

Hudson Bay Mountain Trails

Management Plan

Prepared by the Smithers Mountain Bike Association

Version 1: September 2011

GLOSSARY

FRPA	Forest and Range Practices Act
HBMR	Hudson Bay Mountain Resort (Commercial Downhill Ski Resort)
IMBA	International Mountain Bike Association
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MOE	Ministry of Environment
NESTG	North East Slope Trail Group
RST	Recreation Sites and Trails Branch (Ministry of Natural Resource Ops)
SCFS	Smithers Community Forest Society
SMBA	Smithers Mountain Bike Association
TSC	Trail Safety Coordinator
TTF	Technical Trail Feature
WCF(C)	Wetzin'kwa Community Forest (Corporation)
The Policy	"Authorizing Recreational Mountain Bike Trails on Provincial Crown Land (2006)
The Agreement	"Mountain Bike Trail Management Agreement" signed by SMBA and RSTB

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INTRODUCTION

Purpose

The purpose of this Management Plan is to guide the management of mountain biking activities in three trail networks on Hudson Bay Mountain: The Bluff Recreation Site, the Ptarmigan Road Recreation Trails and the Piper Down Recreation Site. This Management Plan has been created based on direction included in the provincial government's working draft policy statement called "Authorizing Recreational Mountain Bike Trails on Provincial Crown Land" (the 'Policy'). It forms an appendix to a Mountain Bike Trail Management Agreement between the Smithers Mountain Bike Association (SMBA) and the Recreation Sites and Trails Branch (RSTB) of the B.C. Ministry of Forests, Lands and Natural Resource Operations (MFLNRO).

SMBA-RSTB Trail Management Agreement

As per the provincial government Policy, the SMBA and RSTB have signed a Trail Management Agreement (the 'Agreement') which is made under Section 118 of the *Forest and Range Practices Act* (FRPA). This long term trail management arrangement has been issued for a 10-year term and it will remain in effect until 2021. The Agreement provides the SMBA with the right to "non-commercial development, maintenance and management of recreation trails and related improvements for mountain biking". Under the Agreement, the SMBA has committed to develop and regularly update this Management Plan which describes goals, objectives and strategies that guide the management of mountain biking activities on designated trails on Hudson Bay Mountain (see Appendix 1 for list of trails covered under the Agreement).

BACKGROUND INFORMATION

Mountain Biking

The sport of mountain biking has been growing in popularity over the past two decades. Canada has some of the best mountain bike trails in the world, and British Columbia is widely recognized as the birthplace and mecca of freeriding.

Most mountain bikers prefer to ride on singletrack trails, and there are a number of different types of mountain biking including: cross-country, all-mountain, downhill, freeride and dirt jumping. In addition to countless trail networks on provincial crown land, by the year 2000, 65% of B.C. ski areas had summer lift operations for mountain biking and that number has likely continued to increase (Parks Canada, 2010).

Mountain biking is considered an adventure sport although not all trail types fit into this description. Mountain biking offers significant health benefits and contributes to economic development. Participants in the sport range from young children to seniors, and the sport is highly accessible since start-up costs are minimal and participation is often free.

Mountain Biking and Economic Development

Mountain biking has been proven to contribute significantly to economic development. Tourism British Columbia recently published a handbook called Mountain Bike Tourism (2008), to guide communities interested in developing mountain bike trails and promoting them to visitors. It provides a good overview of mountain biking, the market potential and a summary of what is going on in B.C. Some highlights about the market potential include the following:

- The Whistler Bike Park now attracts more than 100,000 biker visits a season with 90% staying overnight. As a result, mountain biking has now surpassed golf as the top summer activity for overnight visits.
- The trail systems of Vancouver's North Shore, Squamish and Whistler, are estimated to have collectively generated \$10.3 million in spending from riders that live outside of the host community over the period from June 4 to September 17, 2006.
- Mountain bikers are educated, affluent and the majority of them are over 30 years of age. For mountain bike travelers to B.C., one third of the American and almost half the Canadians have a household income in excess of \$100,000.
- Mountain biking is a travel motivator, and people will travel to destinations specifically to go mountain biking. The overall North American mountain bike travel market is 1.25 million.

Geographic Context

The Bulkley Valley is located approximately 200 km inland from the Pacific Ocean, on the lee side of the Coast Mountain Range. It is a landscape of mountains, streams, lakes, forests and farmlands. Hudson Bay Mountain is the most prominent landmark in the Bulkley Valley, rising from the Town of Smithers at its base (elevation 500 m) to a summit well above treeline at 2330 m.

Smithers lies about halfway between the cities of Prince Rupert and Prince George on the Yellowhead Highway # 16. Although the town itself only has a population of about 5,200 people, it is considered to be a regional service centre for the entire Bulkley Valley (population approximately 20,000) and, as such, offers a greater variety of amenities than other towns of similar size. Smithers is commonly referred to as a "Town for all Seasons". It has established itself as a world class outdoor recreation destination and it attracts residents and visitors who are avid outdoor recreationalists.

The Bulkley Valley offers a range of activities including cross country and downhill skiing, paddling, hiking, fishing, and mountain biking. The Smithers area is prime mountain biking country, and existing trails offer access to a wide range of riding opportunities for all ages and abilities. Historical mining roads and trails provide access to spectacular backcountry and alpine areas, and the 13 km Perimeter Trail offers gentle biking around the town boundary. On Hudson Bay Mountain, there are now three trail networks that have been designated as Recreation Sites under Section 56 of FRPA and are being managed by the SMBA: The Bluff (on lower Hudson Bay Mountain), Ptarmigan Road Trails (in the Wetzin'kwa Community Forest) and Piper Down (on upper Hudson Bay Mountain near the ski resort). Adjacent to the Bluff Recreation Site there are also a number of old and new hiking trails in the

Wetzin'kwa Community Forest near Seymour Ridge which have been designated as Recreation Trails by the RSTB in partnership with the Smithers Community Forest Society (SCFS).

The Bluff Recreation Site

The Bluff Recreation Site contains a network of many small trails that intersect and link with a series of old routes that were once used to access small bush mills and mining projects on Hudson Bay Mountain. The trails are shared by many users, particularly mountain bikers and hikers. The older trails to the north of The Bluff access road are primarily downhill-freeride oriented, and are suitable for intermediate and advanced mountain bikers. Newer trails to the south and west of the access road are multi-use trails that provide a more intermediate cross-country mountain bike experience, and they are also great for hiking and running. The network has been planned so it provides linkages to other trails in the area, such as Seymour Ridge. The Bluff area is highly accessible to the community as it sits on the lower portions of the mountain immediately adjacent to the town boundary. It provides excellent early and late-season hiking and mountain biking possibilities when the higher trails are snow-covered.

Ptarmigan Road Recreation Trails

There are two downhill mountain bike trails in the Ptarmigan Road Trail System. They are not as steep as many of The Bluff trails, and they can be accessed by vehicle shuttle or by riding to the 3km gate on the Wood Creek Mainline forestry road.

Piper Down Recreation Site

The Piper Down Recreation Site is located on upper Hudson Bay Mountain near the Hudson Bay Mountain Ski Resort. It has three advanced-level downhill trails, including one machine-built trail that has many berms and tabletop jumps. The trails all converge near the bottom, where they follow a short beginner-level trail down to a parking area in an old cutblock. Trails in the Piper Down Recreation Site are best accessed with a shuttle vehicle on the Ski Hill Road. Both the Ptarmigan Road and Piper trails are purpose-built mountain bike trails.

SMBA Profile

The Smithers Mountain Bike Association (SMBA) is a non-profit society that was established to promote mountain biking practices that are environmentally sound and socially responsible. Its mission is to:

- Encourage participation in recreational and competitive mountain biking to people of all ages and abilities;
- Promote responsible mountain biking practices;
- Participate in the planning process for and the management of recreational land as it relates to mountain bike access and use;
- Organize volunteers to aid in the restoration, development, and maintenance of legitimate mountain bike trail systems; and

- Educate riders on: (i) mountain bike safety, (ii) mountain bike practices that minimize user conflicts, trail damage and ecological impact, and (iii) mountain bike trail planning, building and maintenance.

The SMBA was formed in early 2009. It is run by a volunteer board of 7 directors, and we have approximately 150 members who have paid a \$35 annual membership fee, and are actively participating in SMBA activities. Events hosted in the spring/summer of 2010 include an Annual General Meeting, group rides, numerous trail maintenance days, 5 races, a Women's Weekend, Youth Camp, and other social events.

For the past 2 years, the SMBA has been actively pursuing several priorities. The primary objective has been to secure recreation designation on the three existing trail networks and enter into the partnership management agreements with RSTB. As part of these agreements, the SMBA is now responsible for maintaining and upgrading existing trails to ensure that trails and technical trail features meet International Mountain Bike Association (IMBA) safety standards. In addition, the SMBA has been, and will continue to, apply to develop new trails within the existing networks, and encourage participation in the sport of mountain biking throughout the community. Relationships with stakeholders are critical to ensuring the SMBA's success and it will continue to work with these stakeholders to strengthen the relationships that are already in place.

In 2009-2010, the SMBA obtained and invested over \$410,000 of federal, provincial and local grant money into mountain bike trail networks on Hudson Bay Mountain. This work has resulted in the creation of over 60 person-months of employment in the local economy.

For more information about the Smithers Mountain Bike Association, see the website at: www.smithersmountainbike.ca.

MANAGEMENT GOALS, OBJECTIVES AND STRATEGIES

This section of the Plan lays out a series of goals that will guide the management of mountain biking activities on Hudson Bay Mountain in Smithers. For each goal, more detailed objectives and strategies are identified to define how the goal will be achieved.

Goal 1: Maintain Authorized Trails

1.1 Authorize existing trails

Strategy: Ensure FRPA Section 56 designation is in place for Bluff, Ptarmigan and Piper areas/trails

Section 56 of the *Forest and Range Practices Act* (FRPA) allows the Minister to order "the establishment of crown land as a...recreation site or a recreation trail...". As described above, there are three primary mountain biking areas on Hudson Bay Mountain: The Bluff, the Ptarmigan Road Trail System, and the Piper Down Recreation Area. The SMBA applied to the RSTB to have these three mountain bike riding areas designated as Recreation Sites and Recreation Trails under Section 56 of FRPA. In The Bluff and

Piper Down areas, polygon Recreation Sites have been established which encompass each entire trail network (including all trails identified in Appendix 1). In the Ptarmigan Road area, specific Recreation Trails are designated as corridors, rather than polygons. All trails are mapped, and upgrades will be made to ensure that the trails conform to the standards identified in the Agreement. This strategy is consistent with the RSTB Policy Goal A and Sections 6 to 11.

There are still existing undesignated trails on Hudson Bay Mountain, such as the Backdoor Trail that descends the eastern slope of the Hudson Bay Mountain Ski Resort all the way to town. As time, resources and logistics allow, the SMBA will seek designation of these trails as Recreation Sites and Trails.

1.2 Obtain authorization for new trail construction, and for rehabilitation and maintenance

Strategy: Obtain FRPA Section 57 authorization for new trails and changes/upgrades to existing trails

To ensure compliance with FRPA Section 57, all new trail construction, rehabilitation and maintenance will be authorized by the Recreation Sites and Trails Branch. For each proposed new trail, or for rehabilitation and maintenance projects, the SMBA will complete and submit a proposal seeking authorization from the provincial government. The proposal will describe the purpose, location and description of the proposed work, along with expected dates on which the work will begin and end and the standards that will be employed. The standards will include, but not be limited to, those identified in the Agreement. This strategy is consistent with the RSTB Policy Goal A and Sections 6 to 11.

