Review of Access Management Strategies and Tools

Summary of Report

Prepared for:
Foothills Landscape Management Forum

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About the Foothills Research Institute

A partnership of government, industry, local communities, public interest groups and academia, the Foothills Research Institute (FRI) conducts research on the cultural, ecological, economic and social values of Alberta's forests. Focusing on its core study area, comprised of 27,500 square kilometres in west-central Alberta, the Institute generates knowledge and tools that contribute to the sustainable management of Alberta's foothills forests.

About the Foothills Landscape Management Forum

Established in 2005 as the Caribou Landscape Management Association, the Foothills Landscape Management Forum operates as a program under the auspices of the Foothills Research Institute. A partnership with thirteen members, including an Aboriginal community and forest and energy companies operating in the area of the Little Smoky and A la Peche caribou ranges, the Forum is involved in initiatives that facilitate integrated land management in Alberta's Foothills forests.

About the Consultant

Eos Research & Consulting Ltd. is an independent consultant working on strategic environmental, regulatory and sustainability issues, providing analysis, advice and management of key risks and opportunities. Richard Williams is the Principal of Eos.

Acronyms and Abbreviations

AMP	Access Management Plan
ALCES	Alberta Landscape Cumulative Effects Simulator
ASRD	Alberta Sustainable Resource Development
ATV	All Terrain Vehicle
BLM	(U.S.) Bureau of Land Management
CAMP	(B.C.) Coordinated Access Management Planning
CAPP	Canadian Association of Petroleum Producers
CFR	(U.S.) Code of Federal Regulations
CIRL	Canadian Institute of Resources Law
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPAWS	Canadian Parks and Wilderness Society
ENGO	Environmental Non-Governmental Organization
FDP	(B.C.) Forest Development Plan
FLMF	Foothills Landscape Management Forum
FLUZ	(Alberta) Forest Land Use Zone
FMA	(Alberta) Forest Management Area
FRPA	(B.C.) Forest and Range Practices Act
GSMG	Ghost Stewardship Monitoring Group
ILM	Integrated Land Management
IRP	Integrated Resource Plan
KSF	Key Success Factor(s)
LRMP	(B.C.) Land and Resource Management Plan(ing)
NGO	Non-Governmental Organization
NOHVCC	(U.S.) National Off Highway Vehicle Conservation Council
NPS	(U.S.) National Park Service
OHV	Off Highway Vehicle
ORV	Off Road Vehicle (see also OHV)
ROW	Right-Of Way
SAGD	Steam Assisted Gravity Drainage (production of heavy oil/bitumen)
SRD	(Alberta) Sustainable Resource Development
SRMP	(B.C.) Sustainable Resource Management Plan
SUV	Sports Utility Vehicle
TDA	Timber Damage Assessment
USFS	United States Forest Service

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1. Introduction

Eos Research & Consulting Ltd. provided the report on which this summary is based as part of the requirements of a contract with the Foothills Research Institute for the review of *Project Tools for Access Management*. The review was funded by the Energy Partners to the Institute and directed by the Foothills Landscape Management Forum (FLMF). The review is explicitly focused on how access was and could be managed on public lands.

At the start of this review, the FLMF posed four questions for the consultant to answer:

- *How is access management done?*
- *How is it adopted?*
- *What regulatory and non-regulatory tools are employed?*
- *How effective are they?*

To answer the questions, over the past five months, Eos has completed a literature review, interviewed experts in government, industry, academia and among public user groups, and undertaken a survey of public land managers, users and other interested parties. While the work has focused on three principle jurisdictions, including Alberta, British Columbia and U.S. federal lands, documents and information from other parts of Canada, the U.S., Australia, New Zealand and the United Kingdom have also been reviewed.

