Key Elements for Success. To create any trail, trail system, or OHV park, there are three key elements for success: **a) Provide for the User's Needs; b) Design for Sustainability; and c) Develop an Effective Operations & Maintenance (O&M) Program.**

made barriers are used to protect the alignment, the designer is forced to flag in a very lazy S that is close to straight. This increases speed, increases impacts, and decreases seat time. **Vegetation is your friend.**


This fall line trail cannot drain, is not fun to ride, and is not in harmony with the natural landscape. Trails need to lay lightly on the land, not conflict with it.

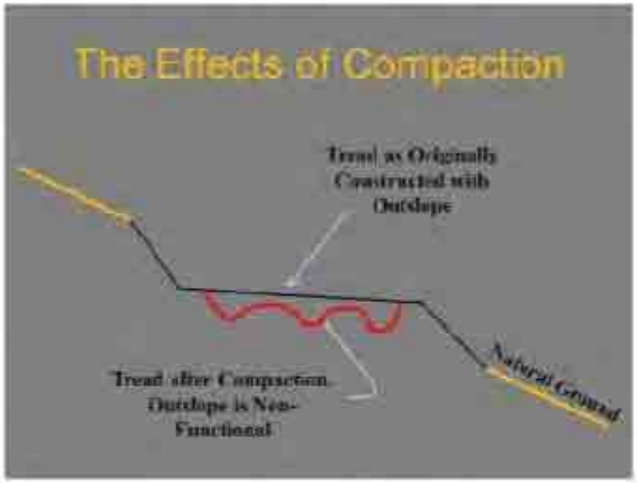
Trails through meadows fall into this category, but trails through recently harvested cut blocks or through recent burns do not. The natural environment is dynamic, not static. Change is a given. The planner and designer must visualize how a denuded area will look in 2 years, 5 years, 15 years. Depending on the growing environment, the pace of recovery can be amazingly dramatic. We'll talk more about meadows and open areas later on.

Tip, Trick, or Trap?

Trap: **Do Not Fall for Fall Line Trails- They Will Fail**

We've said this before, but it's worth repeating since it is so important- avoid **fall line trails**. They generally have sustained (long, unbroken) grades and poor drainage so water is channeled down the trail. It usually requires man-made structures to provide drainage and these cost more to construct, more to maintain, they decrease the rider experience, and they can fail in a significant weather event. Unfortunately, we live in the real world, not the ideal world, so sometimes in technical terrain with tightly spaced controls on each side, the only option is to use the fall line. In

The Interaction of Compaction and Displacement. Now with a brief understanding of the forces being applied, let's talk more about compaction and displacement. When the tires from OHVs are put on a newly constructed trail, compaction will start almost immediately and this will cause the trail tread to sink. Naturally, the compaction will occur the most wherever the tires are the most. For a single track OHM trail, the compaction will be mostly in the center of the trail, but on an ATV/ROV/4WD trail, the compaction will create two ruts near the shoulders of the trail. Over time, the entire compacted tread will be lower than the surrounding ground.



Why is this important to know? If the tread was constructed with outslope, water will no longer come down the slope and sheet across the trail as originally designed. The water will now be trapped in the rut(s) of the trail and will either collect on the trail or run down the trail.