The SMBA recognizes that individual trails have a particular character or feel. When trails need to be upgraded or when features need to be repaired, enhanced or replaced, efforts will be made to maintain the original spirit and feel of the trails as much as possible.

Goal 2: Promote a Positive Mountain Biking Experience

2.1 Designate all areas/trails as non-motorized

Strategy: Install signage and trail filters as needed to discourage or block motorized users

The entire Bluff Recreation Site and the purpose-built mountain bike and other multi-use trails in the other two SMBA Trail Networks will be managed for non-motorized recreation which is consistent with the existing Bulkley Recreation Access Management Plan. To discourage motorized users from inadvertently accessing the trails, signage and trail filters (such as narrow openings between rocks or trees) will be installed near trailheads and at logical points on the trails.

2.2 Conduct trail planning and design

Strategy: Develop a system of nested/stacked loops where possible

New trails will be planned and designed to accommodate a range of rider abilities in order to create a mountain bike trail network that appeals to a wide range of users. The SMBA will seek input from its members for general direction related to trail planning at Annual General Meetings and at separate Trail Committee Meetings where required. In 2009 the Cross-Country All-Mountain Trail Committee

submitted a recommendations report to the SMBA Executive. The recommendations suggested that, where possible and especially for cross-country trails, loop systems be created to allow riders to enjoy a trail without having to return on the same route. Different loops in a single trail network can be linked together in different combinations to create a large variety of trail routes. When planning and designing new trails, easier routes will be located closer to the trailhead, with more challenging trails further away because users seeking difficult or remote experiences are usually willing to travel further.

2.3 Enhance mountain biking opportunities by capitalizing on adjacent infrastructure

Strategy: Advocate for mountain biking use in adjacent areas where appropriate (eg. in Wetzin'kwa Community Forest) and provide linkages to other areas/trails

There are large areas of land between the SMBA's three trail networks, which may provide for expanded mountain biking opportunities in the future. The SMBA will not limit itself to developing trails only in the three trail networks, and where appropriate, it will advocate for shared trail use on trails in nearby areas (such as in Wetzin'kwa Community Forest). The SMBA will participate on the Board of Directors of the SCFS, which is a multi-user-group entity that participates in planning related to recreational use in the area of the old Smithers Community Forest (which is now a part of the larger Wetzin'kwa Community Forest). In the future, the SMBA will also look for opportunities to upgrade existing trails in nearby areas, develop new trails in nearby areas, and create linkages between SMBA-managed trails and other trails. This will provide even more mountain biking opportunities for riders in the Bulkley Valley, in some cases with very little effort. This strategy is consistent with the RSTB Policy Goal D which encourages efficient use of crown land by locating new trails on or around existing recreation infrastructure.

Strategy: Comment on proposed activities in or near established Recreation Sites & Trails

Proposed new developments and activities on Hudson Bay Mountain have the potential to impact the mountain biking experience in this area. The SMBA, in conjunction with RSTB, will monitor proposed developments and activities within and around its established Recreation Sites and Recreation Trails, and where appropriate, it will submit comments to proponents, regulatory agencies and other stakeholders to ensure that mountain biking interests are considered in decision-making. The SMBA will also attend and provide comments and feedback in public/stakeholder meetings such as the Wetzin'kwa Community Forest Corporation Stakeholder sessions. In addition, the SMBA will provide at least one director on the SCFS, which is a society that represents a number of different user groups and participates in planning related to recreational use in the area of the old Smithers Community Forest (which is now a part of the larger Wetzin'kwa Community Forest).

Goal 3: Protect the Environment

3.1 Conduct trail planning and design with environmental considerations in mind

Strategy: Consult with Ministry of Environment (MOE) and/or MFLNRO professionals to identify sensitive habitats, rare ecosystems, etc. and avoid building trails in these areas where possible

When planning trail development activities, the SMBA will consult with appropriate provincial government biologists (from MOE and MFLNRO), hydrologists and resource managers to ensure that proposed activities will not negatively impact the environment, especially sensitive habitats and rare ecosystems. Through collaborative planning efforts, the SMBA will strive to avoid building trails in or near these areas, or will implement measures to minimize risks to these important environmental values. This strategy will help the SMBA and RSTB to meet Policy Goal G in the RSTB policy, which aims to minimize potential impacts on environmental and other sensitive values.

Strategy: Plan and develop sustainable trails according to IMBA guidance in order to minimize impacts to soils, water resources, wildlife and vegetation

The impact of mountain biking on the environment is a longstanding management concern, so to address this IMBA has published two books: “Managing Mountain Biking: IMBA’s Guide to Providing Great Riding” (2007) and “Trail Solutions: IMBA’s Guide to Building Sweet Singletrack” (2004). By following guidance provided in these books, the SMBA will strive to plan and develop sustainable trails that minimize the potential for impacts to soils, water, resources, wildlife and vegetation. In particular, chapter 5 in “Managing Mountain Biking...” describes best practices to help minimize impact and discusses principles of sustainable trails and primary techniques to create environmentally friendly trails.

3.2 Conduct regular trail inspections and maintenance

Strategy: Monitor for signs of erosion, trail braiding etc. on inspections, and conduct maintenance as needed to mitigate environmental risks and repair damage

As part of a regular trail inspection and maintenance program, the SMBA will monitor for signs of environmental damage such as erosion and trail widening/braiding. Initially, the SMBA will target two inspections per year, one in the spring and one mid-season. Inspection forms (attached as Appendix 1) will remind inspectors to monitor for environmental impacts. Repairs and maintenance will be performed by volunteers or paid contractors as soon as is practical in order to mitigate risks and repair damage.

Strategy: Close trails when conditions deteriorate to the point that environmental damage is occurring

Despite efforts to stay on top of maintenance needs, there may be times when excessive use or extraordinary conditions (eg. large snowpack year with a rapid spring melt, or prolonged rainstorms) may cause trail conditions to deteriorate to the point that environmental damage is or has the potential to be occurring. On these occasions, the SMBA or RSTB may close a trail or section of trail to let it heal, or to allow crews to perform maintenance and make upgrades. These trail closures will be posted with signage and/or obstacles, and the SMBA will communicate with its members about the closures on its

Trail Conditions webpage and/or through other communications such as SMBA email and newsletters or RSTB webpages.

Goal 4: Proactively Manage User Conflict

4.1 Undertake stakeholder consultation when planning new trails

Strategy: Consult with stakeholders including NESTG, WCFC, SCFS and HBMR (and other stakeholder groups as appropriate) when planning new trails

The SMBA will develop good working relationships with stakeholder groups that have interests within and adjacent to designated Recreation Sites and in the vicinity of other Recreation Trails. This will facilitate information sharing and promote collaborative trail planning. Prior to submitting applications for FRPA Section 57 authorization, the SMBA will provide copies of the draft application to relevant stakeholders such as the Northeast Slope Trail Group (NESTG) for the Bluff area, Wetzin'kwa Community Forest Corporation (WCFC) and Smithers Community Forest Society (SCFS) in the Ptarmigan Rd and Seymour Ridge areas, and Hudson Bay Mountain Resort (HBMR) in the Piper Down Recreation Area. Other stakeholders may also be contacted as appropriate.

The SMBA will also provide one or more directors to the SCFS to ensure regular communication with other user groups represented on the Board of Directors, and will attend WCFC's User Group meetings as well.

4.2 Designate single and multi-use trails

Strategy: Where possible and appropriate, encourage multi-use trail development within and adjacent to designated Recreation Sites and Trails and communicate the shared-use aspect to trail users

Shared-use trails have many benefits. They are cost-effective, require less trail miles and therefore have less impact on the environment, empower responsible users and often result in the development of a trail community (IMBA, 2007). To achieve these benefits, the SMBA will look for opportunities to develop shared-use trails that are suitable for various non-motorized uses including hiking, running, skiing and/or snowshoeing as well as mountain biking. Signage and maps will be used to indicate the multi-use nature of some trails so that all trail users know what types of other users to expect on the trails. This strategy is consistent with the RSTB Policy Goal F.

Strategy: Where multi-use trails are not appropriate, clearly identify usage information with signage and maps

In some instances, trails are constructed to be mountain bike specific with jumps, berms and other features that are meant to be ridden by advanced riders at high speeds. These types of trails are not suitable for uphill bike traffic or other users such as hikers because of safety concerns. Signage and maps will clearly identify when trails are designated as single use and/or single direction.

4.3 Conduct education about trail rules and etiquette

Strategy: Promote IMBA Trail Rules on signage, the SMBA website and SMBA map

IMBA (2004) has developed a set of trail rules which are recognized around the world as the standard code of conduct for mountain bikers. These include:

- Ride on Open Trails Only
- Leave No Trace
- Control Your Bicycle
- Always Yield Trail
- Never Scare Animals
- Plan Ahead

Adherence to these trail rules will help to minimize user conflict, so the SMBA will promote these trail rules on signage, on the SMBA website and on the SMBA trail map. The SMBA will also look for other opportunities to promote trail rules and etiquette to its members in correspondence such as newsletters, in the curriculum of riding clinics, etc.

Goal 5: Actively Manage for Safety and Risk

5.1 Conduct trail planning and design with safety considerations in mind

Strategy: Rate all mountain bike trails using Whistler Trail Standards

To ensure that all trail users are aware of safety risks and trail difficulty information, all trails and TTFs will be rated using criteria included in the Whistler Trail Standards (Resort Municipality of Whistler, 2003; see Appendix 3 for a copy). Trail and TTF ratings will be posted at trailheads, on maps, and near TTFs where the TTF rating is more difficult than that of the trail on which it lies. See Section 5.3 below.

Strategy: Install TTF filters for advanced trails and features, and develop ride-arounds when features are more difficult than main trail

To ensure that riders are not surprised by advanced trails or TTFs, the SMBA will install TTF filters near the start of the trail and just before advanced features such as rock drops or large jumps. Filters, sometimes known as gateways or qualifiers, are high-skill-level, low-consequence obstacles that demonstrate the difficulty of the upcoming trail or feature. In addition to providing riders with an indication of the level of difficulty for a trail, they also cause riders to slow down and take note of their surroundings and what is ahead on the trail.

Wherever possible on beginner and intermediate trails, more advanced features should be located outside of the main flow, and easier ride-around routes should be present and clearly identified.

5.2 Appoint a Trail Safety Coordinator

Strategy: Designate the Director of Trails as the Trail Safety Coordinator

The SMBA has appointed the Director of Trails to act as the Trail Safety Coordinator (TSC) as per Article 6 of the Agreement. The TSC will be the primary liaison with RSTB on safety-related matters and will be responsible for ensuring that safety issues are dealt with in a timely manner and that the SMBA meets

its Hazard and Risk Assessment obligations as per Article 6 in the Agreement (in particular, maintaining records of all incidents that are known to the SMBA and submitting these records to the RSTB.