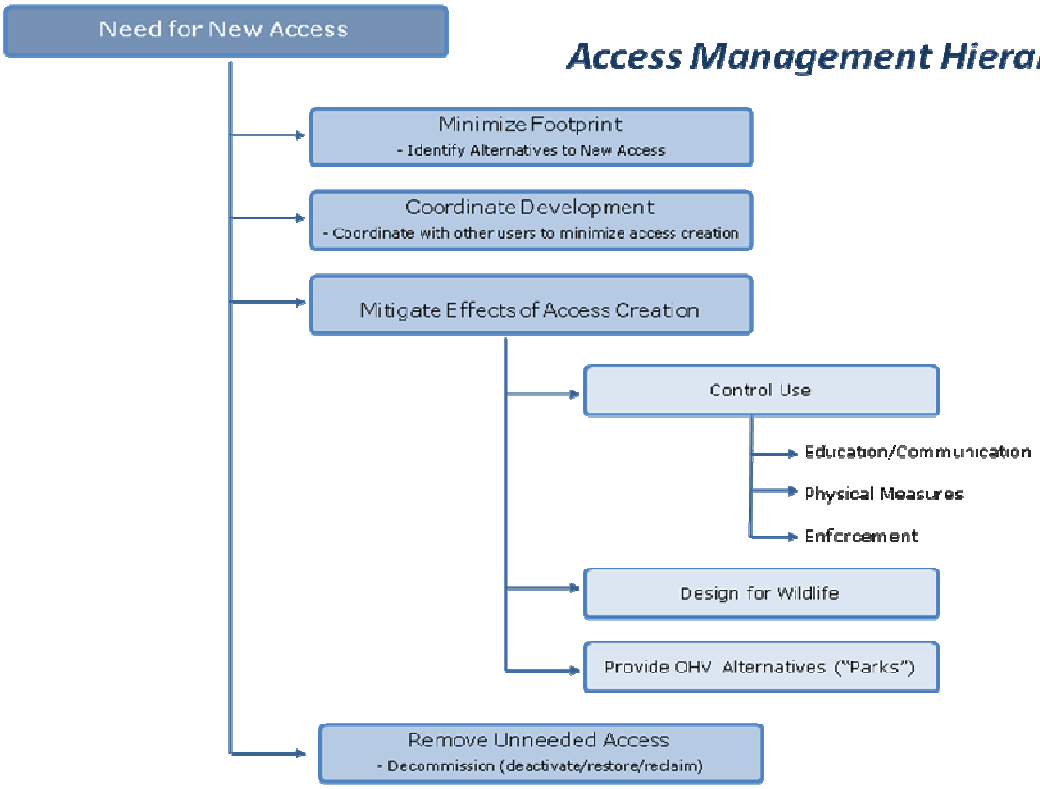
At the end of the work, perhaps the overriding lesson is that access management is one of the most difficult land use planning problems. This is particularly true when the objective involves denying public users access to existing routes. That being said, the following answers are offered in response to the original questions:

How is access management done?
Done well, access management involves an integrated system that includes clear goals and objectives, planning, communication, physical measures, enforcement, performance measurement, monitoring and review.

How is it adopted?
Access management is usually adopted as the result of a planning process that strives to balance a range of competing interests.

What regulatory and non-regulatory tools are employed?
The tools employed by jurisdictions wanting to manage access on public land range from legislative tools such as Alberta's Public Lands Act to physical measures such as gates and road decommissioning.

To better understand how at least some of these tools relate to each other, the consultant has proposed the following hierarchy as a mechanism for making decisions about what types of tools to employ.



A Hierarchy of Access Management Options.

How effective are they?
All of the tools provide some level of effectiveness in the right situation. However, effectiveness appears to be closely correlated to the setting in which tools are applied and, to the supporting measures that they are adopted in combination with. For example, a gate is more effective if employed in a physical setting that does not permit traffic to easily detour around it, where the reason for its presence is explained in terms that relate to users' interests and where there is some level of enforcement to reinforce its purpose.

The balance of this summary provides more fulsome answers to each of the questions as well as a summary of the lessons learned and the consultant's recommendations, and is organized into sections addressing the following elements:

- *Regulatory frameworks for access management;*
- *Planning;*
- *Communications/Education;*
- *Physical measures;*
- *Enforcement.*

2. Regulatory Frameworks

While the review examined a wide range of jurisdictions, extensive information and experience with access management was most apparent in Alberta, B.C. and with respect to U.S. federal lands. The issues facing each of these jurisdictions are summarized below.

Table 1. Access Management Issues.