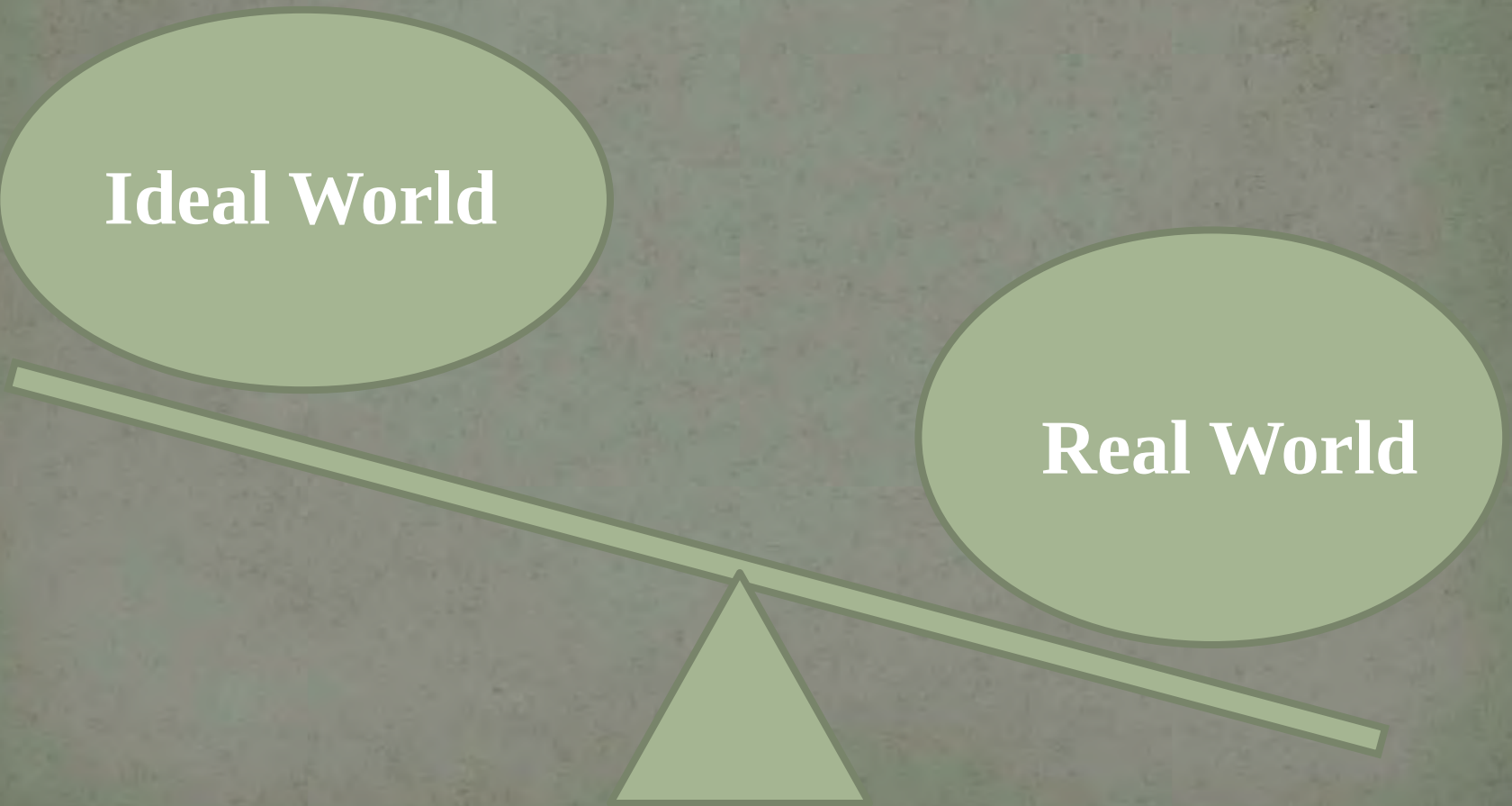
As compaction occurs, the soil particles in the tread become packed together tighter as voids become filled with finer material. What this does is make the tread surface less impervious, so now water is less likely to be absorbed into the tread. Instead, water will run down the tread and there will be more of it since it is not soaking in. As the grade increases, the velocity of the water will increase which will increase the likelihood of scour or erosion.

The designer must recognize that these actions will occur and plan to force the water off at regular intervals through kicks, rolling dips, or best of all, grade reversals.

On flat ground, the compaction will cause water to pond up in low areas. If the trail is not confined by vegetation or topography, riders will tend to go around these ponds and thus widen out the trail tread and create trail braiding.

Once all of the voids are filled and the tread is consolidated, compaction will cease unless the vehicle type changes. ROVs are a fast-growing market, but where do we put them? If we put them on an ATV trail, we could be changing the forces applied to that trail by having vehicles

Mitigating What You Have



Timeline

1. Establish project team > summer 2012
2. Prepare work plan > summer 2012
3. Prepare table of contents > summer 2012
4. Begin writing > winter 2012/2013
5. Develop pic/graphic needs > summer 2013

Timeline

6. Complete writing > winter 2013/2014
7. Review, edit > summer 2014
8. Compile graphics & pics > fall 2014
9. Distribute 1st draft > winter/spring 2015

Distribution

- On-line information
  - Live links to additional photography, videos, websites
  - Easily updated
  - Printable as a pdf
- Printed book – desk reference
- Pocket size field guide for trail staff

Funding

- Our goal - diverse sources of funding
- Initial funding from
  - NOHVCC
  - MIC
  - SVIA
  - ROHVA
  - FHWA
  - MMIC
  - Kawasaki
  - AMA
- Additional funding from various sources including many State RTP grants

www.nohvcc.org