5.3 Adopt construction standards for trails and TTFs

Strategy: Ensure the SMBA-managed trails conform to IMBA Guidelines and Whistler Trail Standards

The RSTB Policy Section 12 (c) requires agreement holders to follow IMBA Guidelines and Whistler Trail Standards when planning, constructing, rehabilitating and maintaining trails. The SMBA will assess conformance of existing and proposed trails and TTFs to these standards and other best management practices, and where necessary, will upgrade trails and TTFs to ensure that the standards are met. A copy of the Whistler Trail Standards is included in Appendix 3 of this plan.

In addition to these standards, and like other bike clubs, the SMBA is working towards the advancement of a set of standards that reflect the skill progression of the sport – see Appendix 2. RSTB and SMBA agree to adopt these draft standards in an adaptive management approach.

5.4 Implement a Signage Strategy

Strategy: Provide basic navigation information on trail signs installed throughout the network

The SMBA will implement a signage strategy that includes installation of signs throughout the trail network. Kiosks with trail maps and other navigational information will be installed at strategic locations within the various trail networks, such as at parking lots and/or major convergences. At the beginning of each trail, signage will indicate the trail name and difficulty rating. Major junctions will be marked with labelled blocks that can be cross-referenced with maps, and trail names will be indicated.

Strategy: Near advanced features, provide warning and safe route information on trail signs

TTFs that are rated as Most Difficult (black diamond) or harder will be identified with “Technical Trail Feature” warning signs. Where appropriate, these features will contain additional signage including large “Caution” signs with supplemental information indicating the type of feature, such as “Drop” or “Jump”. Easier and harder routes will also be indicated. See Appendix 2 for more details.

5.5 Maintain insurance coverage

Strategy: Purchase insurance on an annual basis from a registered provider

The SMBA will maintain insurance coverage for all authorized trails that have TTFs integrated into their design. The insurance will be purchased from a designated provider on an annual basis. The SMBA will provide proof of this insurance to the RSTB.

5.6 Implement an emergency plan

Strategy: Provide trail map brochures to emergency response officials

To facilitate a timely response in the event of an emergency, first responders such as ambulance, fire department, Protection Branch (MFLNRO) firefighters and Search and Rescue will need to know how to access different areas of the trail networks. Updated trail map brochures will be provided to each of

these groups on an annual basis. If necessary, SMBA members will make themselves available to review the maps in the field or office with any of these first responders.

Strategy: Post emergency phone numbers on trail maps

The SMBA will post emergency phone numbers including police, fire and ambulance on the trail map brochure, and at other appropriate locations.

5.7 Create and implement a trail inspection & maintenance plan

Strategy: Conduct semi-annual inspections of all trails

The SMBA will conduct semi-annual inspections of all known trails and TTFs, and the results of the inspections will be documented on an inspection report (the working template is provided in Appendix 1). If possible, inspections will be performed as soon as possible after the snow melts in the spring, and again in the middle of the season. The trail inspections will be coordinated by the SMBA Director of Trails, and inspectors will be at least generally familiar with IMBA Guidelines and Whistler Trail Standards. Efforts will be made to remediate all hazards in a timely manner, and documentation will be kept to track outstanding and completed maintenance needs.

Strategy: Provide an online system for members to identify hazards and maintenance requirements

The SMBA has developed an online forum for members and other trail users to identify hazards and maintenance requirements. SMBA communications will encourage use of the online forum, and the SMBA Director of Trails and other executive members will monitor the forum on a regular basis to ensure that issues are addressed in a timely manner. Once hazards are addressed, this information will be communicated back to members and the public via the forum. Notifications of major trail hazards will be provided in separate email communications to members.

Strategy: Close trails when hazards exist

Despite efforts to stay on top of maintenance needs, there may be times when specific trail sections or features become unsafe for all or certain types of use. The SMBA or RSTB may close a trail or section of trail for the purposes of maintenance or hazard management. These trail closures will be posted with signage and/or obstacles, and the SMBA will communicate with its members about the closures on its Trail Conditions webpage and/or through other communications such as email and newsletters.

Strategy: Prepare and submit annual maintenance reports to RSTB

Annually at the end of each riding season, the SMBA will submit copies of its semi-annual inspection reports to the RSTB, along with any other materials or reports that document maintenance issues that were addressed or are outstanding. This is a requirement listed in the SMBA-RSTB Agreement.

Goal 6: Engage Mountain Bikers in Trail Management

6.1 Educate SMBA Members about sustainable trails

Strategy: Seek opportunities to educate mountain bikers about building and maintaining sustainable trails

The long-term success of mountain biking in the Bulkley Valley will require mountain bikers to stay engaged in trail management activities. IMBA has published two books that provide guidance on how to build and maintain sustainable trails: “Managing Mountain Biking: IMBA’s Guide to Providing Great Riding” (2007) and “Trail Solutions: IMBA’s Guide to Building Sweet Singletrack” (2004). The SMBA will make copies of these books available to its members, and it will look for opportunities to share information contained in the books through its website, newsletters and other communications. In the future, the SMBA may consider hosting a workshop or clinic on trailbuilding, such as IMBA’s 3-day Trailbuilding School.

6.2 Use volunteers to help perform trail maintenance

Strategy: Develop and communicate a trail maintenance and upgrades policy

When SMBA members participate in trail maintenance and upgrading activities, it is important that the work is conducted in a safe manner and conforms to the Standards identified in this Management Plan. The SMBA will develop, communicate and implement a policy about how members can propose and participate in trail maintenance and upgrading activities. In particular, the policy will encourage volunteers to participate in trail maintenance and upgrades, and identify which activities require Trail Director and/or RSTB approval prior to commencement of work.

Strategy: Host organized trail maintenance days

The SMBA will host at least one organized trail maintenance day each year. A major objective of the event will be to engage members and other local mountain bikers in trail management activities. The trail maintenance day will not only allow for trail upgrades to be completed for little-to-no cost, but it will also provide opportunities to educate new participants about sustainable trailbuilding techniques, it will encourage a sense of ownership of the trails, and it will develop a sense of camaraderie within the mountain biking community.

PLAN IMPLEMENTATION & REVIEW

Implementation of this management plan will begin in 2011. It is recognized that the SMBA may not be in a position to implement all the management strategies immediately, but over time and as capacity increases, the SMBA will work with RSTB to implement all the strategies.

The SMBA and RSTB will adopt an adaptive management regime in the coming years and it is anticipated that this management plan is will evolve and change over time as both agencies gain more experience in managing mountain biking. A complete review and update of the plan is recommended in or before 2016.

REFERENCES

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APPENDICES

APPENDIX 1: TRAIL INVENTORY AND INSPECTION CHECKLIST

Mountain Bike Trail Inventory & Inspection Checklist

INSTRUCTIONS

Inspection Schedule:

Trail Inspections are to be conducted twice annually; once at the beginning of the season (May) and once mid-season (August/September)

Recording Condition of Trails and Technical Trail Features (TTFs):

For the general trail and for each feature, record the condition as either: Good (G), Fair (F), or Poor – Requires Remedial Action (P). For problems that require remedial action, note the remedy required (see below); once action is taken, indicate the date the work was completed.

Problems to look for on general trail surface	Remedy Needed
Missing signage (trail name and rating)	Reinstall signage
Obstacles (fallen tree, unsafe roots/rocks)	Remove trees, loose rocks and unsafe roots; armour roots; re-route trail
Danger trees	Remove tree
Erosion	Install drainage or armouring; re-route trail and deactivate
Ponding water	Install drainage or armouring; install bridge; re-route trail and deactivate
Trail braiding / trail creep	Remove obstacles; install corral feature
Overgrown vegetation	Requires brushing
Problems to look for on TTFs	Remedy Needed
Missing signage (if different difficulty)	Reinstall signage
General sturdiness	Reinforce, rebuild or remove
Loose boards / missing nails	Reattach boards
Missing boards	Reinstall boards

The Bluff Recreation Site

Downhill and Freeride Trails

	TRAIL NAME	FEATURE	DATE	INSPECTOR	CONDITION	REMEDIAL ACTION NEEDED	COMPLETED?
	Bluff Rd @ boundary	Kiosk					
◇	Skitzo	General Trail					
		Signage					
□	Upper Rem. Day	General Trail					
		Signage					
◇	Lower Rem. Day	General Trail					
		Signage					
		Wide Trestle					
◇	Four Horsemen	General Trail					
		Signage					
		Filter (Skinny trestle)					
		Teeter totter					
◇	(Shot Dn in Flames)	Rock drop					
◇	(Shot Dn in Flames)	Drop #2					
□	Apocalypse	General Trail					
		Signage					
		Wood-wood gap jump					
		Log ride @ gap jump					
		Dirt-dirt gap below log					
		Wooden step-up					
		Dirt jump (hip)					
		Skinny trestle					
		Bedpost drop					
		Trestle/drop @ btm					
◇	Upper Auntie Flo	General Trail					
		Signage					
		Wide trestle					
		skinny trestle					

<input type="checkbox"/>	Lower Auntie Flo	General Trail				
		Signage				
		Teeter totter				
		Skinny trestle A-frame				
		Hwy to Hell wide trestle				
		Dirt-wood step-up				
		Skinny trestle A-frame				
		Wide trestle				
		Green Monster trestle				
<input type="checkbox"/>	Upper Shining	General Trail				
		Signage				
		237 wide trestle				
		Red Rum skinny trestle				
		Doubleblack hip jumps				
		Wide trestle (below Q)				
		Wide trestle above jctn				
<input type="checkbox"/>	Middle Shining	General Trail				
		Signage				
		Skinny trestle at Junction				
		Wood drop/hip				
		Log ride onto Apocalypse				
<input type="checkbox"/>	Lower Shining	General Trail				
		Signage				
		Log ride #1				
		Log Ride #2 (w/ rideover)				
<input type="checkbox"/>	Smoothy	General Trail				
		Signage				
		Skinny trestle w/ drop				
		Skinny jump				
		Wide Trestle A-frame				
		Stooge drop				
		Wide trestle				
<input type="checkbox"/>	Penetralia	General Trail				

		Signage					
		Overpass wide trestle					
		Wide trestle A-frame					
		Skinny trestle					
		A-frames (3 small?)					
		Wide trestle @ rd					
<input type="radio"/>	Uptrack	General Trail					
		Signage					
		Wide trestle@ entrance					
		2 wide trestles at rd (Q)					
		2 wide trestels at rd					
		2 wide trestles @ rd (P)					
<input type="checkbox"/>	Enchilada	General Trail					
		Signage					
		New continuum					
<input type="checkbox"/>	Old Bluff Trail	General Trail					
		Signage					
		Skinny trestle below RD					
<input type="checkbox"/>	Goat Trail	General Trail					
		Signage					
		Skinny trestle before RD					

Cross Country Trails

	TRAIL NAME	FEATURE	DATE	INSPECTOR	CONDITION	REMEDIAL ACTION NEEDED	COMPLETED?
<input type="radio"/>	Boardwalk Trail	General Trail					
		Signage					
		Wide trestle bridge					
		Log Ride					
		Wide trestle (long)					
		Wide trestle (3 short)					
		Wide trestle (below hill)					
		Wide trestle (short)					