Jurisdiction	Issues
Alberta	• High level of oil & gas activity in Foothills/northern Alta.; • Growing numbers of recreational users; • With significant resources of oil sands, timber and both conventional and non-conventional (e.g. coal bed methane, shale gas) oil and gas, focus is on continued road development and sustained use of the existing resource road network.
British Columbia	• Focus is on continued road development; • Mountain pine beetle infestation and oil & gas; • Creating commercial recreational opportunities.
U.S. Federal Lands	• Tidal wave of recreational users; • More roads and trails than can be maintained; • In the Pacific NW, hydrological integrity is a significant concern; • Focus is on reducing road inventory; • Growing oil and gas development in Rocky Mountain states.

The regulatory frameworks governing (or not) access to public lands in each jurisdiction are summarized in Table 2, below.

Table 2. Regulatory Frameworks for Access Management

Jurisdiction	Basis of Regulation	Effectiveness
Alberta	• Public Lands Act o Disposition and Fees Regulation • Forest Reserves Act o Forest Recreation Regulation • Land Use Framework	• Sustainable Resource Development (SRD) is the principle land use manager for public lands; • Least developed framework of the three jurisdictions; • Forest Land Use Zones (FLUZ) generally seen as most effective legislative tool, but; • There is a lack of consistency between FLUZ; • Ineffective regulation of access outside of FLUZ; • Will Land Use Framework address shortfalls?
British Columbia	• Land Act o Land Use Objectives Regulation • Forest & Range Practices Act o Forest Planning and Practices Regulation o Forest Recreation Regulation • Wildlife Act o Public Access Prohibition Regulation • Motor Vehicle (All terrain) Act	• Canadian Institute for Resources Law describes BC's regime for managing public lands as the most chaotic of the three western provinces. • "a myriad of provisions for managing access in numerous statutes and regulations"; • Agencies and stakeholders indicated respect for Land and Resource Management Planning processes; • BC appears to be retreating from

Jurisdiction	Basis of Regulation	Effectiveness
	• Muskwa-Kechika Management Area Act	requirements to access management; • Resources Road Act withdrawn in June 2008.
U.S. Federal Lands	Executive Orders • Executive Order 11644 (1972) • Executive Order 11989 (1977) U.S. Forest Service • 36 CFR 212 – "Travel Management Rule" • Other regulations including 36 CFR 261 and 36 CFR 295 • Forest Service Manual 2355 - ORV[1] Management • Forest Service Handbook Bureau of Land Management (BLM) • Federal Land Policy and Management Act • 43 CFR, Parts 1600 and 8340 • National Management Strategy for ORV Use on Public Lands • BLM Land Use Planning Handbook National Park Service • Wilderness Act • Alaska National Interest Lands Conservation Act • 36 CFR, Parts 1.5, 4.10, 4.30 and 13 • 43 CFR, Part 36 • Management Policies, 2006	• Well developed, comprehensive framework, but; • More roads than budget to maintain; • Agencies appear to have been slow to act on initial executive direction; • BLM faced with difficult setting (unforested, open lands); • Questions about "*whether BLM and Forest Service are able to properly manage this [OHV] use*"[2]; • Difficult circumstances have complicated implementation.

[1] Off-highway vehicles are also commonly referred to as off-road vehicles (ORV's). While different publications may distinguish between ORV's and OHV's, in practice the terms appear to be used interchangeably. In this report, OHV is used throughout and refers to the full range of potential motor vehicles affecting public lands, including 2WD passenger vehicles, 4WD passenger vehicles, ATV's, motorcycles and snowmobiles.

[2] Statement from Chair of June 2008 US Senate Hearing into OHV use on U.S. public lands.

3. Access Management Planning

Planning is sub-divided into a number of different types for the purposes of discussion. However, in practice the different approaches have more similarities than differences.

Table 3. Representative Planning Initiatives.

Planning Type	Initiative
Pre-Tenure Planning	**Muskwa-Kechika Management Area (B.C.):** The Muskwa-Kechika consists of 1.6 million hectares of park lands and 4.7 million hectares of special management zones. To-date, five pre-tenure plans have been completed and access management is integral to each plan, including designating corridors and conditions of access. With little development in the area to-date, success remains to be determined.
	Roan Plateau (Colorado): In August 2008, BLM put approximately 74,000 acres up for lease on the Roan Plateau. Bidders were notified that only "*phased and clustered ridgetop development*" would be allowed, i.e. leases will be developed ridge-by-ridge with only one operator per ridgetop, development confined to existing corridors and wells restricted to multi-well pads ½ mile apart. Only 1% of the plateau will be developed at any one time and motorized travel limited to designated routes.
Coordinated Operational Planning	**Kakwa-Copton Industrial Access Corridor Plan (Alta.):** In a two year process beginning mid-2004, 11 oil and gas companies and two forest tenure holders worked with SRD to develop the plan. Participants estimate future road development will be reduced by 50% versus conventional development. Key to success was participants' sharing of confidential information through a third-party, Silvacom Ltd.
	Berland-Smoky Access Plan (Alta.): Started as the Caribou Landscape Management Association, the FLMF completed an Integrated Industrial Access Planning Process (IIAP) in 2008. Driven by concerns for regional caribou herds, the plan was developed by 13 FLMF members. The plan is estimated to reduce future road development by 30% versus uncoordinated development and includes annual monitoring.
	Al-Pac Surmont (Alta.): Al-Pac initiated two programs in its 5.8 million hectare Forest Management Area: (1) waiving Timber Damage Assessment payments on seismic lines less than 2.5 m in width, and (2) publishing a map of planned permanent haul roads as a basis for integrated planning. Al-Pac estimates 2500 km of narrow seismic lines were developed 2001 – 2003 and that integrated planning could reduce road development by 34% over 30 years with cost savings of $1 million.
	Canadian Forest Products, Grande Prairie (Alta.): Canfor has signed non-binding agreements with Suncor and Conoco-Phillips to cooperate in its Grande Prairie FMA. Canfor assists Suncor with timber inventories and forestry expertise, Suncor has assisted Canfor in meeting forest certification requirements and reforestation efforts.
Integrated Resource Planning	**Castle River (Alta.):** Completed in 1992, the Castle Access Management Plan is earliest access initiative in Alberta. Although, a FLUZ was imposed on the area in 1998, a 2003 review commented that: "*five years after it received legal status, there remains widespread concern in some government agencies and among a broad range of stakeholders, that the Government of Alberta is still not effectively managing motorized access in the Castle".* Since 2000 Shell Canada has implemented a successful program in the southeast canyons of the Castle, gating roads, closing un-needed roads and committing to "*no net new access".*

Planning Type	Initiative
	Ghost-Waiparous (Alta.): An hour's drive from Calgary and its population of more than one million, recreational use and user conflicts led government to initiate development of an access management plan in 2002. The final plan was approved in 2005 and a FLUZ created in 2006. While the plan increased designated trails from 189 to 600 kilometres, local ENGO's appeared to cautiously support it when first announced. Problems with uncontrolled recreation activities may be improving.
CAMP, etc. in B.C.	**Coordinated Access Management Planning (CAMP):** Developed by Ministry of Forests in the early 1980's, CAMP was an early multi-party approach. Before the Forest Practices Code, planning was voluntary. Afterwards, access management was required as part of Forest Development Plans. The Forest and Range Practices Act which replaced the Code requires none of this. In 2005, the Forest Practices Board commented that: "*Access management planning, and opportunities for public involvement .... have been significantly reduced in the last 10 years. .... The lack of effective access management planning means the public does not have an opportunity to address specific access issues and concerns."*
	Southeast B.C. Strategic Resource Management Plans: Three SRMP's responding, in part, to the province's *Commercial Recreation on Crown Land Policy,* have been developed in the Kootenay-Boundary Region of B.C., including: - Cranbrook West Recreation Management Strategy (approved April 15, 2005); - Golden Backcountry Recreation Access Plan (approved July 31, 2003); - Southern Rocky Mountain Management Plan (approved August 28, 2003). Plans are consensus-based, voluntary and supported by a stakeholder advisory committee.
USFS Travel Management	In response to the Travel Management Rule, Forests must designate roads and trails open to motor vehicle use by class of vehicle and, if appropriate, by time of year. Once published on a Motor Vehicle Use Map (MVUM), any motor vehicle use off the designated system is prohibited. The planning process is guided by the Forest Service Manual and Handbooks. Within that framework, individual Forests have significant latitude in how they meet the requirement. All Forests must meet the requirement by 2010 (45% had completed it by end of 2008). Comments regarding both Forest Service and BLM Travel Planning suggest that some participants feel that it is often too focused on motorized users, losing sight of other users.