		Wide trestle (short)					
<input type="checkbox"/>	All Screwed Up	General Trail					
		Signage @ up entrance					
		Signage @ low entrance					
		Wide trestle on lower					
		Log ride on lower					
<input type="checkbox"/>	Meanstreak	General Trail					
		Signage					
		Dahlie Cr Bridge					
		Wide trestle (Saddle)					
◇	Back in Black	General Trail					
		Signage					
		Upper Dahlie Cr bridge					
◇	Stiff Upper Lip	General Trail					
		Signage					
<input type="checkbox"/>	Soul Stripper	General Trail					
		Signage					
<input type="checkbox"/>	Long Way	General Trail					
		Signage					
		Wide trestle @ rd (Q1)					
		Wide trestle (short)					
		Wide trestle long					
		Wide trestle sloped					
		Wide trestle					
<input type="checkbox"/>	Broken Axe	General Trail					
		Signage					
	Lookout area	General condition					

Ptarmigan Recreation Trails

Downhill and Freeride Trails

	TRAIL NAME	FEATURE	DATE	INSPECTOR	CONDITION	REMEDIAL ACTION NEEDED	COMPLETED?
	Lower Parking Lot	Kiosk					
<input type="checkbox"/>	Huckin' Eh	General Trail					
		Signage					
		Wide trestle					
		Dirt jump (hip) & 2 tables					
		Wide trestle (bridge)					
		Skinny filter					
		Doubleblack drop					
		Rock drop w/ ridearound					
		Doubleblack rock roll					
		Wide trestle					
		Wide trestle to stepup					
		Wide trestle					
		Wide trestle					
		Wide trestle (long)					
<input type="checkbox"/>	Pump Daddy	General Trail					
		Signage					
		Log jump					
		Wide trestle					
		Cliff feature roll-down					
		Wall ride					
<input type="checkbox"/>	Quad Access Trail	General trail					
		Signage					

Piper Down Recreation Site

Downhill and Freeride Trails

	TRAIL NAME	FEATURE	DATE	INSPECTOR	CONDITION	REMEDIAL ACTION NEEDED	COMPLETED?
	Lower Parking Lot	Kiosk					
	Upper Parking Lot	Kiosk					
◇	Piper Down	General Trail					
		Signage					
		Rock drop/ rollover					
		Doubleblack plane gap					
		Wide trestle A-frame/drop					
		Wide trestle A-frame					
		Skinny trestle					
		Teeter totter					
		Wide trestle @ Pay Dirt					
◇	Piper Cross	General Trail					
		Signage					
		Skinny trestle					
		Wide trestle – 4 (ravines)					
		Log ride					
		Rock roll with fence					
		Wide trestle @ paydirt					
◇	Pay Dirt	General Trail					
		Signage					
		Wall ride					
○	Fuzzy Monkey	General Trail					
		Signage					
		Wide trestle (bridge)					

APPENDIX 2: REGIONAL STANDARDS

In addition to the IMBA Guidelines and Whistler Trail Standards (see Appendix 2), a specific regional standard may apply to a select number of trails to keep up with the skill progression in the sport.

The standard outlined below applies to those trails, trail segments or features designated as “Most Difficult - Advanced Features” and may incorporate elements of expert unlimited trail design but in a manner that manages the relative risks and liabilities associated with that difficulty level while remaining with the Agreement and insurance obligations of the SMBA. This type of development will be supported by frequent inspection by the Trail Safety Coordinator and RSTB District Recreation Officer to ensure safety and appropriateness.

Most Difficult - Advanced Features

Management Principles

- Construction of this class of trail will be focused on mountain bike specific downhill trails in The Bluff and Piper Down Recreation Sites and on the Ptarmigan Recreation Trails.
- Location of this class of trail/feature will consider access points in attempts to limit accidental exposure of advanced trail and TTF entrances to average riders.

Trail Design Standards

- Maximum descent grade may exceed 35% in select areas, provided that drainage features are installed in high risk sections. Drainage features will be consistent with standards and best management practices outlined the Management Plan and Agreement.
- Advanced Feature sections of trails will ideally be located on separate detour or alternate trail sections that are signed and separated from the main trail.
- Where possible, Advanced Feature sections of trails will start with skill filters that will limit accidental entry by novice riders.

Technical Trail Features

- All TTF's will be structurally sound, properly designed and maintained.
- TTF width to height ratio may exceed 1:4 for select features. Those features that exceed this ratio must be detours where the main trail does not exceed the trail standards for Most Difficult rating.
- Rock or ramp descents on detours may exceed 120% provided the main trail features are consistent with Most Difficult rating.
- Jumps may include gaps on detours, where the main trail is consistent with Most Difficult trail standards.

- Fall zones must be cleared and groomed in a manner consistent with the Whistler Trail Standards.

Hazard Management for Most Difficult - Advanced Features

- Signage for this class of trails should express the presence of Advanced Features at the trailhead (double diamond symbol).
- Additional signage at least 10m from the Advanced Feature must indicate the presence of the Advanced Feature and the direction of the main trail route.
- Signs will be double-black, to indicate relative higher difficulty than single black, and incorporate supplemental information (e.g. Steep, Caution, Jump) when necessary.
- The SMBA will follow up on any injury that is known to occur on trails of this rating and review the safety of the trail.

APPENDIX 3: WHISTLER TRAIL STANDARDS

Reference:

Resort Municipality of Whistler. 2003. Whistler Trail Standards.

http://www.whistler.ca/images/stories/PDF/Resort%20Experience/Cycling_Committee/trail_standards_first_edition.pdf.



WHISTLER

TRAIL STANDARDS

ENVIRONMENTAL AND TECHNICAL TRAIL FEATURES



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RESORT MUNICIPALITY OF WHISTLER

FIRST EDITION

AUTHOR'S NOTES

As planners, we must not lose sight of the fact that guests are here to have a good time, avoid injury and not get lost.

The evolution of mountain bike trails, recreational equipment, and environmental issues require that this document be amendable.

Thanks to North Shore Mountain Bike Association (NSMBA) and the Whistler Off-Road Cycling Association (WORCA) for reviewing the document and providing feedback. Also thanks to Channa Pelpola, Ken Neave and Jim Richardson for their feedback and insight. Special thanks to Keith Bennett for his feedback, insight and proactive approach to mountain biking.

Cover photos were provided by Bonnie Makarewicz Photography and David Diplock, Director of the North Shore Mountain Bike Association. Trail Type drawings by Jensen Resort Planning.

Andrew DeBoer
Whistler Cycling Committee
Summer 2003



DAVID DIPLOCK PHOTO

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INTRODUCTION

Whistler, British Columbia has been recognized as a premier destination resort for mountain biking. For the most part, this can be credited to the Whistler Mountain Bike Park and a network of valley and off-road trails that provide a recreational and commuter experience for a wide range of residents and visitors. To sustain this experience, the Resort Municipality of Whistler (RMOW) proposes to review, sign, maintain and manage this network of trails throughout the Whistler Valley. This document is not a “how-to” on building or maintaining trails; rather it is the standard by which the trails will be managed within the Whistler Valley.

The Resort Municipality of Whistler’s Trail Standards, Environmental and Technical Trail Features was drafted in support of two initiatives identified by Volume One of Whistler 2002: Charting a Course for the Future. The first and foremost initiative described under the priority of Moving Toward Environmental Sustainability, states “We’ve established a trail hierarchy and environmental standards to ensure the type of trail and its maintenance is appropriate to the setting.” A land use compatibility matrix was developed to address this objective. The matrix outlines the Trail Type and Trail Difficulty Level acceptable in distinct land-use classes. As well, environmental guidelines were established to minimize the placement of trails in sensitive environments. The second initiative described under the priority of Enhancing the Whistler Experience states “Whistler is one of the top bike towns in North America, with world-class trails...” Whistler’s trails must continue to provide exciting experiences for all levels of riders from families to advanced riders. Attention to providing a challenging experience, maintenance, a seamless network and an easy-to-use trail system will help position Whistler as one of the top bike towns in North America.

Appropriate management of our on- and off-road trail network is intended to elevate Whistler’s status as a cycling destination with minimal environmental impact.



BONNIE MAKAREWICZ PHOTO

TRAILS AND LAND USE

This section is a macroscopic view of the trails, the environment and where trails may be placed. This section outlines the levels of land protection, trail type descriptions and trail difficulty levels. These three classifications interact together as defined by a compatibility matrix.

LAND USE DIRECTIONS

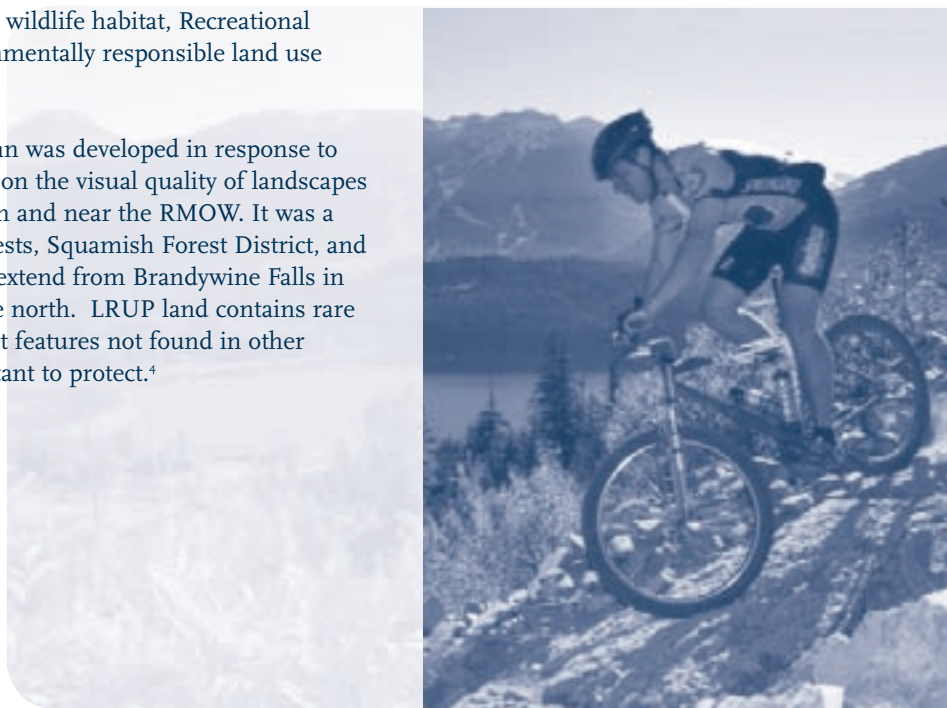
Whistler’s environmental values and principles direct us to address land use as an important environmental consideration. Whistler’s principle of an ecosystem-based approach advises us to mesh our human purposes with the larger patterns and flows of the natural world, and to study these to inform and guide our activities on the land.¹

From the draft Whistler Environmental Strategy, six land use directions are defined for the Whistler Valley. Each land use direction has a different level of environmental protection. For the purpose of this document, the LRUP and PAN 3 are given the same level of conservation.

DEVELOPED AREAS – This land use designation includes industrial, commercial and residential areas.

RECREATIONAL GREENWAYS – An important means for creating linkages between the built and natural environments, and between the needs of human communities and natural ecological systems. Incorporating opportunities for both recreational activities and the maintenance of natural features and wildlife habitat, Recreational Greenways are a vital part of environmentally responsible land use planning.²

LRUP – The Local Resource Use Plan was developed in response to public concerns over logging effects on the visual quality of landscapes and the recreation uses of the land in and near the RMOW. It was a joint effort from the Ministry of Forests, Squamish Forest District, and the RMOW.³ The LRUP boundaries extend from Brandywine Falls in the south to Cougar Mountain in the north. LRUP land contains rare and unique species or unique habitat features not found in other ecosystems and are therefore important to protect.⁴



BONNIE MAKAREWICZ PHOTO

¹The Whistler Environmental Strategy, Discussion Paper, September 21, 1999, Executive Summary, Page x.
²Ibid., Section 6.0, Page 35.
³Forest Recreation Plan, Whistler Local Resource Use Plan, June, 1995, Page 1
⁴The Whistler Environmental Strategy, Section 4.0, Page 23.