Goals, Objectives and Performance Measures

A key planning element often not addressed among access initiatives is performance measurement and monitoring to ensure goals and objectives are met. Among the few initiatives that did explicitly include monitoring and performance measurement were the Berland-Smoky Access Plan (Alta.) and the Greater Yellowstone Area Grizzly Bear Strategy. The lack of performance measurement/monitoring has been noted by others, e.g.:

"*even after thousands of kilometres of roads have been removed, there is an alarming lack of published analysis of the effectiveness of these efforts ....*" [3]

[3] Switalski, T.A., J.A. Bissonette, T.H. DeLuca, C.A. Luce and M.A. Madej, 2004. Benefits and impacts of road removal. Frontiers in Ecology and the Environment, Vol. 2, No. 1, (Feb 2004): 21-28.

4. Mitigating Access

Once the decision to construct a road or ROW has been made, the focus of effort shifts to mitigating its effects. Four aspects of mitigation are examined below, including:

- *Communication (including Education);*
- *Footprint reduction;*
- *Physical controls that block use of access of corridors;*
- *Other means of mitigating the development of access (i.e. road design, closure timing, etc.).*

4.1.Communication/Education

This review concluded that successful access management needs the support of a comprehensive communications approach. Communication, has four roles, including:

- *Users need to understand what they must do to comply;*
- *Compliance appears to be best when users understand why they should comply;*
- *Education is needed to overcome entrenched attitudes and patterns of use; and*
- *Public lands managers need feedback about users views and about what works.*

While there is a wide range of potential tools, the survey focused on four.

Table 4. Effectiveness Ratings for Various Communications Tools.

Measure	No. People Ranking	Mean Rank	Relative Rank
Signs	29	2.90	1
Newspaper ads or notices	24	1.83	4
Providing maps & brochures	27	2.78	2
OHV licensing	15	2.2	3
Other	17		

Respondents also identified engaging user and/or OHV groups, information kiosks, posting fines for non-compliance on signs, public stewardship or steering groups, third-party education programs such as *Tread Lightly* or *Shifting Gears and e*ducation (for users and for public land managers) by the (U.S.) National Off-Highway Vehicle Conservation Council.

Generally, a comprehensive, strategic approach to communicating access management matters appears lacking in all of the jurisdictions examined.

4.2.Footprint Reduction

Respondents emphasized footprint reduction as the first level of consideration for managing access, taking the approach that the easiest access to manage is that which is not created. Examples of pre-development planning, a significant footprint reduction tool, were examined (see above). More broadly, a comprehensive review of footprint reduction

opportunities was completed for CAPP in 2004[4] and in the U.S. BLM has developed extensive guidance materials for managing effects of oil and gas exploration and development on public lands[5].

4.3.Physical Controls

Where roads must be developed, physical closure measures can provide an important means of mitigating their effects.

Prior to this review, commentary on physical access measures and their effectiveness was limited to four sources, including Axys (1995), Golder (2007), Platt (1993) and Rowe (2008). Platt (1993) provided the most objective assessment (although, limited in scope), based on on-the ground inspections of road closure measures in the Cabinet-Yaak Grizzly Bear Ecosystem. Assessments by Axys (1995) and Golder (2007) were based on surveys of "experts" in government and industry, primarily in Alberta. (The current survey attempts to broaden the geographic scope of assessment and engage public land users, but remains essentially an opinion survey.)

The following table compares the rankings of specific control measures developed in each of the four assessments.

Table 5. Relative Effectiveness of Access Management Measures.

Access Management Measure	Review Source			
	This Review (2009)	Golder[6] (2007)	Axys[7] (1995)	Platt[8] (1993)
Manned gates	1[9]	4	2	
ROW re-contouring	2		2	
Rollback	3	1	1	
Road Deactivation	4	3	4	
Directional Drilling & Boring	5	5		
Unmanned gates	6	11	6	2
Removal of Stream Crossings	7	2		

[4] R. McManus Consulting et. al., 2004. Evolving Approaches to Minimize the Footprint of the Canadian Oil and Natural Gas Industry. Prepared for the Canadian Association of Petroleum Producers, December 2004.

[5] BLM Best Management Practices webpage: http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html

[6] Golder Associates, 2007. Audit of Operating Practices and Mitigation Measures Employed Within Woodland Caribou ranges. Submitted to Caribou Landscape Management Association, Peace River, Alberta, February 2007. Note: Golder ratings modified to provide a single ranking.

[7] Axys Environmental Consulting Ltd., 1995. A Compendium of Physical Access Control Measures for Roads and Other Rights-of-Way. A Component of the Access Management Initiative in Northeastern B.C., March 1995.

[8] Platt, Thomas M., 1993. Cabinet-Yaak Grizzly Bear Ecosystem: 1992 Forest Service Road Closure program Compliance Inventory. The Ecology Centre, Missoula, Montana. (24 pgs.)

[9] Note shortcomings to this ranking noted in text below.

Access Management Measure	Review Source			
	This Review (2009)	Golder[6] (2007)	Axys[7] (1995)	Platt[8] (1993)
Excavations/Tank Traps	8			
Berms	9	10	7	1
Visual Screening	10	9	8	
Remote Operations (including SCADA)		6/7		
Barriers at junctions with active access routes		8		
Line Blocking[10]		13		
Special construction[11]			3	
Boulders				3
Posts and Rails				4
Other			9	

On average, respondents to this survey considered manned gates to be the most effective control measure, but also the most costly and thus most suitable for temporary or seasonal closures. However, it should be noted that in most instances, respondents appeared assume that a gate and its guardian would be able to completely stop all unauthorized access. There were a number of indications that actual effectiveness may be much lower.

Axys (1995) suggested that in some cases, attendants do not have legal authority to prevent public access through a control point but can use persuasion and if unsuccessful, record licence numbers to discourage illegal activity. This significant shortcoming was again noted by many Alberta respondents to this review. Alberta industry respondents identified manned gates being ordered to reduce unauthorized (public) traffic in sensitive areas such as woodland caribou ranges where industrial traffic was too high for unmanned gates to be practical (e.g. up to 800 vehicles per day of which less than 5% were public or unauthorized traffic). The high proportion of "authorized traffic" suggests effectiveness was negligible.

4.4.Decommissioning

Decommissioning, i.e. "*the physical treatment of a roadbed to restore the form and integrity of associated hill slopes, channels, and floodplains and their related hydrologic, geomorphic and ecological processes and properties*"[12], can describe a wide range of treatments from simply removing the road from maps and databases to full road re-contouring, including:

- *Installation of berms and/or excavations, including waterbars;*
- *"Ripping" the road bed;*
- *Removing stream crossing structures and restoring stream channels;*

[10] i.e. falling of mature trees across a ROW.

[11] Includes bored pipeline stream crossings, directional drilled stream crossings and clearing and grading restrictions (e.g. shearing trees only with no grading, to facilitate re-vegetation).

[12] Switalski et. al. (2004).

- *Full road recontouring; and*
- *Following recontouring, application of rollback or other barriers to limit travel and revegetation to restore forest productivity/ecological integrity.*

The most extensive decommissioning programs appear to be those on USFS lands in association with Travel Management planning. An on-the-ground evaluation of road decommissioning in Clearwater National Forest (Idaho), found no evidence of motor vehicle use on any of the closed, abandoned or obliterated roads they examined, even though gates at the entrance of some roads "*did not appear to be adequate to prevent use of the roads by ORV's"*. They concluded that the decommissioning efforts had been "*extremely effective for preventing motorized access".* They also found that decommissioning successfully restored watershed integrity and appeared to be effective at preventing failures in high-rainfall events, a primary concern in this National Forest.

4.5.Mitigation by Other Means

Design for Wildlife

A review of wildlife research, particularly that relating to grizzly bears, suggests several management approaches once access has been created.

- To avoid high value habitat, companies such as ConocoPhillips and Petro-Canada have used bear habitat research maps to route pipelines so as to minimize disturbance to grizzly bears.