PAN PROTECTED AREA NETWORK – Divided into the following three subcategories of protection.⁵

PAN 3 – RESERVE LANDS Large tracts of relatively natural land, which could be subject to recreational or other development provided an Environmental Impact Assessment is done. PAN 3 protection is generally used for second growth forests and other natural areas not include in PAN 1 and 2. In cases of development, key ecological components of reserve lands may be subject to PAN 1 or 2 protection after development. Most trail types are acceptable with the exception of paved Type I trails.

PAN 2 – SPECIAL MANAGEMENT ZONES Well protected and allow some low-impact human activities or development (creation of trails). Priorities for PAN 2 protection include significant streams and riparian areas, significant old growth forests and wildlife corridors. Only low impact trails such as Trail Type III, IV or V are acceptable to be built in PAN 2 areas.

PAN 1 – KEY PROTECTED AREAS Preserved to protect unique and sensitive ecosystems from any human development or use, with the possible exception in individual cases of very low-impact nature trails, boardwalks or wildlife viewing platforms for the specific purpose of habitat protection. Priorities for PAN 1 protection include streams, wetlands, riparian areas, old growth forests, key wildlife corridors and unique or threatened habitat types. No cycling trails are to be built in these areas.

COMPATIBILITY MATRIX

The Whistler Valley effectively has five land use directions. These land use directions relate to the five trail types (reference to page 6-7) and the first four trail difficulty levels (reference to page 8-9) in the following compatibility matrix. The RMOW will construct new trails only in environments compatible with trails.

	LAND USE DIRECTION									
	Developed Areas		Greenways		PAN 3 include LRUP		PAN 2		PAN 1	
Mountain Bike TRAIL DIFFICULTY	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
TRAIL TYPE	I	✓	x	x	x	✓	x	x	x	x
	II	✓	✓	✓	x	✓	✓	x	x	x
	III	x	✓	✓	✓	x	✓	✓	x	x
	IV	x	x	✓	✓	x	✓	✓	x	x
	V	x	x	x	✓	x	x	x	✓	✓

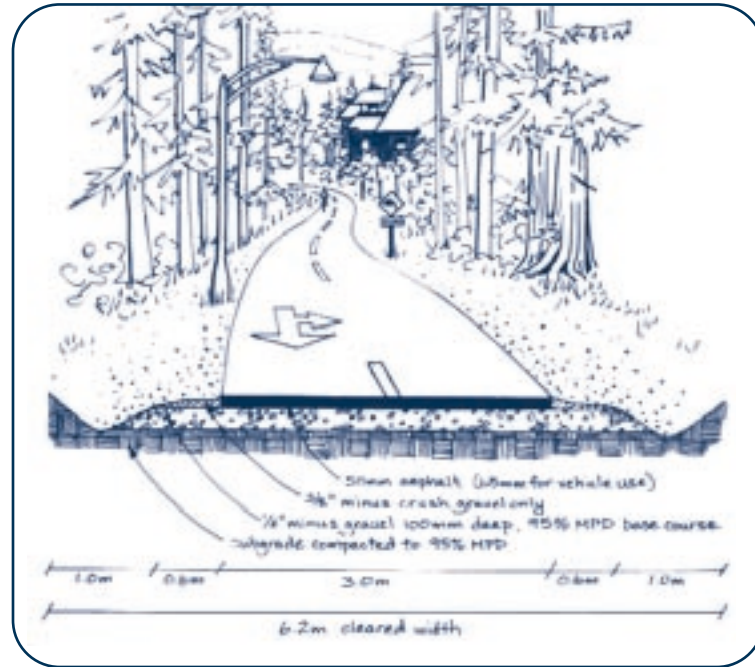
✓ = Compatible x = Incompatible G = Grandfather Clause⁷

TABLE 1 COMPATIBILITY MATRIX

⁵ The Whistler Environmental Strategy, Section 5.1, Page 29.
⁶ Only hiking trails, in individual cases, on very low-impact nature trails, boardwalks or wildlife platforms for the specific purpose of habitat protection are permitted to be constructed in PAN 1.
⁷ Refer to page 18, this document

TRAIL TYPES

Trail Types⁸ are a description of non-motorized trail tread characteristics. Trail Type I has the highest amount of traffic and the most impact on the environment of the trail types. Conversely, Trail Type V has little traffic and the trail tread is minimal.



TRAIL TYPE I

TYPE I

- plan as paved double-track trail for smooth, all weather use to provide access to village, parks and subdivisions
- use asphalt or chip-seal coat surfacing
- clear width to tread width plus 0.6 m gravel shoulder and adequate drainage on each side
- clear height to 3.0 m
- provide 2-3 m tread width
- provide illumination for night use if appropriate
- provide interpretive and directional signs, benches, viewing areas where appropriate



TRAIL TYPE II

TYPE II

- plan as surfaced double-track or single-track trail
- machine built
- remove all embedded trail obstacles
- use crushed limestone with fines, well-compacted gravel, or existing old roadbeds
- clear width to 5.0 m for double-track and 1.6 m for single-track trails
- clear height to 2.4 m
- provide 2-3 m tread width for double-track trails, 1 m for single-track trails
- provide illumination for night use if appropriate

TYPE III

- plan as unsurfaced single-track trail
- may be machine built
- clear width to 1.1-1.3 m
- clear height to 2.4 m
- provide 50-70 cm tread width on native soil



TRAIL TYPE IV

TYPE V

- plan as low-impact nature trail or lightly used wilderness trail
- no high impact users, such as motorized vehicles or horses
- clear height to 2.4 m
- provide 30-50 cm tread maximum, avoid tread grubbing, sections of very rough terrain
- in the case of low-impact nature trails use boardwalks to traverse sensitive areas



TRAIL TYPE III

TYPE IV

- plan as unsurfaced single-track trail
- clear width to 1 m
- clear height to 2.4 m
- provide 30-50 cm width tread on native soil, sometimes rough terrain



TRAIL TYPE V

⁸ Sources for these classifications are: BC Parks; BC Forest Service and RMOW P-4 Risk Management, Trail Classifications, Schedule C

MOUNTAIN BIKE TRAIL DIFFICULTY LEVELS

The following identify all the levels of trail technical difficulty as they apply to mountain bikes, starting with easiest and moving up to expert unlimited. Included are general and detailed description of trails and Technical Trail Features (TTFs). This section quantifies what characteristics compose the trail difficulty for mountain bikes.



NAME: Easiest **SYMBOL:** White circle

GENERAL

- Fairly flat, wide and paved. Suitable for all users.⁹

DETAILED

- Maximum grade: 10%
- Preferred average grade: no more than 5%
- Maintain a minimum 2.5 m curve radius
- Usually associated with Trail Type I

EXPECTED TECHNICAL TRAIL FEATURES

TTFs are not appropriate for this trail level.



NAME: Easy **SYMBOL:** Green circle

GENERAL

- Gentle climbs and easily avoidable obstacles such as rocks, roots and pot-holes.¹⁰

DETAILED

- Maximum grade: 15%
- Maximum sustained climbing grade: 8%
- Curve radius: 2.4 m minimum
- Usually associated with Trail Type II or III

EXPECTED TECHNICAL TRAIL FEATURES

GENERAL

- Small roots & logs to cross
- Embedded rocks to avoid
- Wide bridges

DETAILED

- Embedded trail obstacles: up to 10 cm.
- Logs and roots perpendicular to direction of travel ($\pm 15^\circ$)
- Bridge minimum 90 cm wide, handrail required if height of bridge above surface exceeds 60 cm
- Rock face descents not to exceed 25%
- No drops
- No jumps



NAME: More Difficult **SYMBOL:** Blue Square

GENERAL

- Challenging riding with steep slopes and/or obstacles, possibly on a narrow trail with poor traction. Requires riding experience.¹¹

DETAILED

- Maximum climbing grade: 25%
- Maximum sustained climbing grade: 10%
- Maximum descent grade on non-rock surface: 35%
- Curve radius: 1.8 m minimum
- Usually associated with Trail Type III or IV

EXPECTED TECHNICAL TRAIL FEATURES

GENERAL

- TTF width to height ratio of 1:2
- Small bridges (flat, wide, low and rollable from section to section)
- Small rollable drops
- Small teeter-totters
- Small jumps
- Medium sized logs

DETAILED

- Embedded trail obstacles: up to 20 cm high
- Elevated bridges: less than 1.8 m (6') high above surface
 - Minimum width of flat decking is one-half the height above surface
 - For connected sections, the bisecting angle between each connected section must be large enough to allow the bicycle to complete transition without requiring any wheel lifting techniques
- Teeter-totter: maximum pivot height, less than 60 cm (2') high above the surface
 - Minimum width of flat decking is one-half the height above surface at pivot point
- Rock or ramp descents not to exceed 45%
- Drop-offs not exceeding 30 cm high with exit cleared of all obstacles
- Jumps
 - No jumps with consequences for lack of speed (for example, coffin jumps or gap jumps)
 - Table top jumps maximum height 60 cm (2')
 - Jumps maximum height 45 cm (18")



NAME: Most Difficult **SYMBOL:** Black Diamond

GENERAL

- A mixture of long steep climbs, loose trail surfaces, numerous difficult obstacles to avoid or jump over, drop-offs and sharp corners. Some sections are definitely easier to walk.¹²

DETAILED

- Maximum climbing grade: 30%
- Maximum sustained climbing grade: 15%
- Usually associated with Trail Type III, IV or V

EXPECTED TECHNICAL TRAIL FEATURES

GENERAL

- TTF width to height ratio of 1:4
- Elevated bridges and teeter-totters with maximum deck height
- Connected bridges
- Mandatory air
- Larger jumps
- Steep descents with sharp transitions

DETAILED

- Elevated bridges: less than 3 m (10')¹³ high above surface
 - Minimum width of flat decking is one-quarter the height above surface
- Teeter-totter: maximum pivot height less than 1.8 m (6') above surface
 - Minimum width of flat decking is one-quarter the height above surface at pivot point
- Mandatory air less than 1.0 m (3.3') vertical
- Rock or ramp descents not to exceed 120%
- Jumps
 - Table tops, no maximum height
 - No gap jumps or rhythm sections



NAME: Expert Unlimited **SYMBOL:** Double Black Diamond

GENERAL

- Exceptional bike control skills and balance essential to clear many challenging obstacles. High-risk level. Only a handful of riders will enjoy these rides.
- The RMOW recognizes Expert Unlimited as a difficulty level but due to the small size of the user group, the RMOW will not pursue ownership of these trails, however there may be some of these elements on a trail provided there is a clearly defined alternate route around.

DETAILED

- Similar to Most Difficult
- Usually associated with Trail Type III or IV

EXPECTED TECHNICAL TRAIL FEATURES

GENERAL

- Risk exceeds Most Difficult due to height, widths and exposure
- Fall zones may not meet fall zone standards
- The consequences of errors may be severe and rescue may be difficult

DETAILED

- Exceeding Most Difficult

⁹ Paul Kennett; Classic New Zealand Mountain Bike Rides; 1996

¹⁰ Paul Kennett

¹¹ Paul Kennett

¹² Paul Kennett

¹³ WCB requires "...that a fall protection system is used when work is being done at a place (a) from which a fall of 3m (10ft) or more may occur, or (b) where a fall from a lesser height involves an unusual risk of injury." Occupational Health & Safety Regulation Book 2, section 11.2, page 11-2

SUPPORTING GUIDELINES AND STANDARDS

This section is a microscopic view of trails. It contains guidelines and standards about the placement of trails, construction and strength of technical trail features and the signing of trails.

ENVIRONMENTAL GUIDELINES

The benefits of a trail for recreational purposes must be balanced with the desire to protect the environment. All intrusions into the environment have some degree of impact. However, these impacts can be minimized to balance the objective of a recreational experience with minimal impact on the surrounding environment. Trails that adversely impact the environment will deteriorate in time, have a low aesthetic value and incur a high maintenance cost. Trail construction must strive for minimal impact on their surroundings and be designed with consideration for the specific environment and the intended use of the trails.¹⁴

TRAIL PLACEMENT GUIDELINES

- Trail placement should avoid hazard areas such as unstable slopes, soil prone to erosion, cliffs, embankments and undercut stream banks, etc.
- Avoid shallow rooted trees with high windthrow potential and snags.
- Avoid routes that impact on wildlife species.
- Avoid critical habitat of rare or fragile plant species. If there are fragile plant communities next to the trail, delineate the trail edges by using logs or rocks.
- Avoid sensitive or fragile archaeological or historic sites.
- Avoid building trails in community watersheds.
- Avoid trail routing that encourages users to take shortcuts where an easier route or interesting feature is visible. If an interesting feature exists, locate the trail to provide the desired access to the trail user. Use landforms or vegetation to block potential shortcut routes.
- Avoid routing a trail too close to another trail section to prevent trail proliferation or shortcuts between the two trails.
- Route trailbeds on bedrock or hard packed surfaces and avoid organic materials.
- Use placed stones in sensitive areas and steep descents to minimize trail erosion.



DAVID DIPLOCK PHOTO

¹⁴ Sources for these classifications are: Ministry of Forest, Recreation Trail Management; Access Near Aquatic Areas, A Guide to Sensitive Planning, Design and Management, Province of BC.

AQUATIC ENVIRONMENTS

- Trail construction of Trail Types III-V near an aquatic area within 30 m of streams and within management zones as per Forest Practice Codes must minimize vegetation removal and soil disturbance. Construction standards should be consistent with trail use, thereby minimizing trail width requirements.
- Structures in direct contact with water should be inert (for example, natural untreated cedar, precast concrete or steel) to avoid water quality impacts associated with chemical leaching from treated wood. Pile supported structures are preferred over slabs or floats for bridges requiring supports in contact with streams.
- Locate bridge crossings to minimize disturbance to streambeds and banks. Sections of the waterway that are straight and where banks are stable are preferred for crossing.
- Construct bridges across streams to top-of-the-bank. This minimizes erosion of stream banks and sedimentation of streams.

GENERAL

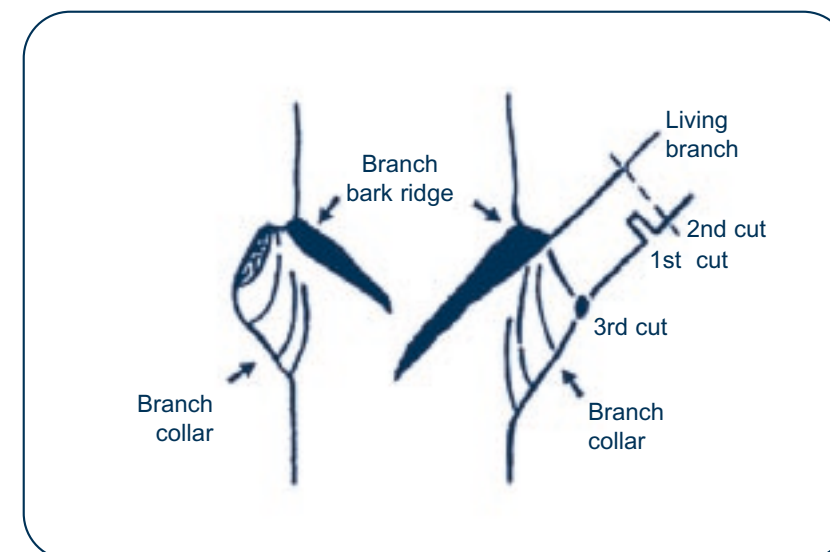
- Avoid cutting down live trees.
- Tree branches must be cut at the collar, both longer or shorter are likely to cause infection to the tree (figure 1).¹⁵
- Cover exposed roots.
- If pretreated wood has been selected for structures being placed in the ground, the structure should be isolated in poly wrap below grade.

USE OF MACHINERY

- Limited access trails that penetrate sensitive areas should be constructed manually with materials and equipment that can be easily transported by small work crews.
- If machinery is required, minimum standards as per Forest Practices

Code should be adopted (i.e. no machinery within 5 m of any water-body.) Low impact construction techniques should be employed such as small underinflated, rubber tired vehicles, and construction pads, platforms or cranes. Prefabricated structures that can be manually assembled on site should be used, if possible.

FIGURE 1 BRANCH BARK RIDGE AND BRANCH COLLAR



¹⁵ "Pruning Basics and Tools" [<http://www.ext.vt.edu/pubs/nursery/430-455/430-455.pdf>] (April 7, 2003)

TTF CONSTRUCTION STANDARDS

Trails with constructed Technical Trail Features (TTF) must exceed a minimum standard to protect the trail user.

SAFETY

TTFs must exceed the minimum strength and stability standard. Also, the finish must be such that if a rider were to fall, the structure or other protrusions would not increase the degree of the injury.

STRENGTH AND STABILITY

Each span of the TTF must be capable of withstanding a centered vertical load of 225 kg (495 lb, 2 times heaviest rider/bike and gear). Every single rung should be capable of holding a rider/bike and gear's weight.

TTF DESIGN PHILOSOPHY

- Gateways:
 - By placing a narrow section or difficult turn early while the TTF is still close to the ground (known as a gateway), inexperienced riders may dismount prior to the TTF getting too high above the ground where the rider is more likely to be injured should a fall occur. For example, place a 10 cm wide gateway 40 cm off the ground as a gateway to a 30 cm wide section 1.2 m off the ground.
- Make the highest difficulty section visible from the entry:
 - By placing the difficult section in view, the rider can make an informed decision before they may get into trouble with a TTF that may be beyond their ability.
 - Avoid wide, easy entrances leading to high, narrow exposed features

TTF HEIGHT AND WIDTH

As outlined in the Technical Trail Difficulty section, maximum height and minimum width are dependent on the TTFs difficulty. As the height above the ground increases, the consequence of injury in the case of a fall increases.

Height is measured vertically to the lowest point within 1.0 m adjacent to TTF (figure 2). Tread width is the amount of flat tread (figure 3).

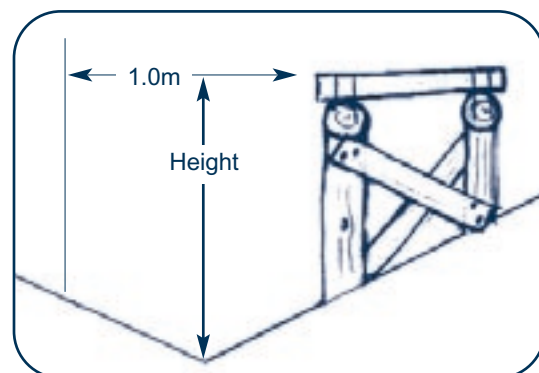


FIGURE 2 MEASUREMENT OF TTF HEIGHT

FIGURE 3
TREAD WIDTH
MEASUREMENT

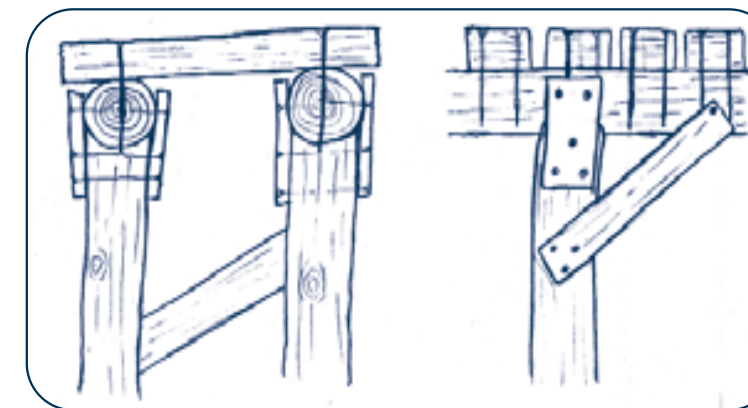
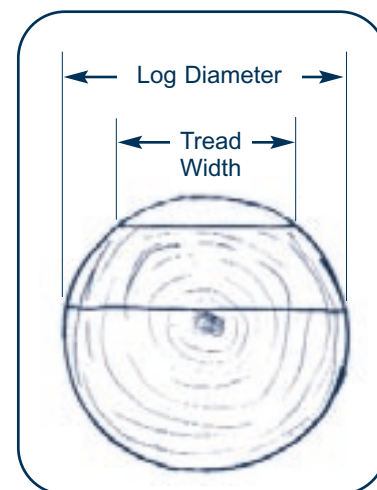


FIGURE 4 BRIDGE STRINGER SUPPORT AND CROSS BRACING

CONSTRUCTION PRACTICES

Cross bracing of vertical members is required (figure 4). Also, TTFs should not be mounted to living trees for the following reasons:

- The tree will continue to grow, compromising the integrity of the TTF.
- The tree may sway due to wind, weakening the TTF.
- Nailing to live trees is harmful to the tree.

CONNECTED MEMBERS

The methods for joining members in order of preference is: nuts and bolts, lag bolts, wood screws or ardox nails. Ensure two-thirds of nail or screw's length penetrates the stringer. Loading on a member should be done in such a way as not to rely exclusively on the shear strength of the joining method.

BRIDGE RUNG SPACING

Deck rungs must be placed tightly so that children will not catch their feet between rungs, arms will not fit between rungs and all users including dogs will use bridges as opposed to walking adjacent to the bridge, compromising the sensitive area the bridge was intended to protect. An appropriate spacing between rungs is 3 cm to promote drainage of water and mud. Overhang rungs past stringers by less than 5 cm (2 in) (figure 5).