- Once roads have been constructed, research suggests construction practices to reduce attractiveness to bears, including seeding with native species (i.e. not with clover – Trifolium spp.) to reduce foraging opportunities along roads.

- Seasonal closures when bears use habitat closest to roads, particularly in spring.

Designated OHV "Parks"

Developing OHV "parks" in areas where motorized use is acceptable provides an outlet for users that channels them away from sensitive and otherwise unacceptable areas. The concept of providing such areas is addressed in the emerging body of literature that examines implementation of travel management initiatives. One U.S. source captured the the common view of such parks as follows:

> "*If you build it they will come – and the corollary, if you close it they will show up elsewhere."*[13]

One of the principle groups focusing on the development of such areas in the U.S. is the National Off-Highway Vehicle Conservation Council (NOHVCC), which provides guidance materials, training and workshops cited by many of those spoken to in this review.

[13] US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation, 2005. Off-Highway Vehicle Use and Collaboration: Lessons Learned from Project Implementation.

5. Enforcement

Concern for lack of enforcement was the most frequently raised issue during this review. Respondents universally agreed that enforcement was essential to successful access management following the view of a 2001 U.S. study that: "*information and education will not result in substantial behavioural change*".

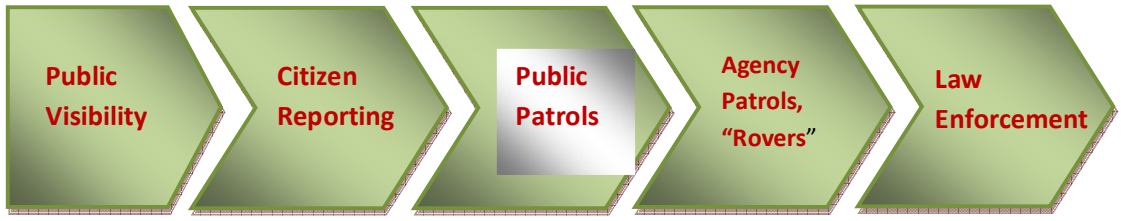
Several respondents discussed segmentation of OHV users, e.g.:

- **Law abiding** or honest: willing to ride on designated routes (80%?);
- **Influenceable**: unlikely to break down gates but willing to follow otherse (15%?);
- **Incorrigible**: seek out opportunities to travel on closed routes, willing to go to great lengths to remove or surmount barriers, travel cross-country and create new, unofficial trails (5%?).

(Literature examining U.S. federal lands management suggest that the numbers falling into the incorrigible and influenceable groups might be much higher).

In all jurisdictions, respondents cited too few enforcement officers to address issues of recreational OHV use on public land. However, there was a spectrum of enforcement options identified, ranging from public visibility to law enforcement officers issuing citations.

Figure 1. Spectrum of "Enforcement" Approaches.



Different respondents reported success with actions all along this spectrum. For example, Shell relies on public visibility to protect most of its gates and associated facilities in the Waterton area. Those structures lying in full view of traffic along a major secondary road are usually undisturbed, while gates in less travelled areas and outside of public scrutiny are more subject to vandalism.

Archie (2007) provides an example of volunteer patrols used in a 100,000 acre area known as Fourmile in Colorado. Friends of Fourmile, a group of local motorized and non-motorized users registered as volunteers with the USFS and BLM, receive training in safe, effective volunteer contacts. Wearing gear that identifies them as official volunteers, they educate and provide information to regulatory staff concerning serious violations they observe.

Montana has reportedly enjoyed some success with "Rovers", state enforcement staff who patrol and provide information but do not get involved in issuing citations or other "hard" enforcement activities.

National Forests in the Greater Yellowstone area (and all other National Forests) employ two different levels of enforcement staff, including Forest Protection Officers – unarmed officers able to make public contacts and write citations for a limited range of violations, and Law Enforcement Officers – armed officers with full enforcement powers. Forests generally have one to two Law Enforcement Officers and a larger number of Forest Protection Officers, who are usually seasonal.

However, in spite of the range of possible enforcement options, respondents repeatedly stressed that there is always some portion of users for which "hard" enforcement is necessary. To fail to respond to these individuals risks diminishing respect for the access control measures in the eyes of other, more reasonable, groups of users.

Arguably the best recommendations provided in literature are those summarized as "*Six Strategies For Success".*[14]

- Make a commitment.
  Expand enforcement capacity, intensify and target patrol efforts.
- Lay the groundwork.
  Create enforceable ORV route systems and regulations.
- See and be seen.
  Engage in visible action and meaningful collaboration.
- Make riders responsible.
  Work with ORV community leaders, use info campaigns to educate and cultivate support.
- Use the force.
  Incorporate technologies that work such as remote electronic monitoring.
- Fit the punishment to the crime.
  Make penalties meaningful, e.g. link violations to other recreational privileges.

[14] Archie, Michele L., 2007. Six Strategies for Success: Effective Enforcement of Off-Road Vehicle Access on Public Lands (40 pgs.), 2007. Wildlands CPR, Missoula, Montana.

6. Conclusion and Recommendations

Lessons Learned

Key lessons resulting from this review include:

- Overarching:
  - *Access management is an issue for jurisdictions throughout North America.*
  - *US federal agencies are managing a tidal wave of recreation users on an extensive pre-existing road and trail network, which exceeds resources available to maintain it*
  - *Western Canada is experiencing some of the same dynamic as the U.S. in areas adjacent to Calgary and Vancouver.*
  - *There appears to have been very little objective monitoring/evaluation of how well existing initiatives are actually working.*
- Regulatory Concerns
  - *Canadian regulatory frameworks appear relatively uncoordinated.*
  - *In Alberta, the best tool appears to be FLUZ's.*
- Planning
  - *The key to successful access planning is good public engagement.*
  - *Public planning processes require significant resources to be successful.*
  - *Start with good information that allows decision consequences to be understood.*
- Tools for Access Control
  - *Most physical access controls can be circumvented by determined individuals.*
  - *Successful controls that incorporate site-specific design and are supported by other measures.*
  - *Recreational users of public lands are a fact of life, if denied access to one area they will simply show up in another.*
  - *Once roads and trails become accepted as "traditional routes", closure is more difficult.*
- Communication
  - *Communication is key and often lacking.*
  - *Users have to know what is expected of them.*
  - *Use multiple communications channels in ways that support each other to reach users.*
- Enforcement
  - *Everyone wants greater enforcement effort and more significant penalties.*
  - *There is a spectrum of potential "enforcement" tools, ranging from the soft and fuzzy (public visibility) to the hard (law enforcement officers).*
  - *The "hard" law enforcement options were uniformly reported to be in short supply.*

Recommendations

The FLMF, and the Foothills Energy Partners in particular, should develop a comprehensive communications plan to ensure that the results of the review and subsequently the results of any pilot project undertaken with the provincial government are constructively disseminated.

More specific recommendations are provided below.

For an Alberta Access Management Pilot

- Develop a comprehensive strategy that fully utilizes all of the available tools.

- Identify clear objectives together with performance measures and monitoring that determine if those objectives are met.
- Put in place a regulatory framework that allows for enforcement, e.g. a FLUZ.
- Practice good public engagement throughout.
- Look for opportunities to limit the development footprint from the outset.
- For recreational users, segment your audience, recognizing the differences in approach required for each.
- Support physical measures with good communication, appropriate setting and enforcement.
- Close temporary corridors such as abandoned wellsite roads as soon as possible.
- Develop trail alternatives for OHV users that divert them into acceptable areas.
- Employ a comprehensive communications strategy that ensures users understand what is expected of them.
- Develop an enforcement strategy that recognizes your constraints.

For Individual Companies
Some of the recommendations apply equally to individual companies that are contemplating access management initiatives. Briefly, these include:

- Look for opportunities to limit the development footprint from the start, e.g.:
  - Adopt objective targets that limit new, net access creation;
  - Deactivate roads, etc. to create space for future new access (and reduce costs).
  - Close temporary corridors ASAP to prevent them from becoming "traditional" access.
- Support physical measures with good communication, appropriate setting and enforcement. Pay attention to quality and design of specific measures.
- Develop those elements of an enforcement approach that lies within your control (e.g. public visibility of measures, working with local public groups).

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