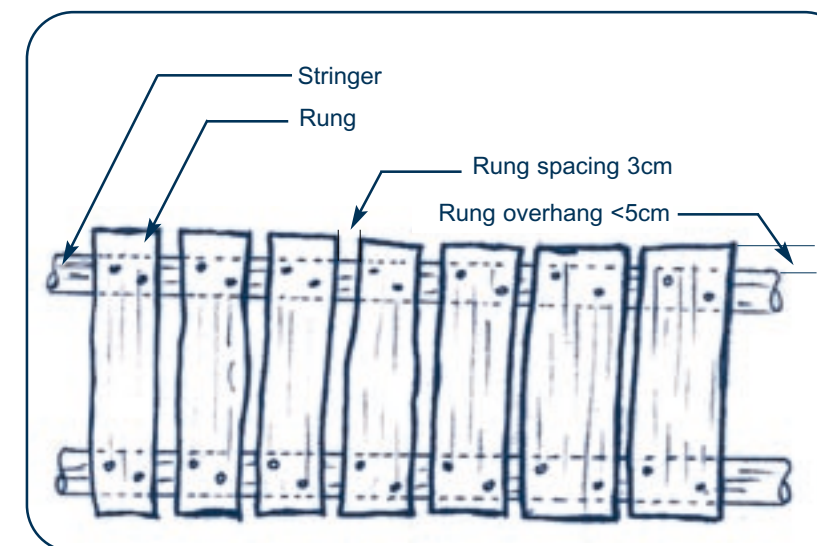


FIGURE 5 BRIDGE RUNG SPACING, RUNG OVERHANG

BRIDGE SURFACING

It is recommended that wood surfaces with a slope exceeding 10°, with the exception of split wood having a rough surface finish, have an applied anti-slip surface. One recommended material is expanded diamond lath. Chicken wire and rolled roofing material, although popular, are not durable and roofing material traps moisture promoting premature rotting.

Note: TTFs must be reinforced to withstand the additional loading of anti-slip surfaces against the direction of the braking forces.

WOOD PREPARATION

Bark must be stripped off and wood in contact with the earth should be isolated to minimize rotting. For natural rot resistant wood, use cedar.

FALL ZONE GUIDELINES

Riding a mountain bike on trails and technical trail features involves challenging oneself and with that challenge comes risk of injury. Challenges come from terrain that contains many natural and man made features. Risk is relative to riders skill level in relation to the difficulty of the trail.

FALL ZONE

The fall zone is the area adjacent to the technical trail feature, bottom of descents and the outside of corners that the rider may deviate into. To help reduce the incidence and severity of injuries, fall zones should be reviewed for hazards. Hazard mitigation efforts can be limited to those items that can be reasonably expected to be reshaped or removed using hand tools while maintaining the natural characteristics of the terrain surrounding the trail.

METHODS

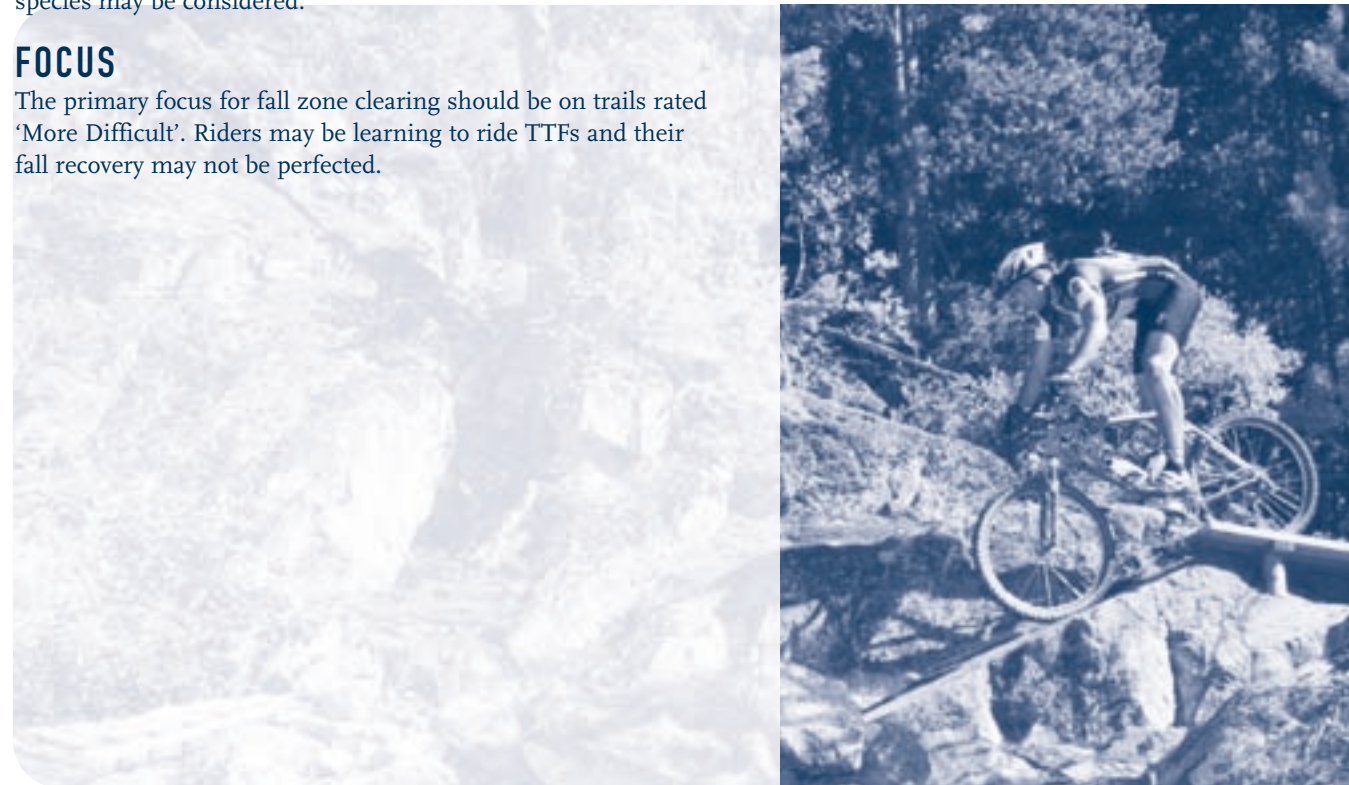
Methods to reduce risk in fall zones (1.5 m to each side of the trail) include but are not limited to:

- Cutting or digging out any sharp objects
- Trimming tree branches to branch shoulder (see figure 1)
- Covering of hazards is another option if material such as rotten logs, bark, mulch, dirt, etc. is available
 - Areas where falls are frequent may need periodic re-covering
- Dulling of sharp points or edges of exposed rocks

NOTE The fall zone need not be cleared of all foliage; the purpose of fall zone guidelines is to reduce the chance of injury should a fall occur. Replanting of the fall zone with a durable locally occurring species may be considered.

FOCUS

The primary focus for fall zone clearing should be on trails rated 'More Difficult'. Riders may be learning to ride TTFs and their fall recovery may not be perfected.



BONNIE MAKAREWICZ PHOTO

SIGN GUIDELINES

Signs are a necessary component of trail management. They provide the user with information that will allow them to make an informed and educated choice. The hierarchy of signs in Whistler will be comprised of three levels. The first is a Trail Network Sign kiosk that contains a map, general information about the area and safety suggestions. The second level is a Trailhead Sign that would contain information specific to the trail. Third, En Route Signs along the trail to promote confidence in the user that they are following the correct route and to be posted on features that are a higher difficult rating than the trail rating.

TRAIL NETWORK SIGN

Located at a parking lot or similar entrance to a network of trails. Information for trail network signs may contain a combination of the following:

- Topographical map of area
- IMBA rules of the trail
 1. Ride on open trails only
 2. Leave no trace
 3. Control your bicycle
 4. Always yield trail
 5. Never spook animals
 6. Plan ahead
- Trail etiquette
 1. Stay on trail, no ride-a-rounds
 2. Do not alter trail
 3. Ride don't slide
 4. Avoid riding in muddy conditions
 5. Know your limits
 6. Support trail maintenance
- Safety
 1. Ride in 3's
 2. Carry a flashlight
 3. Carry a foil emergency blanket
 4. Let someone know your route, time of return and carry a two-way communication device.
 5. Wear a helmet
- Notes about keeping dogs out of fish bearing streams and educational components
- Information on who to contact with trail maintenance concerns or how to get involved
- Acceptable trail user groups
- Emergency contact phone numbers
- Description of cell phone coverage
- Background information on the surrounding area and trails
- Trail maps for distribution
- Bulletin board
- Reference to web or other resource

TRAILHEAD SIGN

These signs are to be located at the entrance(s) of a particular trail to provide the user with the information necessary to make an informed and educated decision whether to proceed or not.

SUGGESTED INFORMATION

- Trail name
- Topographical map of trail
- Trail length
- Elevation gain and loss
- Use at own risk disclaimer

DETAILS

Sign size 140 mm X 370 mm. Selected to be mounted without overhang on 150 mm X 150 mm posts (figure 6).

OPTIONAL INFORMATION

- Trail difficulty rating and a written explanation of what the user may encounter on the trail
- Warning and quantity of higher difficulty TTFs if present
- Conditions subject to change
- Inspect TTFs prior to riding
- Time range to complete
- Trail profile
- Disclaimer – most trails will be a level or two harder to ride when slippery

MANAGEMENT GUIDELINES

EN ROUTE SIGN

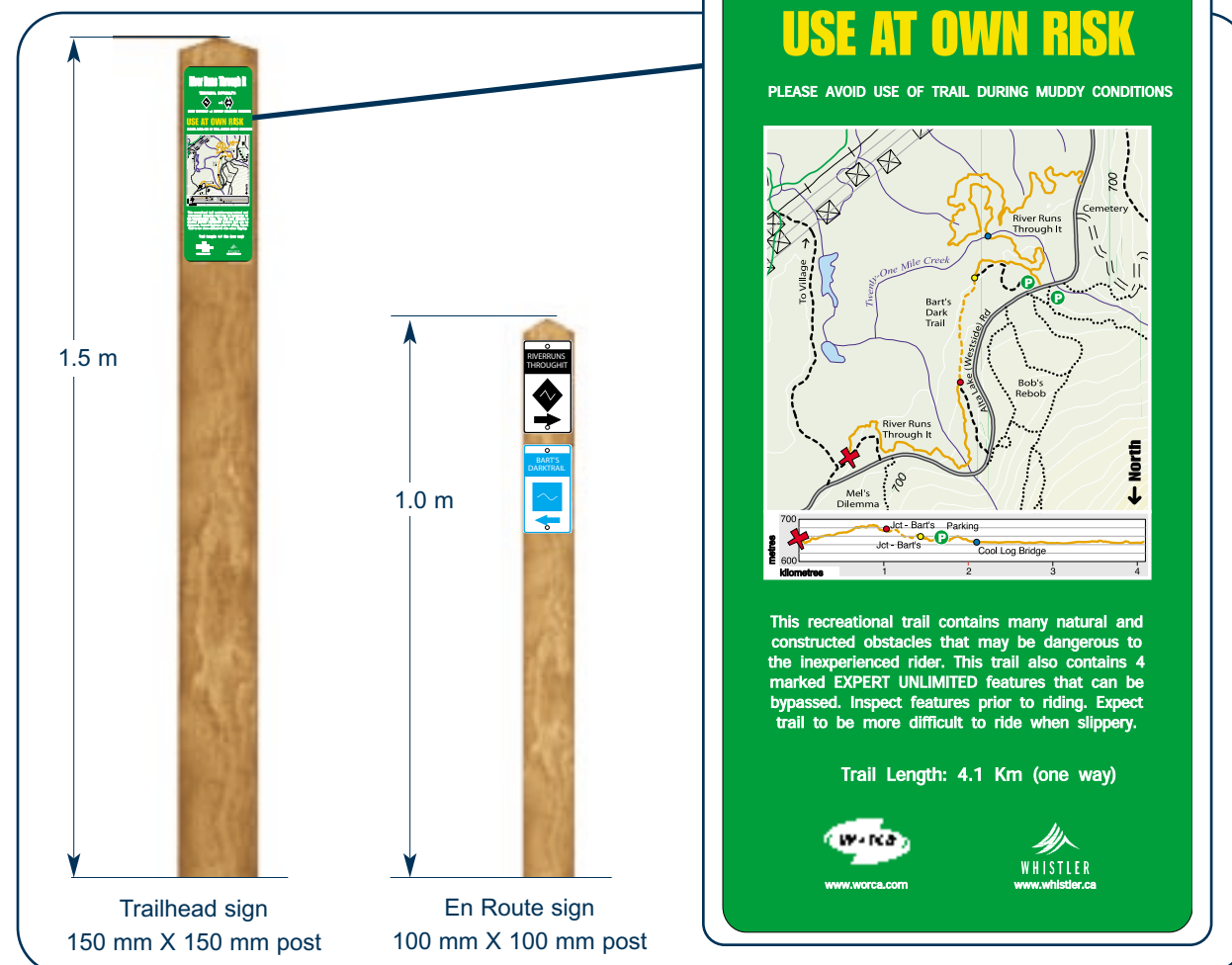
Located along the trail indicating to the user they are still on the desired trail and/or give warning of the higher difficulty of an upcoming TTF. En route signs express difficulty in three ways: shape of sign, color of sign and trail profile symbol on the sign. The signs are labeled with the trail name to distinguish between different trails.

- En route signs to be placed at junctions with alternate trails giving clear indication of each trails' direction. Use difficulty symbol and trail name with a reflective white border.
- For TTFs rated a higher difficulty than the trail rating, en route signs to be posted as warning. Use difficulty symbol and trail name with a reflective yellow border. If feature can not be safely walked, an easier signed bypass route must be provided (figure 6).
- If appropriate, signs may be placed at intervals to guide user.
- Consider reflective signs for night use.

DETAILS

For en route signs marking higher difficulty features, it is important for the sign to be highly visible. Place sign approximately 1.0-1.5 m above tread.

FIGURE 6 TRAILHEAD & EN ROUTE SIGNS



CONSTRUCTION

For new trails, the RMOW will use an experienced trail builder for the trail alignment and follow the supporting guidelines and standards.

TRAIL RATING

The trail and each feature along the trail is reviewed and measured to determine its difficulty. The details and difficulty level of each feature need to be recorded. The trail may be rated as low as the average feature difficulty or as high as the highest feature's difficulty, bearing in mind all features rated at a higher difficulty than the trail's rating must be individually signed. If the feature can not be safely walked, the feature must have an easier, signed bypass route. The trailhead sign must also inform the user that there are higher difficulty features.

TRAIL MAINTENANCE

Trail maintenance is an integral part of managing trails. In general, high use trails and trails in environmentally sensitive areas require a greater level of maintenance and an expedited response to trail deterioration. Trails with man-made TTFs also require more frequent inspection.

MAINTENANCE PRIORITIES

The RMOW will inspect municipal trails as follows:

- **HIGH PRIORITY TRAILS** will be inspected twice a year (April and July). These include all Type I trails, all trails in PAN 1 environments and trails with known constructed TTFs.
- **MEDIUM PRIORITY TRAILS** will be inspected in the spring of each year or prior to the start of the trail use season. These include all trails in PAN 2 and PAN 3 environments and all Type II trails.
- **LOW PRIORITY TRAILS** will be inspected in the spring of each year or prior to the start of the trail use season. These include all remaining mountain bike trails.

All inspections and maintenance must be documented.

INSPECTION TO INCLUDE

Review of the trail;

- for safety;
- to verify difficulty designation.

Review of signs;

- for presence and condition.

Review of constructed features;

- for structural integrity.

TERMINOLOGY

MAINTENANCE TRIGGERS

Triggers for trails requiring additional maintenance:

- TTFs deteriorating.
- Short-cutting of climbing turns and/or switchbacks.
- Trail drifting or sliding down the hill.
- Vegetation cover loss.
- Trail proliferation (widening or braiding).
- Trail incision and soil loss (ruts exceeding 15 cm depth).

GRANDFATHER CLAUSE

In the case of valued existing trails in protected areas when trail deactivation is unlikely to succeed, trail management becomes the preferred option. When considering the Grandfather Clause as an option, evaluate the continuing cost of maintenance to manage the trail. A trail deactivation/closure may not be successful if the trail has been established, is well used, and no alternative route is proposed. The resulting damage may be worse than had the trail remained open and effectively managed.

TRAIL DEACTIVATION

There may be a number of reasons for deactivating an existing trail. When considering deactivation of a trail, take into account;

- Is the trail popular?
- Is the level of impact acceptable or can it be made acceptable by management?
- Can the trail or part of the trail be rerouted to improve the situation?
- Are there suitable alternatives for users if the trail was deactivated?
- Is the trail historically significant?

Alternates to trail deactivation:

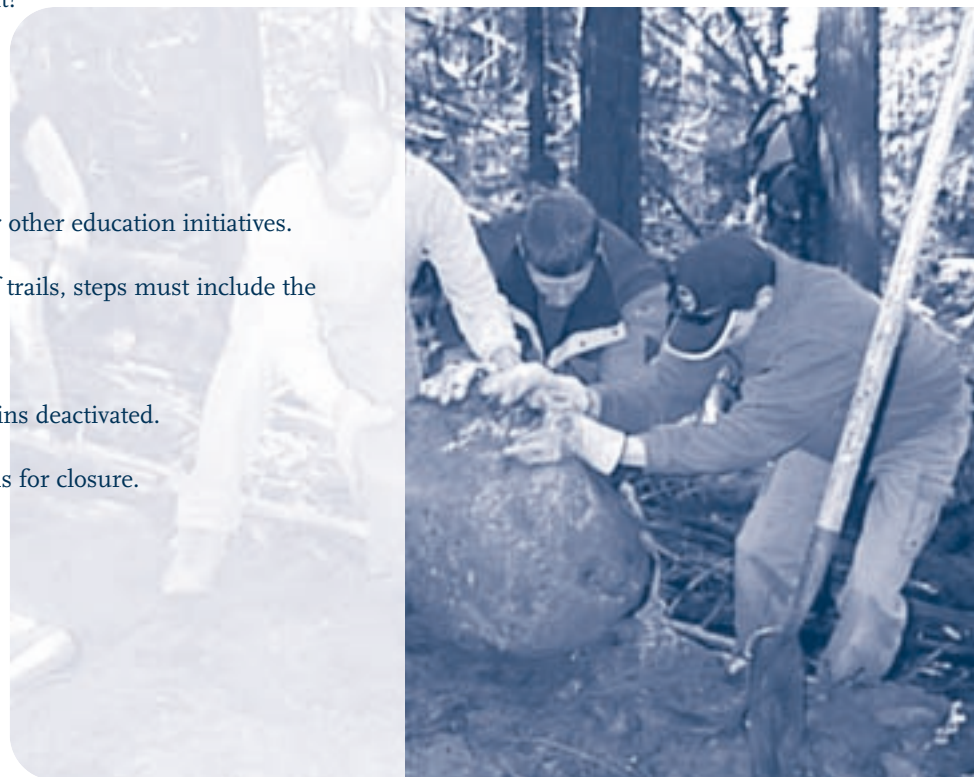
- Management of trail use.
 - Temporary closures
 - Reroute sections of trail
 - Exclusion of damaging users
- Education of users with signs or other education initiatives.

When considering deactivation of trails, steps must include the following:

- Consult user groups.
- Public notice.
- Monitoring to ensure trail remains deactivated.

And may include:

- Signs informing users of reasons for closure.
- Fences.



BONNIE MAKAREWICZ PHOTO

A-FRAME – two ramps (approach and exit) placed together with no level section at the apex. Typically used to bridge deadfall across the trail.

BERM – built up bank on the outside of a corner to improve cornering.

BOARDWALK – a raised walkway made of boards; used to traverse sensitive areas; similar to bridge.

BRIDGE – a structure that is built above and across a river or other obstacle allowing passage across or over obstacle.

DANGER – likely to cause harm or result in injury.

DROP-OFF – a drop in the trail, possibly at the end of a log or off a rock; may require a technique depending on the vertical drop and/or the angle of descent.

EN ROUTE – on the way.

EXPOSURE – placing a rider in the position or location that an error in balance or maneuvering may result in an injury; for example, a narrow bridge above rocks would be exposure and the greater the elevation of the bridge above the rocks, the greater the level of exposure.

FACE – the steep exposed side of a rock.

FALL-AWAY – a drop-off which incorporates a turn in the trail.

GAP JUMP – two ramps placed back to back with a space between them, the rider must travel with enough velocity to cross the space and land on the second ramp.

GATEWAY – a qualifier placed before a trail or TTF; for example, a 2x4 placed before an elevated bridge or a difficult corner. If the rider can successfully negotiate the more difficult gateway, then they will likely be able to negotiate the TTF.

GRANDFATHER CLAUSE – provision exempting certain pre-existing trails from the requirements of a new regulation.

JUMP – a wedge shaped feature built with the intention of sending the rider airborne.

LADDER – a TTF with rungs attached to sides (stringers) made of metal, wood or rope, used for climbing up or down.

LOGJAM – a pile of logs placed near perpendicular to trail to make a ramp, usually placed in front of and behind deadfall to ease passage.

MACHINE BUILT – constructed with the use of an excavator.

MANDATORY AIR – a TTF requiring a wheelie drop or other advanced technique to exit due to a steep or undercut exit.

MANUAL – technique used to lift the front end of a bike up without the use of a pedal stroke; can be used off mandatory airs, etc.; generally requires more forward momentum than a wheelie drop.

PAN – Protected Area Network, sometimes know worldwide as greenways, environmental corridors, landscape linkages, wildlife corridors or riparian buffers.

RAMP – any inclined structure, typically used as an approach to or exit from a TTF. A ramp can also be a jump.

RHYTHM SECTION – series of gap jumps placed end to end. Most technical form of jumping due to skill, timing, technique and failure consequence.

RIPARIAN ZONE/AREA – land between the water and the high water mark on the riverbanks. Riparian areas typically exemplify a rich and diverse vegetative mosaic reflecting the influence of water.

ROLLABLE – a section that can be ridden without requiring higher-level rider skills; for example, an elevated bridge intersection/corner that can be ridden without having to hop and rotate.

ROLL OVER – usually a rock that gets steeper the farther the rider advances, to the point where stopping may not be an option and the rider must continue despite not being prepared for what's ahead.

TABLETOP – two jumps back to back with the void between the jumps filled in with dirt, creating the tabletop.

TEETER-TOTTER – a TTF consisting of a long plank balanced on a central support for riders to cross over, providing an down motion as the rider passes over the pivot.

TONGUE – a steep ramp on the exit of a TTF, often as an easier alternative to mandatory air.

TOP-OF-THE-BANK – the highest elevation of land, which confines to their channel waters flowing in an intermittent or perennial stream or river.

TREAD – the traveled surface of the trail.

TTF – Technical Trail Feature – an obstacle on the trail requiring negotiation, the feature can be either man made or natural, such as an elevated bridge or a rock face respectively.

WHEELIE DROP – technique used to pedal off drops-off or logs with the back wheel landing before the front wheel.

NOTES